

**Do governance practices impact performance, fees and the pay-performance link of CIOs? The case of Australian superannuation funds.**

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## **CERTIFICATE OF AUTHORSHIP/ORIGINALITY**

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## TABLE OF CONTENTS

CHAPTER 1 Introduction.....	1
CHAPTER 2 Do governance practices impact on performance and fees of Australian superannuation funds? .....	5
2.1 Introduction .....	5
2.2 Overview of the institutional setting of Australian superannuation funds.....	10
2.2.1 Compulsory superannuation .....	10
2.2.2 Types of Australian superannuation funds .....	11
2.2.3 The role of directors of Australian superannuation funds .....	13
2.2.4 The government reviews of Australian superannuation funds .....	15
2.2.4.1 The Super System Review (The Cooper Review) .....	15
2.2.4.2 The Financial System Inquiry (the Murray Inquiry).....	19
2.2.4.3 The Fraser Governance Review (the Fraser Review) .....	20
2.2.4.4 The Productivity Commission Inquiry.....	22
2.2.4.5 The Banking Royal Commission (the Hayne Royal Commission) .....	22
2.2.5 The economics of corporate governance .....	26
2.2.6 Governance practices in Australian superannuation funds.....	26
2.3 Literature review and theory development.....	28
2.3.1 Evidence from Australian superannuation funds.....	28
2.3.2 Evidence from publicly listed companies and overseas mutual funds .....	30
2.3.2.1 Board size and firm performance and fees .....	30
2.3.2.2 Board independence and firm performance and fees.....	31
2.3.2.3 Gender diversity and firm performance and fees.....	32
2.3.2.4 Director busyness and firm performance and fees.....	33
2.3.2.5 Directors' competence and firm performance and fees .....	34
2.3.2.6 Director tenure and firm performance and fees .....	34
2.3.3 Hypotheses development.....	35
2.4 Research design and sample selection .....	36
2.4.1 Regression model .....	36
2.4.2 Independent variables .....	37
2.4.2.1 Governance Index .....	37

2.4.2.2 Independent directors.....	38
2.4.2.3 Independent chairperson .....	39
2.4.2.4 Gender diversity.....	39
2.4.2.5 Director busyness.....	39
2.4.2.6 Director competence .....	40
2.4.2.7 Director tenure .....	41
2.4.2.8 Board size.....	41
2.4.3 Control variables.....	42
2.4.4 Sample selection.....	42
2.5 Results .....	43
2.5.1 Descriptive statistics.....	43
2.5.2 Correlation matrix.....	45
2.5.3 The association between the governance practices and performance of Australian superannuation funds ( <i>H1</i> ) .....	46
2.5.4 The association between the governance practices and fees of Australian superannuation funds ( <i>H2</i> ) .....	48
2.6 Additional tests.....	50
2.6.1 The effect of the implementation of the governance disclosure requirements.....	50
2.6.2 Alternate measures of performance and governance index .....	58
2.6.3 Alternate measures of fees and governance index.....	65
2.6.4 Estimating regression Model (1) with the proportion of asset allocations .....	74
2.6.5 Estimating regression Model (2) with the proportion of asset allocations .....	76
2.6.6 Trustee-level regression.....	77
2.6.7 Endogeneity .....	77
2.7 Conclusion.....	79
CHAPTER 2 TABLES AND FIGURES .....	82
APPENDICES .....	91
CHAPTER 3 Do governance practices strengthen the pay-performance relationship of CIO? .	179
3.1 Introduction .....	179
3.2 Literature review and theory development.....	186
3.2.1 Overview .....	186

3.2.2 CIO compensation and fund performance.....	187
3.2.3 CIO compensation, board structure and governance.....	189
3.2.4 CIO compensation and investment outsourcing responsibilities.....	190
3.3 Research design and sample selection .....	191
3.3.1 Regression model .....	191
3.3.2 Independent variables .....	192
3.3.2.1 Fund performance .....	192
3.3.2.2 Governance practices .....	192
3.3.2.3 Investment outsourcing behaviour.....	193
3.3.3 Control variables.....	194
3.3.4 Sample selection.....	195
3.4 Results.....	195
3.4.1 Descriptive statistics.....	195
3.4.2 Correlation matrix.....	198
3.4.3 Main results .....	199
3.5 Additional tests.....	205
3.5.1 Alternative measures of performance.....	205
3.5.2 Alternative measures of the governance index.....	211
3.5.3 Asset allocations .....	212
3.5.4 CIO turnover.....	213
3.6 Conclusion.....	214
CHAPTER 3 TABLES .....	216
APPENDICES .....	231
CHAPTER 4 - Conclusion.....	320
REFERENCES .....	323

## LIST OF FIGURES AND TABLES

CHAPTER 2 TABLES AND FIGURES .....	82
Table 1: Definition of variables .....	82
Table 2: Sample selection .....	83
Table 3 Panel A: Descriptive statistics .....	84
Table 3 Panel B: Descriptive statistics between retail and industry superannuation funds .....	85
Table 4: Correlation coefficients matrix of the variables .....	86
Table 5 Panel A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds.....	87
Table 5 Panel B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds.....	88
Table 6 Panel A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds .....	89
Table 6 Panel B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds.....	90
APPENDICES .....	91
Appendix A1.1 Before and after the governance disclosure requirements introduced in 2014 ...	91
Table A1.1.1A: Descriptive statistics of <i>retail</i> funds for two sub-periods, 2010–2014 and 2015–2016.....	91
Table A1.1.1B: Descriptive statistics of <i>industry</i> funds for two sub-periods, 2010–2014 and 2015–2016.....	92
Table A1.1.2A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014 .....	93
Table A1.1.2B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016 .....	94
Table A1.1.2C: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds for the period between 2010–2014 .....	95
Table A1.1.2D: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016.....	96
Table A1.1.3A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014.....	97
Table A1.1.3B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016.....	98

Table A1.1.3C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds for the period 2010–2014 .....	99
Table A1.1.3D: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016 .....	100
Appendix A1.2 Alternate measure of performance for retail superannuation funds .....	101
Table A1.2.1A: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>retail</i> funds .....	101
Table A1.2.1B: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014 .....	102
Table A1.2.1C: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016 .....	103
Table A1.2.2A: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>retail</i> funds .....	104
Table A1.2.2B: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014 .....	105
Table A1.2.2C: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016 .....	106
Table A1.2.3: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds with interactions.....	107
Table A1.2.4A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>retail</i> funds .....	108
Table A1.2.4B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>retail</i> funds for the period 2010–2014.....	109
Table A1.2.4C: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>retail</i> funds for the period 2015–2016.....	110
Appendix A1.3 Alternate measure of performance for industry superannuation funds .....	111
Table A1.3.1A: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>industry</i> funds.....	111
Table A1.3.1B: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>industry</i> funds for the period 2010–2014.....	112
Table A1.3.1C: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016.....	113
Table A1.3.2A: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>industry</i> funds .....	114

Table A1.3.2B: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>industry</i> funds for the period 2010–2014 .....	115
Table A1.3.2C: Superannuation fund performance ( <i>ROA</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016 .....	116
Table A1.3.3: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds with interactions .....	117
Table A1.3.4A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>industry</i> funds.....	118
Table A1.3.4B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>industry</i> funds for the period 2010–2014.....	119
Table A1.3.4C: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index of <i>industry</i> funds for the period 2015–2016.....	120
Appendix A1.4 Alternate measure of performance for both retail and industry superannuation funds.....	121
Table A1.4.1A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables .....	121
Table A1.4.1B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables for the period 2010–2014 .....	122
Table A1.4.1C: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables for the period 2015–2016 .....	123
Table A1.4.2: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables with interactions .....	124
Table A1.4.3A: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables .....	125
Table A1.4.3B: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables for the period 2010–2014 .....	126
Table A1.4.3C: Superannuation fund performance ( <i>EXCESS_ROR</i> ) and governance variables for the period 2015–2016 .....	127
Table A1.4.4A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index.	128
Table A1.4.4B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index for the period 2010–2014.....	129
Table A1.4.4C: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance index for the period 2015–2016.....	130
Appendix A2.1 Alternate measure of fees for retail superannuation fund .....	131

Table A2.1.1A: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds .....	131
Table A2.1.1B: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014.....	132
Table A2.1.1C: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016.....	133
Table A2.1.2A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>retail</i> funds .....	134
Table A2.1.2B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>retail</i> funds for the period 2010–2014 .....	135
Table A2.1.2C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>retail</i> funds for the period 2015–2016 .....	136
Table A2.1.3: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds with interactions.....	137
Table A2.1.4A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>retail</i> funds .....	138
Table A2.1.4B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>retail</i> funds for the period 2010–2014 .....	139
Table A2.1.4C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>retail</i> funds for the period 2015–2016 .....	140
Appendix A2.2 Alternate measure of fees for industry superannuation funds.....	141
Table A2.2.1A: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds.....	141
Table A2.2.1B: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds for the period 2010–2014 .....	142
Table A2.2.1C: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016 .....	143
Table A2.2.2A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>industry</i> funds.....	144
Table A2.2.2B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>industry</i> funds for the period 2010–2014.....	145
Table A2.2.2C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO_MEMACC</i> ) and governance variables of <i>industry</i> funds for the period 2015–2016.....	146
Table A2.2.3: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds with interactions .....	147

Table A2.2.4A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>industry</i> funds.....	148
Table A2.2.4B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>industry</i> funds for the period 2010–2014.....	149
Table A2.2.4C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index of <i>industry</i> funds for the period 2015–2016.....	150
Appendix A2.3 Alternate measure of fees for both retail and industry superannuation fund fees .....	151
Table A2.3.1A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables .....	151
Table A2.3.1B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables for the period 2010–2014.....	152
Table A2.3.1C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables for the period 2015–2016.....	153
Table A2.3.2A: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables.....	154
Table A2.3.2B: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables for the period 2010–2014.....	155
Table A2.3.2C: Superannuation fund fees ( <i>OP_EXP_RATIO</i> ) and governance variables for the period 2015–2016.....	156
Table A2.3.3A: Superannuation fund fees ( <i>EXCESS_OP_EXP_MEMACC</i> ) and governance variables .....	157
Table A2.3.3B: Superannuation fund fees ( <i>EXCESS_OP_EXP_MEMACC</i> ) and governance variables for the period 2010–2014.....	158
Table A2.3.3C: Superannuation fund fees ( <i>EXCESS_OP_EXP_MEMACC</i> ) and governance variables for the period 2015–2016.....	159
Table A2.3.4A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index .....	160
Table A2.3.4B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index for the period 2010–2014 .....	161
Table A2.3.4C: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance index for the period 2015–2016 .....	162
Appendix A3 Superannuation fund performance with asset allocation.....	164
Table A3.1A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds for the period 2010–2013.....	164

Table A3.1B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds for the period 2015-2016 .....	166
Table A3.2A: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds for the period 2010–2013 .....	167
Table A3.2B: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>industry</i> funds for the period 2015-2016.....	168
Appendix A4 Superannuation fund fees with asset allocation .....	169
Table A4.1A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds with asset allocation for the period 2010–2013 .....	169
Table A4.1B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds with asset allocation for the period 2015–2016 .....	170
Table A4.2A: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds with asset allocation for the period 2010–2013.....	171
Table A4.2B: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>industry</i> funds with asset allocation for the period 2015–2016.....	172
Appendix A5 Trustee level .....	173
Table A5.1: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and governance variables of <i>retail</i> funds .....	173
Table A5.2: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and governance variables of <i>retail</i> funds.....	174
Appendix A6 Lagged governance variables .....	175
Table A6.1: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and lagged governance variables of <i>retail</i> funds.....	175
Table A6.2: Superannuation fund performance ( <i>EXCESS_ROA</i> ) and lagged governance variables of <i>industry</i> funds .....	176
Table A7.1: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and lagged governance variables of <i>retail</i> funds.....	177
Table A7.2: Superannuation fund fees ( <i>EXCESS_OP_EXP_RATIO</i> ) and lagged governance variables of <i>industry</i> funds .....	178
CHAPTER 3 TABLES .....	216
Table 1: Definition of variables .....	216
Table 2: Sample selection .....	217
Table 3 Panel A: Descriptive statistics of CIOs.....	218
Table 3 Panel B: Descriptive statistics of CIOs with and without cash bonuses.....	220

Table 4: Correlation matrix.....	222
Table 5 Panel A: Total compensation, <i>EXCESS_ROA</i> and governance practices.....	223
Table 5 Panel B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	224
Table 5 Panel C: Salary, <i>EXCESS_ROA</i> and governance practices .....	225
Table 6 Panel A: Total compensation, <i>EXCESS_ROA</i> and each governance variable.....	226
Table 6 Panel B: Cash bonus, <i>EXCESS_ROA</i> and each governance variable .....	227
Table 6 Panel C: Salary, <i>EXCESS_ROA</i> and each governance variable .....	229
APPENDICES .....	231
Appendix A1 Alternative measures of performance .....	231
Table A1.1A: Total compensation, <i>ROA</i> and governance practices .....	231
Table A1.1B: Cash bonus, <i>ROA</i> and governance practices .....	232
Table A1.1C: Salary, <i>ROA</i> and governance practices.....	233
Table A1.1D: Total compensation, <i>ROA</i> and each governance variable .....	234
Table A1.1E: Cash bonus, <i>ROA</i> and each governance variable.....	235
Table A1.1F: Salary, <i>ROA</i> and each governance variable .....	236
Table A1.2A: Total compensation, <i>ROR</i> and governance practices .....	237
Table A1.2B: Cash bonus, <i>ROR</i> and governance practices .....	238
Table A1.2C: Salary, <i>ROR</i> and governance practices.....	239
Table A1.2D: Total compensation, <i>ROR</i> and each governance variable .....	240
Table A1.2E: Cash bonus, <i>ROR</i> and each governance variable.....	241
Table A1.2F: Salary, <i>ROR</i> and each governance variable .....	242
Table A1.3A: Total compensation, <i>EXCESS_ROA_lag</i> and governance practices .....	243
Table A1.3B: Cash bonus, <i>EXCESS_ROA_lag</i> and governance practices .....	244
Table A1.3C: Salary, <i>EXCESS_ROA_lag</i> and governance practices.....	245
Table A1.3D: Total compensation, <i>EXCESS_ROA_lag</i> and each governance variable.....	246
Table A1.3E: Cash bonus, <i>EXCESS_ROA_lag</i> and each governance variable .....	247
Table A1.3F: Salary, <i>EXCESS_ROA_lag</i> and each governance variable .....	248
Table A1.4A: Total compensation, <i>ROA_lag</i> and governance practices .....	249
Table A1.4B: Cash bonus, <i>ROA_lag</i> and governance practices .....	250
Table A1.4C: Salary, <i>ROA_lag</i> and governance practices.....	251
Table A1.4D: Total compensation, <i>ROA_lag</i> and each governance variable .....	252

Table A1.4E: Cash bonus, <i>ROA_lag</i> and each governance variable .....	253
Table A1.4F: Salary, <i>ROA_lag</i> and each governance variable .....	254
Table A1.5A: Total compensation, <i>EXCESS_ROA</i> and governance practices for each year .	255
Table A1.5B: Cash bonus, <i>EXCESS_ROA</i> and governance practices for each year .....	256
Table A1.5C: Salary, <i>EXCESS_ROA</i> and governance practices for each year.....	257
Table A1.6A: Total compensation, <i>EXCESS_ROA</i> and governance practices without fund size .....	258
Table A1.6B: Cash bonus, <i>EXCESS_ROA</i> and governance practices without fund size.....	259
Table A1.6C: Salary, <i>EXCESS_ROA</i> and governance practices without fund size.....	260
Table A1.7: Descriptive statistics between small and large industry funds.....	261
Table A1.8A: Total compensation, <i>EXCESS_ROA</i> and governance practices for small funds .....	263
Table A1.8B: Cash bonus, <i>EXCESS_ROA</i> and governance practices for small funds .....	264
Table A1.8C: Salary, <i>EXCESS_ROA</i> and governance practices for small funds .....	265
Table A1.9A: Total compensation, <i>EXCESS_ROA</i> and governance practices for large funds .....	266
Table A1.9B: Cash bonus, <i>EXCESS_ROA</i> and governance practices for large funds.....	267
Table A1.9C: Salary, <i>EXCESS_ROA</i> and governance practices for large funds .....	268
Appendix A2 Alternative measures of the governance index .....	269
Table A2.1A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	274
Table A2.1B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	275
Table A2.1C: Salary, <i>EXCESS_ROA</i> and governance practices.....	276
Table A2.2A: Total compensation, <i>ROA</i> and governance practices .....	277
Table A2.2B: Cash bonus, <i>ROA</i> and governance practices .....	278
Table A2.2C: Salary, <i>ROA</i> and governance practices.....	279
Table A2.3A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	280
Table A2.3B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	281
Table A2.3C: Salary, <i>EXCESS_ROA</i> and governance practices.....	282
Table A2.4A: Total compensation, <i>ROA</i> and governance practices .....	283
Table A2.4B: Cash bonus, <i>ROA</i> and governance practices .....	284
Table A2.4C: Salary, <i>ROA</i> and governance practices.....	285
Table A2.5A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	286

Table A2.5B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	287
Table A2.5C: Salary, <i>EXCESS_ROA</i> and governance practices.....	288
Table A2.6A: Total compensation, <i>ROA</i> and governance practices .....	289
Table A2.6B: Cash bonus, <i>ROA</i> and governance practices .....	290
Table A2.6C: Salary, <i>ROA</i> and governance practices.....	291
Table A2.7A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	292
Table A2.7B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	293
Table A2.7C: Salary, <i>EXCESS_ROA</i> and governance practices.....	294
Table A2.8A: Total compensation, <i>ROA</i> and governance practices .....	295
Table A2.8B: Cash bonus, <i>ROA</i> and governance practices .....	296
Table A2.8C: Salary, <i>ROA</i> and governance practices.....	297
Table A2.9A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	298
Table A2.9B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	299
Table A2.9C: Salary, <i>EXCESS_ROA</i> and governance practices.....	300
Table A2.10A: Total compensation, <i>ROA</i> and governance practices .....	301
Table A2.10B: Cash bonus, <i>ROA</i> and governance practices .....	302
Table A2.10C: Salary, <i>ROA</i> and governance practices.....	303
Table A2.11A: Total compensation, <i>EXCESS_ROA</i> and governance practices .....	304
Table A2.11B: Cash bonus, <i>EXCESS_ROA</i> and governance practices .....	305
Table A2.11C: Salary, <i>EXCESS_ROA</i> and governance practices.....	306
Table A2.12A: Total compensation, <i>ROA</i> and governance practices .....	307
Table A2.12B: Cash bonus, <i>ROA</i> and governance practices .....	308
Table A2.12C: Salary, <i>ROA</i> and governance practices.....	309
Appendix A3 Including asset allocations .....	310
Table A3.1A: Total compensation, <i>EXCESS_ROA</i> , governance practices and asset allocations .....	310
Table A3.1B: Cash bonus compensation, <i>EXCESS_ROA</i> , governance practices and asset allocations.....	311
Table A3.1C: Salary compensation, <i>EXCESS_ROA</i> , governance practices and asset allocations .....	312
Table A3.2A: Total compensation, <i>ROA</i> , governance practices and asset allocations.....	313
Table A3.2B: Cash bonus compensation, <i>ROA</i> , governance practices and asset allocations .	314

Table A3.2C: Salary compensation, <i>ROA</i> , governance practices and asset allocations .....	315
Appendix A4 CIO turnover .....	316
Table A4.1A: CIO turnover, <i>EXCESS_ROA</i> and governance practices .....	316
Table A4.1B: CIO turnover, <i>EXCESS_ROA</i> and each governance variable .....	317
Table A4.2A: CIO turnover, <i>ROA</i> and governance practices .....	318
Table A4.2B: CIO turnover, <i>ROA</i> and each governance variable .....	319

## LIST OF ABBREVIATIONS

2SLS	Two-Stage least squares
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
CAPM	Capital Asset Pricing Model
CEOs	Chief Executive Officers
CIOs	Chief Investment Officers
GDP	Gross Domestic Product
OLS	Ordinary least squares
ROA	Return on assets
ROE	Return on equity
ROR	Rate of return
RSE	Registrable Superannuation Entities
SOX	Sarbanes-Oxley Act
The <i>SIS Act 1993</i>	the <i>Superannuation Industry (Supervision) Act 1993 (Cth)</i>
VIF	Variance inflation factor

## ABSTRACT

This thesis examines the effect of governance practices of Australian superannuation funds on performance, fees and executive compensation. Based on governance practices discussed, and recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014), this thesis develops a governance index to capture the governance quality of Australian superannuation funds. This study presents two main findings. First, the results on the association between governance practices, performance and fees of retail and industry superannuation funds show that better governance practices are positively associated with retail fund performance. In contrast, the findings show no evidence that better governance practices are associated with performance and fees of industry funds. However, some individual governance variables, such as busy directors and directors with financial qualifications and prior superannuation fund experience, enhance the outcomes of retail superannuation funds. Further, busy directors, independent directors and an independent chairperson enhance the outcomes of industry superannuation funds. Second, when examining Chief Investment Officers (CIOs) pay and their pay-performance relationship in industry superannuation funds, the results show that CIO pay is positively associated with fund performance while better governance practices do not strengthen the pay-performance relationship of CIOs. However, some individual governance variables, such as longer-tenured directors, are positively associated with, and directors with financial qualifications are negatively associated with the pay-performance relationship of CIOs. Overall, the results contribute to prior literature on the governance arrangements and the pay-performance relationship of Australian superannuation funds. Moreover, the results have implications for regulators and policy-makers and provide empirical evidence on the impact of governance practices recommended by the reviews. The results suggest that governance practices are different between retail and industry superannuation funds; therefore, a one size “fits-all” governance approach may be inappropriate.

# CHAPTER 1

## Introduction

This thesis examines the impact of governance practices of Australian superannuation funds on fund performance, fees and executive compensation. Chapter 2 examines whether governance practices of Australian superannuation funds impact fund performance and fees. Chapter 3 investigates whether governance practices of Australian industry superannuation funds impact Chief Investment Officers (CIOs) pay and their pay-performance relationship.

The motivation for this thesis is twofold. First, the main motivation for this thesis is the concerns raised by the government and regulators on governance practices of Australian superannuation funds. Although governance practices purportedly play a crucial role in enhancing members' outcomes of Australian superannuation funds, there are perceived shortcomings of governance practices including board independence, gender diversity and the appointment of skilled directors<sup>1</sup> with appropriate qualifications and experience (Cooper et al., 2010). Thus, the Australian government commissioned several reviews, including the Cooper Review (2010), the Murray Inquiry (2014), the review conducted by the Productivity Commission (2018), and the review conducted by the Banking Royal Commission (2019) to assess and provide recommendations on the governance, transparency and efficiency of the superannuation fund industry. While some of these recommendations have been acted upon, many remain controversial. In particular, the recommendation on mandating a minimum number of independent directors on the board has sparked debate between industry superannuation funds and the government; this change will dismantle the governance arrangements in industry superannuation funds that employ the equal representation model, where boards comprise an equal number of employer and member directors. As a result, directors of industry superannuation funds may lose their position even though industry superannuation funds have outperformed retail superannuation funds (Crowe and Owens, 2015; Mather, 2015). Despite the ongoing debate and concerns regarding the appropriate governance arrangements of superannuation funds, the empirical evidence on the impact of governance practices of Australian superannuation funds is minimal (Mather, 2014; Coorey and Mather, 2015). This thesis provides evidence relevant to the debate.

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<sup>1</sup> In this thesis, the term "directors" refers to "superannuation fund trustee directors".

Second, although there is a well-developed literature for publicly listed firms (Yermack, 1996; Core, Holthausen, and Larcker, 1999), the literature on governance and executive compensation in Australian superannuation funds is scant (Benson, Hutchinson and Sriram, 2011; Nisbet, 2013; Liu, 2014; Liu and Ooi, 2016; Liu and Ooi, 2019). Some studies provide evidence on governance practices of Australian superannuation funds but are limited due to small sample sizes and sample periods. This thesis builds on prior literature by providing large scale evidence based on a larger sample size and a longer sample period. As the board of directors is the main governance mechanism in Australian superannuation funds, this setting is ideal to test the effectiveness of governance practices on performance, fees and executive compensation.

Importantly, the samples examined in Chapters 2 and 3 of this thesis are different. Chapter 2 uses a sample of retail and industry superannuation funds to examine the effectiveness of governance practices on fund performance and fees. Retail and industry superannuation funds are used in Chapter 2 as they represent a significant proportion of the Australian superannuation funds. Moreover, the debate on the appropriate governance practices and comparison of performance and fees typically involves both retail and industry superannuation funds. However, in Chapter 3, only industry superannuation funds are used to examine the impact of governance on CIOs' pay and the pay-performance relationship. Chapter 3 focuses on CIOs of industry superannuation funds because, as shown in Chapter 2, the governance practices between retail and industry superannuation funds are significantly different. The board structures of industry superannuation funds are similar because industry superannuation funds employ the equal representation model which is required by legislation (the *SIS Act 1993*). Moreover, CIOs of retail superannuation funds are not examined as the funds are typically owned by financial institutions where CIOs satisfy both members of the funds and shareholders of the parent company. CIOs' of retail funds have various responsibilities within the entity which means that their pay reflects more than their efforts in regards to the superannuation funds. Finally, as retail funds are typically part of listed entities, CIOs in these funds are potentially also offered equity compensation. The governance and operating characteristics of industry superannuation funds thus provide an ideal setting to examine the pay-performance relationship as their sole responsibilities and efforts are to enhance fund performance for members of industry superannuation funds.

The tests in this thesis employ a governance index designed to capture the governance practices recommended in the recent government reviews (Cooper Review, 2010 and Murray Inquiry, 2014). The findings in Chapter 2 document some evidence of an association between the governance practices and performance and fees of Australian superannuation funds. For retail superannuation funds, this Chapter reveals that better governance practices are positively associated with fund performance but are not associated with fees. Some individual governance practices, such as directors with financial qualifications and prior superannuation fund experience, are positively associated with performance; and busy directors and directors with prior superannuation fund experience are positively associated with fees of retail superannuation funds. Interestingly, however, for industry superannuation funds, the findings reveal no evidence that better governance practices are associated with performance and fees. Across the sample of industry superannuation funds, busy directors increase fund performance, while independent directors and an independent chairperson are negatively associated with fund fees.

The results in Chapter 3 present weak evidence that fund performance is positively associated with CIOs' total pay, and investment outsourcing is negatively associated with CIO cash bonuses. However, better governance practices do not influence CIO pay and do not strengthen the pay-performance relationship of CIOs. When examining individual governance practices, longer tenured directors strengthen the association between fund performance and CIOs' cash bonus; and fewer directors with financial qualifications on the board strengthen the link between fund performance and CIOs' salary. Furthermore, the size of industry superannuation funds explains the variation in CIOs' pay, suggesting that CIOs of larger industry superannuation funds receive higher levels of compensation.

This thesis makes several contributions. First, the findings in this thesis are relevant to regulators and policy-makers by providing large-scale descriptive evidence on the governance practices and executive compensation of Australian superannuation funds. In addition, this study provides empirical evidence on the impact of the governance practices recommended and discussed by the Cooper Review (2010) and the Murray Inquiry (2014). Although this evidence indicates that the overall measure of governance practices of Australian superannuation funds have limited effect on fund performance, fees and CIO compensation, some individual governance practices have a positive influence on fund performance and fees. For retail superannuation funds, directors with financial qualifications and prior

superannuation fund experience are associated with higher fund performance, while busy directors and directors with prior superannuation fund experience are associated with lower fees. For industry superannuation funds, busy directors are associated with higher fund performance and board independence is associated with lower fees. The findings suggest that there are differences within the same type of fund, and some individual governance practices are more effective for different types of superannuation funds.

Second, this thesis contributes to prior literature on the governance arrangements and pay-performance link of Australian superannuation funds (Liu, 2014; Tan and Cam, 2015; Liu and Ooi, 2016; Liu and Ooi, 2019). The evidence of this thesis extends the literature on the effectiveness of governance practices on fund performance, fees and the pay-performance relationship of CIOs. Despite the board of directors being the main governance mechanism in Australian superannuation funds, the findings of this thesis are inconsistent with assumptions that better governance practices improve superannuation fund outcomes. These findings suggest that the implementation of the governance practices recommended by the Cooper Review (2010) and the Murray Inquiry (2014) may not necessarily lead to improved superannuation fund outcomes and more effective monitoring activities.

The remainder of this thesis is structured as follows. Chapter 2 describes the institutional setting, discusses recent government reports into the superannuation fund and examines the association between governance practices, fund performance and fees of Australian superannuation funds. Chapter 3 investigates whether governance practices of industry superannuation funds influence CIOs' pay and their pay-performance relationship. Chapter 4 concludes and discusses limitations of study and scope for future research.

## CHAPTER 2

# Do governance practices impact on performance and fees of Australian superannuation funds?

### 2.1 Introduction

Australian superannuation funds have one of the largest pool of assets under management in the world, with assets under management exceeding its Gross Domestic Product (GDP) (OECD, 2017).<sup>2</sup> After the introduction of legislation on compulsory superannuation funds for Australians in 1992, retirement savings have accumulated to a significant amount of \$2.7 trillion<sup>3</sup> (as at June 2018) and are expected to grow to \$9.5 trillion by 2035 (Deloitte, 2015). Given the size and importance of the superannuation industry, the Australian Government has raised a number of concerns regarding the transparency, efficiency and competitiveness of the superannuation system, which led in part to the commission of the 2010 Super System Review (also known as the Cooper Review), the 2014 Financial System Inquiry (also known as the Murray Inquiry) and the 2018 Productivity Commission Inquiry.<sup>4</sup>

These reviews provide a number of recommendations on the governance, investment transparency, investment performance and fees of superannuation funds, as well as recommendations on other aspects of superannuation including insurance, retirement and taxation, and self-managed superannuation funds (SMSFs). While some recommendations have been acted upon, such as MySuper<sup>5</sup>, disclosure of directors' details and remuneration<sup>6</sup>, and Australian

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<sup>2</sup> OECD (2017) report indicates that a ratio of assets under management to GDP at the end of 2016 for Denmark, Canada, Switzerland, the United States and Australia is 209.0%, 159.2%, 141.6%, 134.9% and 123.9%, respectively.

<sup>3</sup> All figures presented are in Australian Dollars (AUD) unless indicated.

<sup>4</sup> The Super System Review (the Cooper Review (2010)) received approximately 450 submissions and provided 177 recommendations on the structure, fees, transparency and governance of superannuation and investments. The Financial System Inquiry (the Murray Inquiry (2014)) made 44 recommendations on the resilience, fairness and efficiency of the Australian Financial System, including superannuation funds. The 2018 final inquiry report conducted by the Productivity Commission provided 31 recommendations on investment performance, fees and costs, member engagement, insurance, fund governance and system governance.

<sup>5</sup> MySuper is a default superannuation product with a single investment strategy and a standard set of fees which was introduced under *Stronger Super* reforms. It provides transparency for members, employers and market analysts to evaluate and compare funds.

<sup>6</sup> Since 1 July 2014, Australian superannuation funds are required to disclose the remuneration and details of directors and executive directors, and other information under s29QB of the *SIS Act 1993*. Specifically, under regulation 2.37 of the *Superannuation Industry (Supervision) Regulation 1994 (Cth) (SIS Reg)*, directors and executive officers' payments and benefits including cash salary, non-monetary benefits, pension and superannuation benefits, and other post-employment benefits are required to be disclosed. Prior to this, superannuation funds were not required to disclose this information but some superannuation funds voluntarily disclosed this information either on the fund's website or in their annual report.

Prudential Regulation Authority (APRA) Prudential Standards<sup>7</sup>, many of the recommendations are controversial and remain unimplemented to date. In particular, the proposed mandated changes to governance arrangements, including a minimum one-third independent directors and an independent chairperson on the board remain controversial, and are highly debated between the government and industry superannuation funds. A major contentious issue is the recommendations change the current board structure of industry superannuation funds which is based on an equal representation model.<sup>8</sup> Moreover, high fees paid by members<sup>9</sup>, and recent scandals where superannuation funds charged unwanted fees to members have raised concern regarding the performance and outcomes of retirement benefits for members (Cooper et al., 2010; Hayne, 2019). The reviews including the Cooper Review 2010 and the Hayne Royal Commission 2019 have highlighted the importance of the governance practices of Australian superannuation funds in enhancing the performance and outcome of retirement benefits for members. However, to date, there is no large-scale empirical evidence which provides guidance to regulators and policy-makers in regards to the effectiveness of current superannuation fund governance practices (Hewett, 2014; Mather, 2014; Coorey and Mather, 2015; Mather, 2017a). This chapter provides evidence relevant to this debate. Specifically, the objectives of this chapter are: (i) to provide descriptive evidence on the board composition, director characteristics, fees and performance of Australian superannuation funds using a large sample size; (ii) to examine the association between performance and governance practices of Australian superannuation funds; and (iii) to examine the association between fees and governance practices of Australian superannuation funds.

The motivation of this chapter is twofold. First, while there is a well-developed literature that addresses the influence of corporate governance on performance (Core, Holthausen, and Larcker, 1999; Brown and Caylor, 2006; Bhagat and Bolton, 2008) and firm value (Yermack, 1996; Carter, Simkins, and Simpson, 2003; Matolcsy, Stokes, and Wright, 2004) for listed firms, little is known

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<sup>7</sup> In response to the review, APRA has introduced Prudential Standards such as APRA *Prudential Standard SPS 510 Governance* in 2012, APRA *Prudential Standard SPS 520 Fit and Proper* in 2013, APRA *Prudential Standard SPS 521 Conflicts of Interest* in 2013, and APRA *Prudential Standard SPS 530 Investment Governance* in 2013.

<sup>8</sup> The *Superannuation Legislation Amendment (Trustee Governance) Bill 2015 (Cth)* was submitted in November 2015; but, it did not pass the Senate. This bill required a minimum of one-third independent directors and an independent chairperson on the board of directors from July 2017 and a majority of independent directors by July 2019. Subsequently, on 14 September 2017, the *Superannuation Laws Amendment (Strengthening Trustee Arrangements) Bill 2017* was introduced to the Senate; however, it was withdrawn due to a lack of support from crossbenchers (Mather, 2017a; Patten, 2017a; Patten and Uribe, 2018).

<sup>9</sup> Australian superannuation funds members paid about \$31 billion in fees in 2016 (Rainmaker, 2017). There are many cases where high fees exceed incremental returns (Minifie, 2014 and 2015). Therefore, the net returns from funds with higher fees are lower than funds which charge lower fees with a minimum time and effort spent on achieving higher returns.

about the role of governance in Australian superannuation funds. Current empirical evidence on the effect of governance on Australian superannuation fund performance (Benson, Hutchinson, and Sriram, 2011; Nisbet, 2013; Nguyen, Tan, and Cam, 2012; Liu, 2014), fees (Tan and Cam, 2015) and compensation (Liu and Ooi, 2016) is limited due to small sample sizes, mixed results and the different types of superannuation funds. For example, Benson et al. (2011) examine 35 public and industry superannuation funds during the year 2005 and 2006 using survey data and find a positive association between board size and superannuation fund performance. Nisbet (2013) uses a sample of 72 observations from 2009 to 2012 and reports inconsistent effects of board independence on superannuation fund performance between retail and industry superannuation funds. Nguyen et al. (2012) use 52 observations for 2010 and find an insignificant association between superannuation governance and performance of corporate superannuation funds. Liu (2014) uses 100 observations from APRA trustee governance data in 2006 and finds an insignificant association between board independence and superannuation fund performance. In addition to these limited studies and mixed results, to the best of my knowledge, there is no study that examines the influence of director characteristics and executive compensation on superannuation fund performance and fees since the release of the Cooper Review in 2010. This thesis provides evidence using a larger sample by hand collecting information on board composition, director characteristics and executive compensation<sup>10</sup> for both retail and industry superannuation funds in Australia.

Second, it has been suggested that the governance of superannuation funds has not kept pace with changes in the superannuation fund industry (Cooper et al., 2010). A number of reviews (such as the Cooper Review (2010) and the Murray Inquiry (2014)) highlight the important role the board of directors plays in enhancing the outcomes of members' retirement benefits. These reviews have provided recommendations to improve the governance of superannuation funds. However, many recommendations are yet to be implemented and remain controversial. For example, the current governance model of industry superannuation funds has been criticised on the basis that the equal representation model (an equal number of employer and member directors on the board) is no longer adequate for the current superannuation sector (Cooper et al., 2010; Rowell, 2015).<sup>11</sup>

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<sup>10</sup> This thesis focuses on executives' compensation of industry superannuation funds.

<sup>11</sup> Initially, the equal representation model was introduced to allow the members to participate in the management of their retirement savings by having representation on the board. However, this approach has been criticized for a number of reasons. First, the close relationship between members and employers has changed due to the superannuation funds moving away from defined benefit funds to defined contribution funds, and choice legislation in 2005. Second, the employer and member representatives are not elected by the employers or members of the funds but rather from a third party such as employer associations and trade unions. Third, it potentially leads to inefficient governance due to an unnecessarily large board.

In addition, while directors play a key role in the governance of funds (Clark and Urwin, 2008), there is no required standard for directors' competence, such as experience, qualifications and skill. Although Australian superannuation funds comply with APRA Prudential Standards (*APRA Prudential Standard SPS 510 Governance* and *APRA Prudential Standard SPS 520 Fit and Proper*), there is concern that the boards of Australian superannuation funds may not have appropriate skills, capabilities and experience to manage the fund effectively. Consequently, many superannuation funds may rely on consultants to make up for a lack of skills and experience in making investment decisions (Roddan, 2018). The Cooper Review (2010) suggests that the way to improve the governance practices of superannuation funds is to introduce a minimum proportion of independent directors on the board.

However, the proposed governance changes have been met by resistance from superannuation funds. For example, the call for a minimum proportion of independent directors on the board, which would dismantle the equal representation model, has prompted anger and frustration from industry superannuation funds (Mather and Evers, 2014; Mather, 2015; Hutchens, 2016). Proponents of the proposed legislation argue that the presence of independent directors on the board enhances the fund performance as it increases skill levels and promotes diversity of thinking on the board (Patten, 2015). Conversely, the directors of industry superannuation funds, which typically operate using the equal representation model, are fiercely defending the model because these directors, particularly those with trade union connections, would lose their position (Crowe and Owens, 2015; Mather, 2015).<sup>12</sup> Industry funds argue that they have been outperforming retail funds (Mather and Evers, 2014; Coorey and Mather, 2015; Mather, 2015; ISA, 2016). However, there is no empirical evidence to support their claim (Hewett, 2014; Mather, 2014; Coorey and Mather, 2015). Hence, the results in this chapter provide guidance to policy-makers and regulators on the influence of board composition, independence and directors' competence level on superannuation fund performance and fees.

This chapter tests the research questions using a sample of 928 fund-year observations of retail and industry superannuation funds from 2010 to 2016 which is after the Cooper Review in 2010. Financial data is sourced from *APRA Annual Fund-level Superannuation Statistics*; the governance characteristics are hand collected from annual reports, superannuation fund websites,

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<sup>12</sup> These changes are controversial as some instances the compensation of employee representative directors on the board of industry superannuation funds are transferred back to the unions, which are used to support political campaigns for the Labor party. Government estimates about \$8 million are transferred to unions through industry superannuation funds each year (Lipson, 2017).

and relevant documents (disclosed under s29QB of the *SIS Act 1993*).<sup>13</sup> A governance index is developed based on governance practices discussed in and recommended by the reviews, and this index is used to measure the governance quality of Australian superannuation funds.

The results in this chapter find some evidence that better governance practices are positively associated with superannuation fund performance and no evidence that better governance practices reduce superannuation fund fees. The findings in this chapter for retail and industry superannuation funds are inconsistent. Specifically, for retail superannuation funds, the findings document a positive association between better governance practices and performance and an insignificant association between better governance practices and fees. Interestingly, some individual governance variables such as directors with financial qualifications and prior superannuation fund experience generate higher fund performance; and busy directors and directors with prior superannuation fund experience charge higher fund fees. For industry superannuation funds, the results in this chapter show no evidence that better governance practices influence performance and fees. However, some individual governance variables show significant results. Busy directors are associated with higher fund performance, while having an independent chairperson and more independent directors are associated with lower fees.

Overall, there is some evidence that governance practices influence the performance and fees of Australian superannuation funds. The findings are generally robust to additional tests, including alternative measures of performance, sub-sample analyses, controlling for the proportion of asset allocations, and trustee-level analyses.

The findings of this chapter contribute to the growing body of literature on the governance of Australian superannuation funds (Benson, Hutchinson, and Sriram, 2011; Liu, 2014; Tan and Cam, 2015; Liu and Ooi, 2016; Liu and Ooi, 2019) and provide evidence relevant to the recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014). This thesis provides empirical evidence that some governance practices matter for the performance and fees of Australian superannuation funds. The findings suggest that competent directors play a vital role as a governance mechanism in Australian superannuation funds. Moreover, due to differences in business operations, business mix and investment strategies between retail and

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<sup>13</sup> Director busyness is obtained from the Connect 4 Boardroom database.

industry superannuation funds, the results suggest that some individual governance practices are more relevant to retail than industry funds and vice versa.

Furthermore, this chapter contributes to the debate between government and industry superannuation funds arising from the controversial superannuation governance Bills introduced in the Senate.<sup>14</sup> The evidence of this thesis suggests that board independence enhances the outcomes for industry superannuation funds but not retail superannuation funds. The findings support the contention that independent directors bring diverse skills and experience to the board to make effective decisions for industry superannuation funds. However, the evidence also suggests that the regulations should be implemented with care as each type of superannuation fund is different from each other.

The remainder of this chapter is structured as follows. Section 2.2 outlines the institutional setting of Australian superannuation funds. Section 2.3 reviews the literature and develops hypotheses on the influences of governance practices on the performance and fees of Australian superannuation funds. Section 2.4 presents the research design and discusses the sample collection. Section 2.5 presents and discusses the results and is followed in Section 2.6 by a discussion of additional tests. Lastly, Section 2.7 concludes.

## **2.2 Overview of the institutional setting of Australian superannuation funds**

### **2.2.1 Compulsory superannuation**

Compulsory Australian superannuation was mandated under the *Superannuation Guarantee (Administration) Act 1992 (Cth)* to accumulate retirement savings of Australians.<sup>15</sup> This system is unique as Australia is one of the few countries that requires compulsory employer contributions made to employees' superannuation accounts.<sup>16</sup> The balances in Australian

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<sup>14</sup> There were two governance Bills (the *Superannuation Legislation Amendment (Trustee Governance) Bill 2015* and the *Superannuation Laws Amendment (Strengthening Trustee Arrangements) Bill 2017*) introduced to the Senate to mandate a minimum proportion of independent directors on the board of industry superannuation funds.

<sup>15</sup> Australian superannuation funds are a part of the Australian Retirement System which comprises the Age Pension, mandatory superannuation funds, and voluntary retirement savings. The current contribution rate is 9.5 percent and it will increase to 12 percent by 2025 (s19(2) of the *Superannuation Guarantee (Administration) Act 1992*).

<sup>16</sup> Countries including Chile, Denmark, France, Indonesia, Mexico and Switzerland have mandatory superannuation fund schemes, while other countries including Argentina, Austria, Brazil, Canada, Ireland, Italy, Japan, Poland, South Africa, the United Kingdom and the United States have voluntary superannuation fund schemes (Mercer, 2017).

superannuation funds are consequently one of the largest and fastest growing superannuation funds around the world (OECD, 2017).<sup>17</sup>

### **2.2.2 Types of Australian superannuation funds**

There are four main types of Australian superannuation funds: corporate, industry, public sector, and retail.<sup>18</sup> This chapter focuses on retail and industry superannuation funds for two reasons. First, retail and industry superannuation funds represent a significant proportion of the superannuation funds in Australia, making up almost half of all superannuation funds.<sup>19</sup> Second, the performance, fees and board structure of retail and industry superannuation funds are currently debated by both the superannuation community and regulators (Hewett, 2014; Mather, 2014; Boyd, 2015; Coorey and Mather, 2015). Despite the significance of retail and industry superannuation funds, the empirical evidence on these superannuation funds remain sparse.<sup>20</sup>

There are a number of differences between retail and industry superannuation funds. First, their operating structure varies as industry funds are operated on a not-for-profit basis by employer associations and trade unions. They are set up by the employer for the employees working in a particular industry or workforce. Conversely, retail superannuation funds are typically operated by banks, financial institutions and insurance companies on a for-profit basis, and are open to general membership. While industry funds distribute any profits back to members, retail superannuation funds operate to generate profits for the company managing the fund and its shareholders.

Second, the demographics of member accounts vary between retail and industry superannuation funds. According to APRA (2019a), as at June 2018, 45 percent of industry fund members are under 35 years old, while only 27 percent of retail superannuation fund members fall within this age group. As a result, industry superannuation funds receive higher

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<sup>17</sup> The OECD (2017) indicates that in 2016, Australian superannuation funds (USD\$1,523 billion) were the fourth largest among the OECD countries, preceded by the United States (USD\$25,127 billion), Canada (USD\$2,404 billion), and the United Kingdom (USD\$2,274 billion). According to OECD (2017), nominal and real geometric 5-year (10-year) annual returns for Australian superannuation funds are 7.7 percent (5.3 percent) and 5.8 percent (2.9 percent), respectively.

<sup>18</sup> There are also superannuation funds including self-managed superannuation funds. Although self-managed superannuation funds have the largest size of assets, they are not regulated by APRA and are not examined in this thesis.

<sup>19</sup> As at June 2018, retail and industry superannuation funds account for about 46 percent of the total assets in Australian superannuation funds. Also, retail and industry superannuation funds have the largest number of members, 11.6 million and 11.4 million member accounts respectively, as at June 2018.

<sup>20</sup> Since the release of the Cooper Review (2010), to the best of my knowledge, there are three studies which examine both retail and industry superannuation funds (Nisbet, 2013; Liu, 2014; Liu and Ooi, 2019).

contributions and pay lower retirement benefit payments than retail superannuation funds, as younger members are not going to withdraw their retirement benefits for a longer period.<sup>21</sup> This allows industry superannuation funds to invest in long-term aggressive assets such as unlisted assets. Moreover, members' age is an important component when it comes to designing and developing investment options, particularly a pre-mixed default investment option (e.g., the MySuper option). These pre-mixed investment options typically use a lifecycle design where younger members invest a larger proportion of assets into aggressive assets and gradually reduce the amount of aggressive assets as they reach retirement age. As industry superannuation funds have a higher proportion of younger members than retail superannuation funds, industry superannuation funds have a large proportion of investments in aggressive assets.

Third, the proportion of contributions made by employers and members are dissimilar between retail and industry superannuation funds.<sup>22</sup> As at June 2018, industry superannuation funds received about 86 percent (\$34,517/\$40,206 million) from employer contributions and about 14 percent (\$5,690/\$40,206 million) from member contributions, whereas retail superannuation funds received about 68 percent (\$21,242/\$31,290 million) from employer contributions and about 32 percent (\$10,049/\$31,290 million) from member contributions (APRA, 2019a). Therefore, industry superannuation funds have a larger proportion of compulsory employer contributions than retail superannuation funds.

Fourth, based on APRA data (2019a), retail superannuation funds charge a higher total expense ratio than industry superannuation funds (0.8 and 0.7 percent in 2018, respectively). The total expense ratio is broken down into an operating expense ratio and an investment expense ratio.<sup>23</sup> Specifically, industry superannuation funds have a lower operating expense ratio than retail superannuation funds (0.3 and 0.7 percent, respectively). In contrast, industry superannuation

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<sup>21</sup> Retirement benefits are accessible when members reach the preservation age of 55 (depending on the date of birth). According to APRA (2019a), as at June 2018, 16 percent of industry funds' members are over 55, while 26 percent of retail funds' member accounts fall within this age group. Industry superannuation funds have higher employer contributions compared to retail superannuation funds (\$40,206 million compared to \$31,290 million). Moreover, Industry superannuation funds have paid less than half the retirement benefit payments of retail superannuation funds (\$15,136 million compared to \$28,822 million).

<sup>22</sup> Employer contributions include superannuation guarantee and salary sacrifice. Member contributions include personal, low income super and government co-contribution.

<sup>23</sup> Under APRA *SRS 330.0 Statement of Financial Performance*, operating expenses include administration expenses, advertising and marketing, commissions, director and individual trustee expenses associated with service provider and other operating expenses. Moreover, the investment expenses include investment management base fee, investment management performance based fee, custodian fees, investment consultant fees, and costs associated with service provider and other investment expenses.

funds have a higher investment expense ratio than retail superannuation funds (0.4 and 0.1 percent, respectively). A variation in expenses is an important factor as it influences the net return of superannuation funds.

Fifth, the APRA rate of return (ROR)<sup>24</sup> indicates that there are performance differences between retail and industry superannuation funds. Industry superannuation funds have outperformed retail superannuation funds consistently since 2004, except in 2010.<sup>25</sup> This variation between retail and industry superannuation funds exists for several reasons. First, there is a difference in the number of investment options and investment strategies offered by retail and industry superannuation funds. As at June 2018 (APRA, 2019b), on average (median) industry superannuation funds offered 20 (17) investment options which is significantly lower than retail superannuation funds which offered 191 (34) investment options. Further, asset allocations based on investment options vary between retail and industry superannuation funds. Assets are classified into aggressive assets (equity, property and hedge funds) and conservative assets (cash and fixed interest) based on the level of returns and risks. APRA 2018 data (APRA, 2019b) shows that industry superannuation funds have a greater proportion of aggressive assets compared to retail superannuation funds (72 percent compared to 61 percent). A larger proportion of investments in unlisted assets is the main reason industry superannuation funds outperform retail superannuation funds (ISA, 2016).<sup>26</sup>

### **2.2.3 The role of directors of Australian superannuation funds**

Directors of Australian superannuation funds play a fundamental role in overseeing and managing superannuation funds' business operations and investment activities.<sup>27</sup> These directors must satisfy that they are fit and proper as outlined in para.18 of the *APRA Prudential Standard SPS 520 Fit and Proper* and part 6 of the *SIS Act 1993*. A director is qualified as fit

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<sup>24</sup> The APRA rate of return (ROR) is measured as net earnings after tax divided by cash flow adjusted net assets.

<sup>25</sup> Ellis, Tobin and Tracey (2008) examine the gross return and average net returns performance relative to passive benchmarks of Australian superannuation funds from 2001 to 2006. They find that balanced and growth retail default investment options have lower average net returns than industry fund counterparts. The performance analysis provided by the Productivity Commission (2018) shows that not-for-profit funds performed better than for-profit funds for the past 12 years to 2016.

<sup>26</sup> Unlisted assets are valued using a mark-to-model where valuation techniques and professional judgements are required; thus, the outperformance is potentially driven by the upward valuation of unlisted assets. For example, UniSuper revalued the infrastructure investment of Hancock Taumata to the full value by 10 percent from the discount negotiated on the purchase price (Thompson, Macdonald and Moullakis, 2016).

<sup>27</sup> Under para.11 of the *APRA Prudential Standard SPS 520 Fit and Proper*, a responsible person includes a director, a secretary, a senior manager, and a person who carries out activities which have a material effect on a superannuation fund's business operations and financial affairs. Furthermore, the CIO is a responsible person as they make and manage financial and investment decisions which have a significant effect on superannuation fund's business operations and investment activities.

and proper if they possess relevant qualifications, knowledge, experience and skills to perform their duties and responsibilities with honesty, integrity and diligence.<sup>28</sup>

The directors on the board of Australian superannuation funds oversee both business operations and investments.<sup>29</sup> For example, the board of directors is responsible for establishing and managing policies and procedures about the size and composition of the board, board renewal, and the nomination, appointment and removal of directors (para. 18 of the APRA *Prudential Standard SPS 510 Governance*). Moreover, the board of directors are responsible for formulating, selecting, managing, monitoring and reviewing investment strategies and investment objectives (s52(6) of the *SIS Act 1993* and the APRA *Prudential Standard SPS 530 Investment Governance*).<sup>30</sup>

These responsibilities and duties of directors are to be performed in the best interests of members. When there are conflicts of interest, the directors must prioritise the interests of members over the interests of any other person (s52(2)(d) of the *SIS Act 1993* and para.2 of the APRA *Prudential Standard SPS 521 Conflicts of Interest*).<sup>31</sup> The duties and responsibilities outlined in the *SIS Act 1993* and APRA *Prudential Standards* highlight that directors of Australian superannuation funds need to be competent and act in the best interest of members to perform their duties and responsibilities effectively.

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<sup>28</sup> When a director no longer satisfies that they are fit and proper, superannuation funds must ensure that they are not appointed on the board or are removed from holding a responsible person position (para.43 of the APRA *Prudential Standard SPS 520 Fit and Proper*).

<sup>29</sup> As outlined in the *SIS Act 1993* and the APRA *Prudential Standards*, the responsibilities for the board of directors include: (i) managing superannuation fund's business operations in a sound and prudent manner (para.8 of APRA *Prudential Standard SPS 510 Governance*); (ii) establishing, documenting and approving a remuneration policy (para.24 and 25 of the APRA *Prudential Standard SPS 510 Governance*); (iii) managing investments of superannuation funds in a sound and prudent manner (para.5 of the APRA *Prudential Standard SPS 530 Investment Governance*), and specifically, approving investment objectives and an investment strategy (para.6 of the APRA *Prudential Standard SPS 530 Investment Governance*); (iv) establishing and implementing an insurance management framework (para.11 of the APRA *Prudential Standard SPS 250 Insurance in Superannuation*); (v) establishing and implementing a risk management framework (para.7 of the APRA *Prudential Standard SPS 220 Risk Management*) to manage a number of risks, including governance risk, investment governance risk, liquidity risk, operational risk, and insurance risk, strategic and tactical risks (para.12 of the APRA *Prudential Standard SPS 220 Risk Management*), that are material to the superannuation fund's business operations; and (vi) establishing and implementing a conflicts management framework (para.8 of the APRA *Prudential Standard SPS 521 Conflicts of Interest*) and policy (para. 18 of the APRA *Prudential Standard SPS 521 Conflicts of Interest*) to identify, mitigate and manage all circumstances for potential conflicts.

<sup>30</sup> Directors are also responsible for formulating and approving a liquidity management plan (para.32 of the APRA *Prudential Standard SPS 530 Investment Governance*).

<sup>31</sup> The board of directors are required to establish and implement a conflicts management framework under para.8 of the APRA *Prudential Standard SPS 521 Conflicts of Interest*. The board of directors must ensure that directors and senior managers identify all potential conflicts and understand any situations where a conflict can arise (para.11 of the APRA *Prudential Standard SPS 521 Conflicts of Interest*).

## 2.2.4 The government reviews of Australian superannuation funds

### 2.2.4.1 The Super System Review (The Cooper Review)

Since the introduction of compulsory superfunds in 1992, no comprehensive reviews had been conducted until the Cooper Review in 2010. The size of superannuation funds has grown significantly in this period, and has economic significance for both the Australian economy and the retirement of individual Australians (Cooper et al., 2010). Due to the sheer size of superannuation funds, there was concern regarding the complexity of the superannuation fund system and a lack of transparency and comparability of superannuation fund products. Further, concern was expressed about the high fees paid by members (Collett, 2009; Ferguson, 2010).<sup>32</sup> To examine these concerns, in 2010, the Rudd Government commissioned the Super System Review (also referred to as the Cooper Review) to examine Australian superannuation funds including their governance, efficiency, structure and operation. The Cooper Review highlighted issues and provided recommendations in relation to the governance practices of Australian superannuation funds.<sup>33</sup> These recommendations are summarized below.

First, different types of superannuation funds have different board structures. Many not-for-profit Australian superannuation funds, particularly industry superannuation funds, employ the equal representation model for board composition.<sup>34</sup> The equal representation model requires the funds to have an equal number of employer and member representatives on the board.<sup>35</sup> Initially, the equal representation model was considered to be an important aspect of superannuation fund governance, allowing employers and members to participate through board representation. However, most employer and member representatives are no longer elected by employers or members of the funds, but rather from third-parties such as employer

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<sup>32</sup> Not only had the asset size grown significantly but also members of Australian superannuation funds have paid large amounts of fees. Australian superannuation fund members paid about \$31 billion in fees in 2016 (Rainmaker, 2017), which has increased from about \$21 billion three years ago (Minifie, 2014 and 2015). According to OECD statistics (2017), the total expense ratio of Australian superannuation funds has been between 0.7 and 0.9 since 2001, and has been constantly on average above the median OECD rate of 0.4 percent.

<sup>33</sup> The Cooper Review received approximately 450 submissions and provided 177 recommendations, including recommendations relating to insurance, self-managed superannuation funds, MySuper, SuperStream, and governance and transparency of outcome.

<sup>34</sup> The standard employer-sponsored funds are required to employ the equal representation model for board composition (Part 9 of the *SIS Act 1993*). Under s16 of the *SIS Act 1993*, an employer-sponsored fund is defined as a superannuation fund that has at least one employer-sponsor where an employer makes contributions to the fund for the employee.

<sup>35</sup> Under s10 of the *SIS Act 1993*, employer representatives are defined as those directors who are nominated by “*the employer or employers of the members of the fund; or an organisation representing the interests of that employer or those employers*”. Member representatives are defined as those directors who are nominated by “*the members of the fund; or a trade union, or other organisation, representing the interests of those members*”.

associations and trade unions. The Cooper Review highlights that this model has led to an increase in the size of the board and suggests the model is no longer adequate.<sup>36</sup>

Second, Australian superannuation funds have a disparity in the number of directors on the board. While the current average number of directors on superannuation funds' boards is seven, about 42 percent of Australian superannuation funds have more than seven directors on the board and 3 percent have more than 12 directors on the board, which potentially reduces effective functioning and decision-making (Rowell, 2016). Although APRA provides guidelines on the size of the board for APRA regulated institutions, such as banks and general and private insurance companies under APRA *Prudential Standard CPS 510 Governance*, the Prudential Standard does not specify the size of the board for Australian superannuation funds.<sup>37</sup> The Cooper Review does not make any recommendations on the optimal size of the board but indicates that large boards are ineffective and inefficient.

Third, there are no restrictions on the length of time a director can serve on a board, thus, there are many directors with long tenure. The average directors' tenure of superannuation funds varies between retail and industry superannuation funds. Based on APRA data, the average tenure of directors on retail and industry superannuation funds' board is 5.1 years and 7.7 years respectively (Chanticleer, 2017). Furthermore, about one-quarter of superannuation fund directors have been on the board for more than 9 years, with some tenures exceeding 12 years (Rowell, 2016).<sup>38</sup> Directors with long tenure on the same board may arguably not be able to exercise independent judgement and may not be able to bring a fresh perspective for board decisions (Rowell, 2016). Although the Cooper Review indicates that regular director turnover supports good governance, the Review does not make any recommendations on the optimal tenure of directors.

Fourth, Australian superannuation funds have a low number of female directors on the board. As at June 2018 (APRA, 2019), there were 310 female directors on the boards of Australian

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<sup>36</sup> The board size of industry superannuation funds tend to be larger than retail superannuation funds due to the equal representation model. Table 3 Panel B shows that the average board size for retail superannuation funds is 5.1 and for industry superannuation funds is 8.8.

<sup>37</sup> APRA *Prudential Standard CPS 510* (effective from 1 July 2017) requires the entities to have a minimum of five directors (para. 26), a majority independent directors on the board (para. 27) and an independent chairperson (para. 28). However, there are no guidelines on the size of the board for superannuation funds under the APRA *Prudential Standard SPS 510 Governance*. In para. 6 of the APRA *Prudential Practice Guide SPG 510 Governance*, APRA provides guidance that superannuation fund boards should consist of no more than 12 directors.

<sup>38</sup> In paragraph 24 of the APRA *Prudential Practice Guide SPG 510 Governance*, APRA indicates that a long tenure diminishes the capacity of independent judgement and suggests a maximum tenure of 12 years.

superannuation funds, accounting for about 32 percent (310/958) of the total directorships. The Cooper Review recommends that at least 40 percent of Australian superannuation funds' directors are female to reflect international best practice (Recommendation 2.18).

Fifth, there is a lack of regulation on the level of competence and training of directors. Despite the requirement for directors to be 'fit and proper' under the APRA *Prudential Standard 520 Fit and Proper* and s29D(1)(d) of the *SIS Act 1993* in order to obtain a Registrable Superannuation Entity (RSE) licence<sup>39</sup>, there are no specified requirements on the level of education, qualification, experience and training required.<sup>40</sup> An inadequate level of skills and knowledge in a specialised area, such as investment management, potentially leads to poor decision making and as a result, has an adverse effect on the value of the fund and consequently members' retirement benefits. Based on the 2018 APRA thematic review on the board governance of Australian superannuation funds, APRA indicates that although Australian superannuation funds have complied with APRA *Prudential Standard SPS 510 Governance* and APRA *Prudential Standard SPS 520 Fit and Proper*, most of these superannuation funds do not have an optimal board composition with appropriate skills, capabilities and experience of directors to manage the business operations effectively.<sup>41</sup> Furthermore, the directors' ability to monitor service providers, such as investment managers, will diminish without an adequate level of skills and knowledge – potentially resulting in over reliance on them. In particular, consultants are hired by many industry superannuation funds to provide advice on investment decisions as employer associations and trade unions appoint directors who lack the necessary superannuation and financial expertise (Roddan, 2018). Therefore, the Cooper Review recommends on-going training for directors to demonstrate that the board has the collective skill set needed to perform their responsibilities and duties (Recommendation 2.2 and 2.3).

Sixth, there is concern over potential conflicts of interest arising from multiple directorships.<sup>42</sup> For example, directors sitting on multiple superannuation fund (and related parties) boards have

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<sup>39</sup> APRA has the power to cancel an RSE licence under s29G of the *SIS Act*. Also, under s34C of the *SIS Act 1993*, APRA has the power to impose or may change the standards for RSEs to be complied with.

<sup>40</sup> Directors must act honestly and perform their duties with care, skills and diligence in the best interests of beneficiaries. According to the *APRA SPS 520 Fit and Proper*, a person who is fit and proper has a relevant education, qualifications, knowledge and skills to perform their duties.

<sup>41</sup> APRA uses a sample of 29 various Australian superannuation funds to conduct a cross-sectional analysis on their board governance (Rowell, 2018).

<sup>42</sup> The APRA *Prudential Standard SPS 521 Conflicts of interest* requires Australian superannuation funds to have a conflicts management framework where the board of directors identifies, assesses, mitigates, manages and monitors all potential and actual conflicts relating to business operations. The conflicts management framework requires that directors understand their roles, responsibilities and duties, and have an up-to-date register of relevant duties and interest. Under s52(2)(d) of the *SIS Act*

a greater risk of having a conflict of interest. Therefore, the Cooper Review recommends that while there may be no foreseeable conflict at the time of director appointments (Recommendation 2.13), funds develop a conflicts of interest policy to address potential conflicts of interest that may arise later (Recommendation 2.17).

Last, since there is no regulatory requirement for a minimum proportion of independent directors on the board of Australian superannuation funds; there is a lack of independent directors on the board of Australian superannuation funds.<sup>43</sup> Although APRA requires institutions, including authorised deposit-taking institutions, general insurance and the life insurance industry, to have a majority of independent directors on the board, neither the *SIS Act 1993* nor *APRA Prudential Standard SPS 510 governance* for superannuation funds require a minimum proportion of independent directors.<sup>44</sup> The Cooper Review believes that independent directors play an important role in making decisions objectively (Cooper et al., 2010). However, APRA (2019a) data show that there were only 88 independent directors on the board of Australian superannuation funds, accounting for 9.2 percent (88/958) of all directorships. The Cooper Review recommends for funds subject to the equal representation model, that at least one-third of board directors be independent, that is they have no affiliation with any person or entities related to the fund or any related entity (Recommendation 2.7).<sup>45</sup>

Besides the governance of superannuation funds, the Cooper Review addresses a number of reasons for a lack of transparency and comparability in the disclosure of performance and fees. First, Australian superannuation funds disclose performance either before or after tax and fees. For example, some superannuation funds disclose their performance excluding administration costs, while others include them. The Cooper Review recommends that APRA develops a standardised measure of performance and disclose the performance net of all fees and taxes (Recommendation 4.8 and Section 5.5 of Chapter 4: Outcomes transparency). Second,

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*1993*, requires that if conflicts of interest arise, directors must perform in the best interest of beneficiaries over any other person (APRA *Prudential Standard SPS 521* para.18(c)).

<sup>43</sup> The Cooper Review recommends that independent directors are defined as those who are free from connections to, or associations with, employer sponsors, the appointer, entities related to the trustee, employer groups, unions, service providers and not current or former executives of the fund or a related entity. In para.13 and 14 of the *APRA Prudential Practice Guide SPG 510 Governance*, APRA suggests that industry and retail superannuation funds would benefit from having at least one independent director on the board as they may augment decision-making processes by bringing diverse skills and expertise to the board.

<sup>44</sup> *APRA Prudential Practice Guide SPG 510 governance* recommends superannuation fund boards to appoint at least one independent director.

<sup>45</sup> The Cooper Review also recommended to have a majority of independent directors for those funds that do not employ the equal representation model (Recommendation 2.6).

superannuation funds disclose fees either before or after tax. The Cooper Review recommends disclosing fees on a pre-tax basis which will enhance comparability across superannuation funds (Recommendation 4.7). Third, some superannuation funds do not disclose investment performance fees charged by investment managers. Often, superannuation funds negotiate fees with investment managers, thus the actual fees charged and reported in Product Disclosure Statement (PDS) may differ. Investment managers charge the fees either as asset-based fees or performance-based fees.<sup>46</sup> Although performance-based fees are suggested to be more appropriate than asset-based fees because of a better alignment of interests between investment managers and members, there is no empirical evidence to show that performance-based fees generate better outcomes than asset-based fees.<sup>47</sup> Therefore, the Cooper Review recommends that APRA develops a standard for superannuation funds to charge appropriate performance fees (Recommendation 3.2).

#### **2.2.4.2 The Financial System Inquiry (the Murray Inquiry)**

Subsequent to the Cooper Review, the Financial System Inquiry was established in 2013 by the government to assess the Australian financial system and to satisfy the election commitment of the Coalition government. Specifically, the Financial System Inquiry (also referred to as the Murray Inquiry) examined the efficiency, resilience and fairness of the Australian financial system. In the 2014 final report, the Murray Inquiry provided 44 recommendations, including recommendations to enhance regulation, competition and outcomes of Australian superannuation funds. The Murray Inquiry indicated that there is a lack of competition and efficiency in superannuation funds, and made several recommendations to strengthen them.<sup>48</sup>

In particular, the Murray Inquiry recommends, similar to the Cooper Review, that Australian superannuation funds have a majority of independent directors on the board as well as an independent chairperson (Recommendation 13). Furthermore, directors should be subject to civil and criminal penalties if they use their position to their advantage or if they fail to act in

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<sup>46</sup> Under asset-based fees, investment managers are paid as a percentage of the total assets according to the contractual assets size. The limitation of asset-based fees is that investment managers are remunerated based on the incremental increase of the assets, including the cash inflow of compulsory contributions. Further, the limitation of performance-based fees is that the superior performance of investment managers in the short-term could be due to luck rather than skill.

<sup>47</sup> There is no empirical evidence in the submissions that were received by the Cooper Review.

<sup>48</sup> There are five recommendations related to the superannuation system: (i) to enhance the clarity of the objective of superannuation policy which is to provide an individual with a retirement income; (ii) to improve the efficiency in converting superannuation assets into a retirement income; (iii) to introduce a competitive process to improve net returns for default superannuation fund members; (iv) to improve the governance of superannuation funds; and (v) to allow some employees to freely choose the fund where their superannuation contributions can be paid to.

the best interests of members.<sup>49</sup> The Murray Inquiry suggests that implementing the above recommendations and strengthening disclosure requirements should provide incentives for directors to act in the best interests of superannuation fund members.

In sum, the Cooper Review and the Murray Inquiry provided a number of recommendations, yet many of these recommendations remain controversial and have not been implemented. In particular, the recommendation on the independence of directors has been highly debated between industry superannuation funds and the government (Mather and Eyers, 2014; Mather, 2015; Huchens, 2016).

#### **2.2.4.3 The Fraser Governance Review (the Fraser Review)**

In response to the Cooper Review and the Murray Inquiry, the government proposed the superannuation governance Bill 2015 to mandate a minimum proportion of independent directors on the board of superannuation funds.<sup>50</sup> However, the Bill did not pass the Senate.<sup>51</sup> As a result, an independent professional body, Industry Super Australia and the Australian Institute of Superannuation Trustees, commissioned the Fraser Review (2017) to review the proposed changes of the board structure of industry superannuation funds and to enhance the governance of superannuation funds by developing an appropriate code of board governance that suits not-for-profit superannuation funds, particularly industry superannuation funds.

The Fraser Review opposes the requirement for an independent chairperson and one-third independent directors on the board of superannuation funds proposed in the Bill by the government.<sup>52</sup> On the one hand, the government argues that independent directors provide different skills, experience and perspectives, and reduces conflicts of interest.<sup>53</sup> On the other hand, the Fraser Review indicates that superannuation funds are not homogeneous and are

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<sup>49</sup> In response to the Recommendation 13 of the Murray Inquiry, the government proposed *Treasury Laws Amendment (Improving Accountability and Member Outcomes in Superannuation Measures No.1) Bill 2017* to impose civil and criminal penalties in order to ensure that directors perform their responsibilities and duties in the best interests of members as outlined in s52A of the *SIS Act 1993*. In a case of serious breach of directors' responsibilities and duties, they may be punished with a jail term of up to five years.

<sup>50</sup> Subsequent to the *Superannuation Legislation Amendment (Trustee Governance) Bill 2015*, the *Superannuation Laws Amendment (Strengthening Trustee Arrangements) Bill 2017* was proposed to the Senate on 14 September 2017.

<sup>51</sup> The Labor Party, as well as several crossbenchers such as Nick Xenophon and Jackie Lambie, did not pass the Bill (Mather, 2017b; Proust, 2017).

<sup>52</sup> Mandating a minimum proportion of independent directors on the board of superannuation funds is highly debated between industry superannuation funds and the government, specifically between unions and the Financial Service Minister Kelly O'Dwyer (Boyd, 2017; Hewett, 2017; Patten, 2017b).

<sup>53</sup> The Fraser Review indicates that conflicts of interest are higher for retail funds than industry funds due to multiple interests of shareholders and senior executives.

different in several factors such as size, culture and performance.<sup>54</sup> The Fraser Review argues that superannuation funds would benefit more from an adequate level of values, skills and experience of directors rather than from director independence.<sup>55</sup>

The Fraser Review makes several recommendations on the governance of superannuation funds. First, directors should have an adequate level of skills and experience to maintain fund performance in the best interest of members.<sup>56</sup> This is achieved by having appropriate selection procedures of directors with necessary skills and values that align with the funds' values. Specifically, superannuation funds should establish a formal charter that identifies the roles, responsibilities and objectives of the funds, as well as board nomination committees where they assess directors' capabilities and compatibility. Second, the chair of the board should be the best available candidate who performs in the best interests of fund members, regardless of whether they are independent or not. Third, a board renewal policy, including directors' tenure and gender diversity, should be established to improve the mix of skills and experience of directors on the board. The Fraser Review does not mention the optimal years of directors' tenure but recommends funds to employ a pragmatic approach. Moreover, the Fraser Review suggests a minimum of 40 percent female directors on the board of industry funds by mid-2022.<sup>57</sup> Last, disclosures on directors, gender diversity, and the process of appointing and removing directors should be improved as funds gain trust and security from members. Overall, the recommendations suggest improving directors' skills, knowledge, tenure, and gender diversity on the board. However, these recommendations lack an analysis of the performance of superannuation funds (Patten, 2017b) and suggest maintaining the equal representation model rather than enhancing the governance structure of industry superannuation funds (Proust, 2017).

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<sup>54</sup> The superior performance of industry superannuation funds is the key argument against having a third of independent directors on the board. The outperformance is driven by a larger proportion of investments into aggressive assets, such as infrastructure, and the effective mutual structure. The effective mutual structure is where the members' interests are the key focus of funds and equal representation model supports the mutual structure as the representatives focus on the members' interests.

<sup>55</sup> Subsequently, Bernie Fraser commented that there is not enough of a pool of competent directors for industry superannuation funds but this should not be the reason for appointing independent directors on the board (Anderson, Mather and Patten, 2017).

<sup>56</sup> The Fraser Review recommends maintaining an appropriate mix of skills and experience on the Board at all times; however, it does not specify the level of skills and experience required (Recommendation 1(b)(i)).

<sup>57</sup> It is planned that all Australian Institute of Superannuation Trustee (AIST) members to have a minimum of 40 percent of female directors by mid-2022.

#### **2.2.4.4 The Productivity Commission Inquiry**

In 2016, in response to the recommendations on the efficiency of superannuation funds in the Financial System Inquiry 2014 (the Murray Inquiry)<sup>58</sup>, the government commissioned the Productivity Commission to review and assess the efficiency and competitiveness of the Australian superannuation fund system. In the final report released in 2018, the Productivity Commission provides 31 recommendations, relating to performance, fees and cost, engagement of members, fund governance and system governance.

In particular, the Productivity Commission examined the role of directors and governance practices of Australian superannuation funds and provided a number of recommendations based on the findings. The Productivity Commission highlights that directors' competence leads directors and boards to make better decisions on behalf of members to manage risks effectively, and to improve transparency and performance of superannuation funds. However, there is a lack of effective assessment processes for board skills and performance management. The Commission indicates that board renewal processes, concerning the appointment of directors with appropriate skills and experience, play a key role in enhancing the outcome of superannuation funds rather than having more independent directors on the board. The definition of independent director has attracted attention and the Productivity Commission suggests that independent directors should be those who are not affiliated with parties related to a fund. Moreover, the Productivity Commission advocates for the removal of conflicts of interest generated by the use of related parties as they are poorly managed by directors.

Based on the findings, the Productivity Commission recommends strengthening the board of directors by providing prescriptive prudential standards, including a process to assess the performance of directors, a skills matrix of directors to be maintained, and power be given to APRA to enforce the definition of an independent director (Recommendation 19). Furthermore, it is recommended that the interest and duties of directors are to be clarified where directors act in the best interest of members (Recommendation 22).

#### **2.2.4.5 The Banking Royal Commission (the Hayne Royal Commission)**

Further to the above reviews, recent scandals involving financial institutions, including some Australian superannuation funds charging unwanted fees and fees for-no-services to members,

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<sup>58</sup> The Financial System Inquiry (2014) recommended a review of the effectiveness of the Stronger Super reforms on improving competition and efficiency in the superannuation systems (Recommendation 10 of the Financial System Inquiry).

raised concerns about the culture of the Australian financial industry. The Banking Royal Commission (also known as the Hayne Royal Commission) inquired into and reported on misconduct in the financial sector, including the banking, superannuation and financial services industries. The final report, released in 2019, provided 76 recommendations on banking, financial advice, superannuation, insurance, culture, governance and remuneration of executives.

The Banking Royal Commission provides a number of recommendations to enhance the governance and remuneration practices of Australian superannuation funds. Specifically, as directors of Australian superannuation funds play an important governance role, the Banking Royal Commission recommends clarifying the duties and obligations of directors (Recommendation 3.1). If directors breach their covenants and obligations set out in s52A and s29VO of the *SIS Act 1993*, respectively, civil penalties are to be enforced (Recommendation 3.7). Furthermore, in order to ensure that managers are paid appropriately, the Banking Royal Commission recommends to revise the prudential standards and to design and implement remuneration systems incorporating both financial risks and non-financial risks (Recommendation 5.1, 5.2 and 5.3).

The following table summarises the main recommendations of the five reviews.

**Table A: Summary of the key recommendations on governance practices of Australian superannuation funds.**

	<b>The Super System Review 2010 (the Cooper Review)</b>	<b>The Financial System Inquiry 2014 (the Murray Inquiry)</b>	<b>The Fraser Governance Review 2016 (the Fraser Review)</b>	<b>The Productivity Commission 2018</b>	<b>The Banking Royal Commission 2019 (the Hayne Royal Commission)</b>
<b>Board independence</b>	Recommends the board should consist of one-third independent ('non-associated') directors where the board has an equal representation model, and consist of a majority of independent ('non-associated') directors for funds which do not (Recommendation 2.7).	Recommends mandating a majority of independent directors and an independent chairperson on the board of superannuation funds (Recommendation 13).	The Fraser Review opposes the requirement for board independence proposed in the Bill by the government and suggests appointing a chair who is the best candidate irrespective of whether they are independent.	Recommends providing a better definition of an independent director, and giving APRA powers to interpret and enforce the definition of an independent director (Recommendation 19).	N/A
<b>Female directors</b>	Recommends having at least 40 percent of female directors on the board to reflect international best practice (Recommendation 2.18).	N/A	Suggests a minimum of 40 percent female directors on the board of industry funds by mid-2022.	N/A	N/A

Competence of directors	Recommends on-going training for directors to demonstrate that the board has the collective skill set needed to perform their responsibilities and duties (Recommendation 2.2 and 2.3).	N/A	Recommends introducing a selection processes to maintain an appropriate mix of skills and experience on the board of superannuation funds.	Recommends maintaining a board of directors with a skill matrix where they have appropriate level of knowledge and experience of the superannuation fund system (Recommendation 19).	N/A
Conflict of interest	Recommends funds develop a conflict of interest policy to address potential conflicts of interest that may arise later (Recommendation 2.17).	Recommends strengthening the conflict of interest requirements (Recommendation 13).	N/A	Recommends clarifying the interest and duties of directors to act in the best interest of members (Recommendation 22).	Recommends clarifying the duties and obligations of directors and requiring directors to prioritise members' interests (Recommendation 3.1).
Penalties	Recommends designing an appropriate penalty regime for directors to act in the best interests of members (Recommendation 2.12).	Recommends enforcing civil and criminal penalties for directors not acting in the best interests of members (Recommendation 13).	N/A	N/A	Recommends enforcing civil penalties if directors breach their covenants and obligations set out in s52A and s29VO of the <i>SIS Act 1993</i> (Recommendation 3.7).

### **2.2.5 The economics of corporate governance**

The traditional view of corporate governance for publicly listed companies is based on the work of Jensen and Meckling (1976). They argue that the separation of ownership and control leads to agency costs as the agents, who are delegated with decision making authority, maximise their benefits at the expense of the principals. To reduce agency costs, the principals expand resources to monitor and bond managers. These monitoring and bonding costs include auditors, incentive-based compensation of the managers, budget restrictions, and formal management control systems. Moreover, Shleifer and Vishney (1997) build on the work of Jensen and Meckling (1976) and argue that there are a number of other governance mechanisms which reduce agency costs, including managers' reputation, mergers and acquisitions, legal protection of the principals, and block holdings by shareholders and debt holders. As many individual principals cannot monitor their managers effectively, they appoint a board of directors to advise and monitor the managers on their behalf. Fama and Jensen (1983) address the role of the board of directors and argue that external (independent) directors are of particular importance in advising and monitoring the (Chief Executive Officers) CEOs.

### **2.2.6 Governance practices in Australian superannuation funds**

The governance of Australian superannuation funds is different from publicly listed firms in a number of important aspects (Hess and Impavido, 2004; Bryan et al., 2009; Benson et al. 2011; Liu, 2014). First, there is a lack of large block holding investors acting as a monitoring mechanism. Also, unlike publicly listed firms, members of superannuation funds do not have voting rights to appoint directors<sup>59</sup>, regardless of the magnitude of funds invested in their superannuation fund accounts. Therefore, the members of superannuation funds rely primarily on legal protections.<sup>60</sup>

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<sup>59</sup> The union-backed superannuation funds are resisting the idea of voting rights as voting power of unions are diluted if the voting power is extended to members (Rose, 2016).

<sup>60</sup> Members can take action for any loss or damage caused by the directors' misconduct (Murray et al., 2014, pg 135). Members can take the matter to a state court or the Superannuation Complaints Tribunal (Cooper et al., 2010). However, it is expensive and time-consuming for members seek to have a matter heard by the courts. The Cooper Review (2010) indicates that no class action has occurred at the time of their review. Australian superannuation funds are required to have internal complaints process for members under s101 of the *SIS Act 1993*. While directors of managed investment schemes, including managed funds and pooled investments are subject to criminal and civil penalties under the *Corporations Act 2001 (Cth)*, s601FD and Part 2D.1, superannuation fund directors who breach their responsibilities and duties to act in the best interests of beneficiaries are not subject to criminal or civil penalties (Murray et al., 2014).

Second, there are no debt-holders in Australian superannuation funds<sup>61</sup> as Australian superannuation funds are not allowed to borrow under the *SIS Act 1993*. Although there are no debt-holders, trade unions participate in the operations of Australian superannuation funds through member representatives on the board of Australian superannuation funds (Clark, 2004; Hess and Impavido, 2004).

Third, unlike publicly listed firms, there is no secondary market for Australian superannuation funds. As such, there are no equity incentives for managers that can be used to align their interests with those of the beneficiaries.<sup>62</sup> In addition, beneficiaries cannot sell their assets as the beneficiary ownership of their assets are ‘sticky’ – members cannot access their retirement benefits until they reach their preservation age. However, beneficiaries, since 2005, can transfer their assets to other superannuation funds.<sup>63</sup> Therefore, poorly-performing superannuation funds can be penalised through the outflow of funds (Bryan et al., 2009).

In sum, many of the corporate governance mechanisms which mitigate agency problems of publicly listed firms are not present in Australian superannuation funds (i.e. block holding, large debt holders, and secondary markets). Due to a lack of corporate governance mechanisms, the agency costs for superannuation funds are higher than publicly listed companies (Clark and Urwin, 2008). The board of directors, therefore, plays a key role in minimising agency problems in Australian superannuation funds (Hess and Impavido, 2004; Bryan, Ham, and Rafferty, 2008; Liu, 2014).

In addition to the differences between publicly listed firms and Australian superannuation funds, governance practices also vary between industry and retail superannuation funds. The main difference is that industry superannuation funds employ an equal representation model whereas, retail superannuation funds do not. The equal representation model employed by industry superannuation funds leads to a larger board, and the appointment of member (i.e., union) and employer directors. In contrast, in retail funds the directors are appointed by the organization sponsoring the fund.

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<sup>61</sup> Self-managed superannuation funds (SMSFs) can borrow money using limited recourse borrowing arrangements.

<sup>62</sup> There are some retail superannuation funds listed on ASX and these retail superannuation funds may pay equity incentives as part of their compensation package.

<sup>63</sup> Beneficiaries can change their funds since 1 July 2005. Also, beneficiaries can change their asset strategies or change their asset allocations.

## 2.3 Literature review and theory development

While there is an extensive literature that has addressed the governance of publicly listed companies<sup>64</sup>, there is a limited body of literature that has examined the impact of governance on performance and fees of Australian superannuation funds. This limited body of literature focuses on providing evidence on self-managed superannuation funds<sup>65</sup> and the behavioural aspects of Australian superannuation funds such as superannuation fund members' financial literacy<sup>66</sup>, members' behaviour<sup>67</sup>, and executives' behaviour.<sup>68</sup> This section provides a discussion on empirical studies that have examined the governance of Australian superannuation funds, publicly listed firms and mutual funds.

### 2.3.1 Evidence from Australian superannuation funds

A number of studies examine the effect of governance practices on the performance and fees of Australian superannuation funds (Benson et al., 2011; Nguyen et al., 2012; Nisbet, 2013; Liu, 2014; Tan and Cam, 2015; Liu and Ooi, 2019). Some studies find that larger boards are associated with better fund performance (Benson et al., 2011) and charge higher fees (Tan and Cam, 2015). Based on evidence from 52 corporate superannuation funds, Nguyen et al. (2012) argues that as board and fund size increase, more asset consultants are hired, as a result, there are higher fees and agency costs.

In addition to board size, Nisbet (2013) highlights the differences in performance and board characteristics between retail and industry superannuation funds. She reports that retail superannuation funds outperform industry superannuation funds.<sup>69</sup> Independent directors and female directors on the board of *industry* superannuation funds are associated with superior fund performance, whereas independent directors on the board of *retail* superannuation funds are associated with poor fund performance. In contrast to industry superannuation funds, independent directors of retail superannuation funds have greater pressure from financial

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<sup>64</sup> Yermack, 1996; Core, Holthausen, and Larcker, 1999; Matolcsy, Stokes, and Wright, 2004; Masulis, Wang, and Xie, 2007; Linck, Netter, and Yang, 2008; Adams and Ferreira, 2009; Masulis, Ruzier, Xiao, and Zhao, 2012; Larcker, So, and Wang, 2013; Bugeja, Matolcsy, and Spiropoulos, 2016; Bugeja, Matolcsy, Mehdi, and Spiropoulos, 2016.

<sup>65</sup> Arnold, Bateman, Ferguson, and Raftery, 2014a and 2014b; Phillips, Cathcart, and Teale, 2007.

<sup>66</sup> Bateman, Eckert, Geweke, Louviere, Thorp, and Satchell, 2012; Brockman and Michayluk, 2016.

<sup>67</sup> Agnew, Bateman, and Thorp, 2012; Parrish and Delpachitra, 2012; Ali, Anderson, Clark, Ramsay, and Shekhar, 2014; Bateman, Deetlefs, Dobrescu, Newell, Ortmann, and Thorp, 2014.

<sup>68</sup> Butt, Donald, Foster, Thorp, and Warren, 2015.

<sup>69</sup> Nisbet (2013) indicates that the result is to be interpreted with caution due to small sample size.

institutions and their shareholders leading to a difference in investment strategy and product offerings. Furthermore, Tan and Cam (2015) document that there is no association between board independence and fees charged by Australian superannuation funds, indicating that independent directors do not influence fund costs as they are nominated and elected by other directors on the board. They suggest that agency costs can be reduced by enhancing directors' competency through an appropriate selection process, and providing continuous training of directors' to improve their skills and knowledge to reduce reliance on external investment managers.

Liu (2014) investigates more extensive governance variables (such as directors' age, tenure, education, expertise and competence, compensation, and board meeting attendance) to examine the effect of governance practices on the performance and fees of all large Australian superannuation funds. He documents that directors' age, director busyness, and a directors' prior superannuation fund experience are negatively associated with performance; and directors' age is positively associated with fees. Based on the findings of a positive association between directors' fund ownership and performance, he suggests that ownership is a more effective means of aligning the interests of directors and members than directors' compensation.

Furthermore, Liu and Ooi (2019) investigate the effect of related-party outsourcing and director affiliation on investment performance.<sup>70</sup> They argue that industry superannuation funds outsource some of their functions to external service providers as funds may require external expertise and economies of scale; whereas, retail superannuation funds are more likely to use related-party service providers to maximise their gains from the activities that are part of their conglomerate (Liu, 2013). They find that retail superannuation funds with a greater proportion of affiliated directors generate lower investment performance. In their additional tests, they include a number of governance variables such as independent chairperson, board size and directors with investment experience; however, many of the governance variables show an insignificant association with investment performance.

The empirical evidence for Australian superannuation funds is conflicting for several reasons. First, prior studies have used different measures of performance. There is an inherent difficulty in measuring performance due to various investment options and asset allocations. The various

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<sup>70</sup> They identify affiliated directors as those directors who are also a director, executive or employee of a service provider of the fund, or of a connected entity within a service provider group.

performance measures used are ROR (Nguyen et al., 2012; Nisbet, 2013)<sup>71</sup>, return on assets (ROA) (Nisbet, 2013), the excess return over a benchmark (Benson et al., 2011), and risk-adjusted over-benchmark return (Liu, 2014). Second, prior studies use small sample sizes, a short time period, and focus on particular types of superannuation funds. For example, Benson et al. (2011) use survey data from 34 superannuation funds (industry and public sector superannuation funds) from 2005 to 2006. Nguyen, Tan, and Cam (2012) examine 52 corporate superannuation funds for the single period of 2010. Nisbet (2013) uses a sample of 72 observations (retail and industry superannuation funds) from two separate years (2009 and 2012). Liu (2014) uses 100 observations (21 corporate, 46 industry, six public sector and 73 retail superannuation funds) from the single period of 2006. Liu and Ooi (2019) use 101 superannuation funds for the period between 2015 and 2016. This study builds on these prior studies using a benchmark-adjusted ROA and draws on a larger database including both retail and industry superannuation funds. A longer sample period of 7 years allows this study to examine the effect of governance before and after the heightened governance disclosure requirements in 2014 (under s29QB of the *SIS Act 1993*).

### **2.3.2 Evidence from publicly listed companies and overseas mutual funds**

#### **2.3.2.1 Board size and firm performance and fees**

Prior studies find that smaller boards have a positive impact on firm value (Tobin's  $Q$ ) (Yermack, 1996), future operating performance (Larcker, Richardson and Tuna, 2007) and industry-adjusted ROA (Eisenberg, Sundgren and Wells, 1998) for publicly listed firms. Moreover, Yermack (1996) documents that the announcement of a decrease (increase) in the size of the board has a positive (negative) market reaction. However, Coles, Daniel and Naveen (2008) argue that firms are heterogeneous and the level of advising is greater for more complex firms (firms that are larger, highly diversified and highly leveraged) than simple firms. They report that complex firms have larger boards and complex firms with large boards are positively associated with Tobin's  $Q$ .

For mutual funds, Tufano and Sevick (1997) use 1,587 open-end mutual funds and they find that mutual funds with smaller boards improve performance and charge lower fees, supporting the findings of Yermack (1996). Del Guercio, Dann and Partch (2003) use 476 closed-end

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<sup>71</sup> Cheong and Zurbrugg (2008) address the problem that APRA performance data is measured at a fund level, although superannuation funds have a number of investment options with various investment names and asset allocations.

funds and also find similar evidence. In more recent studies, Ferris and Yan (2007) and Meschke (2007) find that a smaller board size charges a lower fund expense ratio. Based on the findings of a majority of prior studies from publicly listed firms, a smaller board size is expected to have a positive association with fund performance and a negative association with superannuation fund fees.

### **2.3.2.2 Board independence and firm performance and fees**

Numerous studies find a positive association between independent directors on the board and the performance of publicly listed firms (Baysinger and Butler, 1985; Rosenstein and Wyatt, 1990; Matolcsy, Stokes and Wright, 2004; Black, Jang and Kim, 2006).<sup>72</sup> For example, Rosenstein and Wyatt (1990) find that on the day of the announcement of an appointment of additional independent directors to the board, the stock price increases on average 0.2 percent.<sup>73</sup> Using 306 Australian publicly listed firms for the period between 1999 and 2001, Matolcsy, Stokes, and Wright (2004) find that a greater proportion of independent directors on the board of a firm with large investments in growth options are associated with a higher firm performance. Black, Jang, and Kim (2006) investigate 515 Korean companies for the period of 2001 using a regression discontinuity design to mitigate the issues associated with reverse causality and omitted variable bias. They find that a majority of independent directors on the board have approximately a 40 percent higher firm performance (Tobin's  $Q$ ) than those firms with a minority of independent directors on the board.

In the mutual fund industry, Tufano and Sevick (1997) and Del Guercio, Dann, and Partch (2003) document that a higher proportion of independent directors on the board is more effective and is associated with lower fees. Ding and Wermers (2012) find that a high proportion of independent directors is associated with better performance and there is a higher likelihood of replacing underperforming portfolio managers. Meschke (2007) finds that funds with an independent chair on the board charge lower fees, whereas the relation between the proportion of independent directors on the board and fees varies over time. Specifically, Meschke (2007) reports that the proportion of independent directors on the board is positively

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<sup>72</sup> Some empirical evidence finds that independent directors on the board have a negative association (Agrawal and Knoeber, 1996; Subrahmanyam, Rangan, and Rosenstein, 1997; Yermack, 1996; Bhagat and Black, 2002) and no association (Bhagat and Black, 1999; Mak and Li, 2001; Hermalin and Weisbach, 2003) with firm performance.

<sup>73</sup> In their follow-up study, Rosenstein and Wyatt (1997) document that the association between the announcements of an appointment of inside directors on the board and the stock-market reaction is, on average, zero. Specifically, they find that when inside directors own less than 5 percent of the shares they find a negative association, when inside directors own between 5 percent and 25 percent of the shares they find a positive association with the share price.

associated with fees from 1995 to 2001, whereas the positive association switches to a negative association from 2002 to 2004. Overall, he concludes that a higher proportion of independent directors is not associated with fees but is associated with lower performance.<sup>74</sup>

The literature on overseas superannuation funds in Poland confirms a positive effect of independent directors on the board and fund performance (Kowalewski, 2012; Jackowicz and Kowalewski, 2012). Jackowicz and Kowalewski (2012) find, on average, a positive association between board independence and fund performance but they find a negative association during the financial crisis in 2007 and 2008. The prior evidence suggests that board independence is positively associated with performance and negatively associated with fees.

### **2.3.2.3 Gender diversity and firm performance and fees**

There has been an increase in attention to the gender diversity of the board of Australian superannuation funds. The Cooper review (2010) and the Fraser review (2017) highlight the importance of gender diversity on the board. Female directors on the board broaden and add different perspectives which enhance discussions for board decisions (Gul, Srinidhi, and Ng, 2011; Srinidhi, Gul, and Tsui, 2011).<sup>75</sup>

The literature supports that having female directors on the board increases firm performance (Shrader, Blackburn, and Iles, 1997; Carter, Simkins, and Simpson, 2003; Farrell and Hersch, 2005).<sup>76</sup> For example, Carter, Simkins, and Simpson (2003) find that a greater proportion of female directors is positively associated with firm performance (Tobin's *Q*).<sup>77</sup> Farrell and Hersch (2005) document that better performing firms have more female directors on the board. In a more recent study, Adams and Ferreira (2009) reveal that female directors attend more board meetings and are more likely to serve on monitoring committees such as audit,

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<sup>74</sup> Meschke (2007) uses various performance measures: annual return, benchmark adjusted annual return, return using capital asset pricing model (CAPM) model, return using the Fama and French 3-factor model, return using the Cahart 4-factor model, and return using the Cahart model with liquidity factor.

<sup>75</sup> Carter et al. (2003) argue that having female directors on the board improves the financial value of firms in several ways. Female directors provide a better understanding of the marketplace; increase creativity and innovation; provide more effective problem-solving with various alternative perspectives to deal with problems; improve the effectiveness of leadership through a broader view; and promote more effective global relationships. Furthermore, gender diversity can create a competitive advantage. Cox and Blake (1991) indicate that a competitive advantage can be achieved through cost, attraction of human resources, marketing success, creativity and innovation, problem-solving quality, and organisational flexibility.

<sup>76</sup> Prior studies also find that having female directors on the board enhances stock price informativeness (Gul, Srinidhi, and Ng, 2011), improves earnings quality (Srinidhi, Gul, and Tsui, 2011), and reduces the likelihood of making acquisitions, and reduce bid premium (Levi, Li, and Zhang, 2014).

<sup>77</sup> Carter et al. (2003) find this positive association after controlling for size, industry, and other corporate governance measures (such as CEO duality and the percentage of inside directors on the board). Also, they report that the proportion of female directors on the board are associated with larger firm size and board size, but decrease as the number of inside directors increase.

nominating and corporate governance committees. However, they find that an average effect of female directors on the board on firm performance is negative and they suspect that too much board monitoring can decrease shareholder value.

Overall, the findings from prior studies indicate that female directors on the board improve firm performance. This suggests that having female directors on the board is positively associated with fund performance and negatively associated with fees of superannuation funds.

#### **2.3.2.4 Director busyness and firm performance and fees**

Based on the ‘reputation hypothesis’, directors with multiple outside directorships (busy directors) is a signal that the directors understand their decision-making role and are expert in decision-making (Fama and Jensen, 1983). Busy directors are viewed as directors of high quality with valuable experience and reputation (Ferris, Jagannathan, and Pritchard, 2003). Subrahmanyam, Rangan, and Rosenstein (1997) find that independent directors with multiple directorships are positively associated with abnormal returns in bank acquisitions. Similarly, Ferris, Jagannathan, and Pritchard (2003) show evidence that when firms announce the appointment of busy directors for the first time, firms generate higher abnormal returns. They also report that busy directors are positively associated with firm performance and find no association with fraudulent litigation. Their findings suggest that busy directors do not shirk their monitoring and advising responsibilities. However, other studies support that directors with multiple outside directorships are too busy to commit and devote sufficient efforts and time to each duty (Ferris et al., 2003; Schnake, Fredenberger, and Williams, 2005; Fich and Shivdasani, 2006).<sup>78</sup> In mutual funds, Tufano and Sevick (1997) document that directors who sit on other boards for the same sponsor charge lower fees. In contrast, Ferris and Yan (2007) find a positive association between independent directors with multiple outside directorships and fund fees.

The Reviews highlight the conflict of interest issues which may arise from multiple outside directorships (Cooper et al., 2010; Murray et al., 2014; Productivity Commission, 2018; Hayne

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<sup>78</sup> Fich and Shivdasani (2006) argue that boards with a majority of independent directors with more than three directorships are associated with weak corporate governance. Their finding supports the ‘busyness hypothesis’ that when busy directors are fired from the board, the stock price increases; and when busy directors on the board add an additional directorship, the stock price decreases. Schnake et al. (2005) show that directors with more outside directorships are more likely to have a higher number of 10K investigations. These results suggest that directors with too many outside directorships decrease their monitoring ability.

et al., 2019). Based on these arguments busy directors are expected to have a negative association with fund performance and a positive association with superannuation fund fees.

#### **2.3.2.5 Directors' competence and firm performance and fees**

Since the introduction of the *Sarbanes-Oxley Act* of 2002 (SOX) that requires publicly listed firms to have at least one financial expert on audit committees, there has been an increasing body of literature that examine the effect of directors' expertise on audit committees and firm outcomes. Despite using various definition of directors' expertise, the majority of empirical studies show a positive association between directors with expertise and firm performance. Davidson, Xie, and Xu (2004) and DeFond, Hann, and Hu (2005) find that the appointment of accounting financial experts to audit committees receives a positive market reaction, whereas the appointment of non-accounting financial experts to audit committees shows no market reaction. In a more recent study, Dass et al. (2014) report that having directors from related industries on the board increases R&D intensity, patent grants, and patent citations, and find that having these directors on the board is positively associated with Tobin's  $Q$ . They also find a positive market reaction for announcements of a new director from related industries. Faleye, Hoitash and Hoitash (2018) argue that having industry expert directors on the board reduces internal information asymmetry by facilitating better advice to the board. They find that having industry expert directors on the board is positively associated with firm value (Tobin's  $Q$ ). Based on this prior evidence, directors with prior superannuation fund experience are expected to have a positive association with fund performance and a negative association with superannuation fund fees.

#### **2.3.2.6 Director tenure and firm performance and fees**

There are contrasting arguments about the effect of director tenure on monitoring capacity. On the one hand, directors gain more experience and knowledge about the firm if they sit on the board longer. As the directors' tenure increases, the directors become more competent and build confidence meaning they are more likely to challenge management (Vafeas, 2003). On the other hand, when directors stay on the board for a long period of time, their independence diminishes and the effectiveness of their monitoring and advising capacity reduces (Bhagat and Black, 2002). The prior empirical evidence supports the latter argument where Vafeas (2003) argues that an increase in tenure leads to closer relationships that are developed with management (Bhagat and Black, 2002). Vafeas (2003), based on data on 483 US firms from 1994, finds that long directors' tenure is detrimental to the interests of shareholders. However,

Schnake, Fredenberger, and Williams (2005) report that longer director tenure is associated with a lower number of 10K investigations. Based on the prior evidence that longer-tenured directors have an adverse effect on their monitoring and advising capacity, directors with longer tenure are expected to have a negative association with fund performance and a positive association with superannuation funds fees.

In sum, prior studies have examined the effect of board characteristics on the performance of publicly listed firms and fees charged by overseas mutual funds; however, these governance practices show mixed evidence. Based on the majority of studies of publicly listed firms and overseas mutual funds, it is reasonable to assume that good governance practices – a smaller board, greater board independence, greater gender diversity on the board, less director busyness, directors with accounting and financial expertise on the board, and a shorter director tenure – are associated with better firm performance and lower fees.

### **2.3.3 Hypotheses development**

The superannuation fund industry lacks external governance mechanisms and the commissioned reviews highlight that effective governance practices are critical in enhancing members' retirement benefits. The Cooper Review (2010) and the Murray Inquiry (2014) recommend having a majority of independent directors and an independent chairperson on the board of Australian superannuation funds. It is argued that independent directors on the board help make objective decisions and provide effective advising and monitoring of management, consequently reducing the conflicts of interest between the management and fund members. Independent directors are arguably self-motivated with a greater commitment to members than inside directors, although independent directors may have insufficient expertise and knowledge in monitoring superannuation fund performance (Besley and Prat, 2003; Jackowicz and Kowalewski, 2012). Independent directors and an independent chairperson may also enhance performance as they have incentives to retain their reputation and to reduce litigation risks.

Furthermore, directors' competence and expertise on Australian superannuation funds have received attention by regulators and academics.<sup>79</sup> Prior research suggests that directors of superannuation funds are lacking financial knowledge and skills as they do not utilise all available information efficiently (Clark, Caerlewy-Smith, and Marshall, 2006). Moreover,

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<sup>79</sup> Although APRA *Prudential Standard SPS 510 Governance* provide some guidance on these policies, there is a lack of scrutiny of policies on nomination, appointment and removal of directors.

earlier research suggests directors are also poor at investment and risk management (Ambachtsheer, Capelle, and Lum, 2008). Ambachtsheer et al. (2008) argue that the board competency problem arises due to inappropriate nomination, appointment and removal policies.

Directors' competence and expertise play a crucial role in the performance of superannuation funds (Clark, 2004) as many Australian superannuation funds outsource certain activities to external service providers such as investment managers (Liu and Arnold, 2010). Directors without financial and/or accounting expertise on Australian superannuation fund boards are a concern as they do not have sufficient knowledge and skills to perform in the best interest of members (Cooper et al., 2010). As a result, these directors may not effectively monitor investment managers but rather rely on investment managers' decisions. Although there is no one set of best governance practice identified for Australian superannuation funds, the reviews (including the Cooper Review 2010, the Murray Inquiry 2014 and the Productivity Commission 2016) suggest that the above governance features are expected to improve the performance and fees of superannuation funds. Based on the majority of findings of prior studies of publicly listed firms, overseas mutual funds and Australian superannuation funds, this chapter argues that the following "good governance" practices are associated with higher performance and lower fees of Australian superannuation funds: (i) a smaller board, (ii) board independence, (iii) female directors on the board, (iv) a lower directors' busyness, (v) directors' competence, and (vi) a shorter director tenure. This chapter therefore predicts that:

*H1: There is a positive association between superannuation fund performance and good governance practices of Australian superannuation funds.*

*H2: There is a negative association between superannuation fund fees and good governance practices of Australian superannuation funds.*

## **2.4 Research design and sample selection**

### **2.4.1 Regression model**

This section presents the regression models used to test *H1* and *H2* derived in Section 2.3.3.

The regression models below are estimated to test *H1* and *H2*, respectively.<sup>80</sup>

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<sup>80</sup> The regression models are developed based on the regression analysis in Liu (2014) and Tan and Cam (2015).

*EXCESS\_ROA* =

$$\alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (1)$$

*EXCESS\_OP\_EXP\_RATIO* =

$$\alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (2)$$

*EXCESS\_ROA* is measured as the difference between a superannuation fund's *ROA*<sup>81</sup> and the median *ROA*<sup>82</sup> for each year. *EXCESS\_OP\_EXP\_RATIO* is calculated as the difference between a superannuation fund's *OP\_EXP\_RATIO* (calculated as the percentage of total administration and operating expenses divided by total assets) and the median *OP\_EXP\_RATIO*<sup>83</sup> for each year. The dependent variables and all continuous variables are winsorised at the top and bottom 5 percent to reduce problems related to outliers. Model (1) is estimated using an ordinary least squares (OLS) regression and Model (2) is estimated using a Tobit regression.

## 2.4.2 Independent variables

### 2.4.2.1 Governance Index

The main measure used in this thesis is a governance index to capture good governance practices (*GOV\_INDEX*).<sup>84</sup> Based on the theoretical framework of Finkelstein (1992), there is

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<sup>81</sup> Return on assets (*ROA*) is calculated as the percentage of net earnings after tax and expenses divided by total assets. Based on APRA *SRS 330.0 Statement of Financial Performance*, APRA defines net earnings after tax and expenses as the net of investment income (including investment income and total gains and losses on the investments, such as the changes in the value of investments and foreign exchange gains and losses), all expenses (including investment, administration, operating and advice expenses), and income tax.

<sup>82</sup> The median *ROA* is calculated as the median value of *ROA* for each year in the sample.

<sup>83</sup> The median *OP\_EXP\_RATIO* is calculated as the median value of *OP\_EXP\_RATIO* for each year in the sample.

<sup>84</sup> The Federal Government, APRA and the Cooper Review (2010), the Murray Inquiry (2014), the Fraser review (2017) and the Productivity Commission Inquiry (2018) have acknowledged the key role of the board of directors. As discussed in Section 2.2.5, these reviews have either explicitly recommended or indicated a preference for independent board members, smaller boards, female directors on the board, restricting director busyness, on-going training for board members and shorter director tenure. The governance index is developed based on the following characteristics of the board of directors: board independence (Rosenstein and Wyatt, 1990; Agrawal and Knoeber, 1996; Bhagat and Black, 1999; Hermalin and Weisbach, 2003), independent chair (Meschke, 2007; Jackowicz and Kowalewski, 2012), gender diversity (Carter, Simkins, and Simpson, 2003; Farrell and Hersch, 2005; Adams and Ferreira, 2009), directors' expertise (Davidson, Xie, and Xu, 2004; DeFond, Hann, and Xuesong, 2005; Krishnan and Visvanathan, 2008), director busyness (Subrahmanyam, Rangan, and Rosenstein, 1997; Ferris,

an emerging literature which uses an index rather than a single variable to measure governance quality.<sup>85</sup> Prior studies acknowledge that one measure of governance quality may not capture the full complexity of the construct. The governance index is developed using seven governance variables, selected based on recommendations from the Cooper Review (2010), the Murray Inquiry (2014), the Fraser Review (2017) and the Productivity Commission Inquiry (2018).<sup>86</sup> They are (i) the percentage of independent directors on the board (*IND\_DIR*), (ii) the presence of an independent chairperson (*IND\_CHAIR*), (iii) the percentage of female directors on the board (*FEMALE\_DIR*), (iv) the average number of outside directorships on ASX-listed companies held by directors (*BUSY\_DIR*), (v) the presence of directors with financial qualifications (*FINANCIAL*), (vi) the presence of directors with prior superannuation experience (*EXPERIENCE*), and (vii) the average of director tenure (*TENURE*).<sup>87</sup> These variables are defined in Table 1.

< Insert Table 1: Definition of variables >

#### 2.4.2.2 Independent directors

Common corporate governance practices for publicly listed firms and financial institutions require a certain level of board independence.<sup>88</sup> A higher level of board independence reflects a greater level of diversity of skills and experience which is expected to enhance decision making processes (Rowell, 2017). Therefore, a greater proportion of independent directors on

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Jagannathan, and Pritchard, 2003; Fich and Shivdasani, 2006), and director tenure (Vafeas, 2003; Schnake, Fredenberger, and Williams, 2005).

<sup>85</sup> For example, Gompers, Ishii, and Metrick (2003) use a Governance Index to proxy for the level of shareholder rights. Larcker, Richardson, and Tuna (2007) develop a governance index to examine the association between corporate governance and various accounting and economic outcomes. Larker et al. (2007) argue that “*the measurement error from using a single indicator for a complex construct will almost certainly cause the regression coefficients to be inconsistent*”. Lisic, Neal, Zhang, and Zhang (2016) construct a summary index of CEO power based on ten CEO characteristics. Ghannam, Matolcsy, Spiropoulos, and Thai (2019) and Bachmann, Loyeung, Matolcsy, and Spiropoulos (2019) develop a CEO power index and examine the influence of CEO power in the setting of merger and acquisitions and CEO cash bonus, respectively.

<sup>86</sup> Prior research has used various approaches to measure governance practices, including the construct of an index (Gompers, Ishii, and Metrick, 2003; Lisic et al., 2016) and the use of individual governance variables. However, there is no ideal way to measure governance practices. The reviews including the Cooper Review 2010, the Murray Inquiry 2014, and the Productivity Commission 2016 did not indicate that one governance variable is more important than other governance variables. Therefore, both a governance index (using equal weighting of each governance variable) and individual governance variables are examined in this thesis.

<sup>87</sup> The governance index (*GOV\_INDEX*) is an aggregate of seven governance variables (*IND\_DIR*, *IND\_CHAIR*, *FEMALE\_DIR*, *BUSY\_DIR*, *FINANCIAL*, *EXPERIENCE*, and *TENURE*). A score of one is given if the board has: more than or equal to 33 percent independent directors (*IND\_DIR*); an independent chair (*IND\_CHAIR*); more than 50 percent of female directors (*FEMALE\_DIR*); directors with less than the 50<sup>th</sup> percentile of outside directorships (*BUSY\_DIR*); at least one director with financial qualifications (*FINANCIAL*); at least one director with prior superannuation fund experience (*EXPERIENCE*); directors with less than the 50<sup>th</sup> percentile of average board of directors tenure (*TENURE*).

<sup>88</sup> For example, APRA regulated insurance companies and deposit-taking institutions comply with the APRA prudential framework. The boards of APRA regulated insurance companies and deposit-taking institutions are required to have a majority of independent directors under para. 27 of the APRA *Prudential Standard CPS 510*.

the board indicates better governance practices. *IND\_DIR* is measured as the total number of independent directors divided by the total number of directors on the board.<sup>89</sup>

#### **2.4.2.3 Independent chairperson**

Along with the recommendation of mandating a higher proportion of independent directors on the board, the Cooper Review (2010) and the Murray Inquiry (2014) also recommend an independent chairperson to be appointed to the board of Australian superannuation funds. Prior evidence suggests that having an independent chairperson on the board increases performance and results in lower fees (Meschke, 2007). The presence of an independent chairperson on the board represents better governance practices. *IND\_CHAIR* is an indicator variable equal to 1 if a superannuation fund has an independent chairperson on the board, 0 otherwise.

#### **2.4.2.4 Gender diversity**

Prior studies suggest that female directors on the board promote greater diversity on the board by providing different perspectives and a greater level of discussion in decision making processes (Gul et al., 2011; Srinidhi et al., 2011). The domestic and international standards, including the ASX Corporate Governance Principles and Recommendations (2014) (Recommendation 1.5) and G20/OECD Principles of Corporate Governance 2015 (Part VI, (E), (4)), advocate the need for board gender diversity. Therefore, a greater proportion of female directors on the board suggests better governance practices. *FEMALE\_DIR* is measured as the percentage of female directors on the board.

#### **2.4.2.5 Director busyness**

Directors who hold multiple outside directorships lack time and effort to perform their responsibilities and duties well (Ferris et al., 2003; Schnake et al., 2005; Fich and Shivdasani, 2006). It is also possible that busy directors are expert in decision-making as they attain board experience and reputation from multiple-directorships (Fama and Jensen, 1983; Ferris et al., 2003). However, in this thesis, busy directors are conjectured to indicate poor governance practices as they are associated with concerns arising from conflicts of interests and have insufficient time to focus a specific role. *BUSY\_DIR* is measured as the total number of outside

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<sup>89</sup> In this study, an independent director is a director which superannuation funds classify as either independent, non-executive or external directors.

directorships on ASX-listed companies held by directors divided by the total number of directors on the board.<sup>90</sup>

#### **2.4.2.6 Director competence**

To capture directors' competence, this thesis focuses on the financial expertise and superannuation fund industry experience of board members.

##### Financial qualification

Although neither *the SIS Act 1993* nor *the APRA Prudential Standards* require directors to have a financial qualification, prior studies suggest that directors who have accounting and financial expertise improve firm value (Davidson et al., 2004; DeFond et al., 2005). It is conjectured that these directors would use their financial skills and expertise to achieve better outcomes for members of superannuation funds. Thus, the presence of directors with financial qualifications suggests better governance practices. *FINANCIAL* is an indicator variable equal to 1 if a superannuation fund has at least one director with financial expertise, including accounting and finance qualifications on the board, 0 otherwise.<sup>91</sup>

##### Superannuation fund experience

Prior studies suggest that directors with related industry experience provide better advice to the board and are associated with higher firm value (Dass et al., 2014; Faleye et al., 2018). Due to the complexity of the superannuation fund industry, directors who have prior superannuation industry experience should promote better superannuation fund outcomes. *EXPERIENCE* is an indicator variable equal to 1 if a superannuation fund has at least one director with prior superannuation fund experience on the board, 0 otherwise.<sup>92</sup>

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<sup>90</sup> Directors who obtain their board skills and experience from outside directorships in publicly listed companies are examined in this thesis. Untabulated results including directorships from other superannuation fund boards in the regression with all other governance variables provide similar results.

<sup>91</sup> Director's qualifications have been back-filled; that is, the director's qualifications extracted from the annual reports and relevant disclosures indicating financial qualifications from any year are filled for other years throughout the sample. For example, if the 2015 Annual Report discloses information that a director has financial qualifications but there is no disclosure of qualifications for that director in the prior report, then it is assumed that this director has financial qualifications.

<sup>92</sup> Since 1 July 2014, superannuation funds are required to disclose directors' experience either in their annual reports or on their websites (under s29QB of *the SIS Act 1993*). However, prior to this date, superannuation funds disclose directors' experience voluntarily.

#### 2.4.2.7 Director tenure

Long tenure diminishes a director's independence, and monitoring and advising capacity; consequently, it has a detrimental effect on firm outcomes (Bhagat and Black, 2002; Vafeas, 2003). Thus, directors with a shorter tenure indicate better governance practices. *TENURE* is measured as the total number of years directors have been employed in the fund divided by the total number of directors on the board.

#### 2.4.2.8 Board size

Prior studies argue that larger boards provide less effective monitoring and efficient decision-making due to poor communication and difficulty in making decisions from various perspective (Lipton and Lorsch, 1992; Yermack, 1996). A number of studies show evidence that smaller boards are associated with better firm value (Yermack, 1996) and lower fund fees (Tufano and Sevick, 1997). Board size (*BFSIZE*) is defined as the total number of directors on the board.

Importantly, *BFSIZE* is not included in *GOV\_INDEX* as it is at the fund level, not at the director level – *GOV\_INDEX* includes individual director's characteristics only. Furthermore, the board size of retail and industry superannuation funds varies vastly due to the equal representation model implemented by industry superannuation funds. This means that industry superannuation funds are more likely to have a larger board size than retail superannuation funds. If *BFSIZE* is included in the governance index to differentiate between the good and poor governance, retail superannuation funds would mechanically have a higher score for *GOV\_INDEX* than industry superannuation funds.<sup>93</sup> This is highlighted by the findings in Table 3, Panel B, which displays the mean *BFSIZE* for retail superannuation funds as 5.136, while the average for industry superannuation funds is 8.833.

In sum, each of the governance variables is accumulated to construct the *GOV\_INDEX*. A score of 1 is received if *IND\_CHAIR* equals 1, *FINANCIAL* equals 1 and *EXPERIENCE* equals 1. The following four continuous governance variables are reconstructed as part of the index. A value of one is allocated if: *IND\_DIR* is greater than or equal to the 33<sup>rd</sup> percentile<sup>94</sup>; *FEMALE\_DIR* is greater than the 50<sup>th</sup> percentile; *BUSY\_DIR* is less than the 50<sup>th</sup> percentile;

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<sup>93</sup> This is because superannuation funds with smaller boards are considered as having better governance practices.

<sup>94</sup> The 33<sup>rd</sup> percentile is used for *IND\_DIR* instead of the 50<sup>th</sup> percentile as the Bills (*Superannuation Legislation Amendment (Trustee Governance) Bill 2015* and *Superannuation Laws Amendment (Strengthening Trustee Arrangements) Bill 2017*) require superannuation funds to comply with having a minimum of one-third of independent directors on the board.

and *TENURE* is less than the 50<sup>th</sup> percentile. Therefore, the possible total score of *GOV\_INDEX* ranges between 0 and 7. A higher score of *GOV\_INDEX* indicates good governance practices, while, a lower score represents poor governance practices. *GOV\_INDEX* is used in Model (1) and (2). The expectation of the coefficients on *GOV\_INDEX* is positive in Model (1) and negative in regression Model (2). A summary of the variable definitions are presented in Table 1.

### 2.4.3 Control variables

Following prior literature, three control variables are included in Model (1) and (2) (e.g. Nguyen et al., 2012; Tan and Cam, 2013; Nisbet 2013; Liu, 2014; Liu and Ooi, 2016; Liu and Ooi, 2019).<sup>95</sup> First, the natural logarithm of total assets (*Ln\_TA*) is included to control for fund size, as large superannuation funds may benefit from diversified investments through a wide range of asset classes and lower operating costs that are dispersed among larger assets (Cummings, 2016). Second, industry superannuation funds have a lower number of investment options compared to retail superannuation funds, as retail superannuation funds design and develop investment options to suit risk preferences of individual members. The natural logarithm of investment options (*Ln\_INV\_OPTIONS*) is applied as a proxy for investment complexity. Third, preservation age<sup>96</sup> is included as a control (*PRS\_AGE*) as members are more inclined towards a conservative investment portfolio to manage the liquidity issue of benefit payments when they are reaching retirement-phase (Cummings and Ellis, 2015). *PRS\_AGE* is measured as the percentage of members who are aged 50 or over.<sup>97</sup> As a number of retail superannuation funds are managed by the same corporate trustee, trustee fixed effects are included in all models.

### 2.4.4 Sample selection

Financial data is obtained from APRA *Annual Fund-level Superannuation Statistics back series* and APRA *Superannuation Fund-level Profiles and Financial Performance* statistics. All governance characteristics data, except *BUSY\_DIR* (which is obtained from the Connect 4

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<sup>95</sup> The log of total member accounts is not included in the models as the correlation coefficient between the log of the total member accounts and *Ln\_TA* is high (Spearman correlation is 0.7724 and Pearson correlation is 0.7686). When the log of the total member accounts is included as a control variable, the results remain generally the same.

<sup>96</sup> The preservation age is when members can start drawing down their retirement benefits.

<sup>97</sup> Under *Regulation 6.01 of the SIS Reg 1994*, the preservation age starts from the age of 55 depending on a member's date of birth. However, this study uses the age of 50 instead of the age 55 to calculate *PRS\_AGE* due to data inconsistency, where the member age cohorts are categorised in different age groups from one year to another.

Boardroom database), are hand collected from annual reports, superannuation fund websites, and relevant documents (disclosed under s29QB of *the SIS Act 1993*).

This thesis focuses on the period between 2010 and 2016 which is after the Cooper Review in 2010. An initial sample of 2,101 is obtained from APRA 2018 *Annual Fund-level Superannuation Statistics back series* and APRA 2014 *Superannuation Fund-level Profiles and Financial Performance*. As this chapter focuses on retail and industry superannuation funds, 500 observations of corporate and public sector funds are excluded. In addition, 55 observations of defined benefit superannuation funds are excluded as these funds have a different operational structure to defined contribution funds (Liu and Ooi, 2016).<sup>98</sup> A further 510 observations are removed from the sample due to missing governance information<sup>99</sup>, and 108 observations are excluded due to missing financial information. The final sample consists of 928 fund-year observations for the period between 2010 and 2016. The summary of the sample selection process is displayed in Table 2.

< Insert Table 2 >

## 2.5 Results

### 2.5.1 Descriptive statistics

Table 3 provides descriptive statistics for the variables included in regression Model (1) and Model (2). Panel A reveals that the mean (median) *ROA* is 5.866 percent (6.423 percent). Despite the positive investment returns, the mean *EXCESS\_ROA* is -0.355, suggesting that superannuation funds generated lower excess investment returns. Consistent with the operating expense ratio in OECD statistics (2017) which falls within the range of 0.7 and 0.9 percent, the mean (median) *OP\_EXP\_RATIO* is 0.787 percent (0.563 percent). The average *GOV\_INDEX* for superannuation funds is 3.471, suggesting that boards demonstrate on average 3 of the 7 indicators for good governance. The mean *IND\_DIR* and *FEMALE\_DIR* are 0.335 and 0.244 respectively; these findings are higher than those reported in Liu (2014), which is based on a sample of 100 funds from 2006. The average outside directorships on ASX-listed companies held by superannuation fund board members is 0.531, which is less than one outside

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<sup>98</sup> The sample contains defined contribution funds and hybrid funds which include both defined benefit and defined contribution components.

<sup>99</sup> The missing governance information arises due to the lack of availability of annual reports for some superannuation funds which are no longer operating. These superannuation funds stop their operations either because they were unable to sustain their operations or merge voluntarily to benefit from greater scale (Rowell, 2017).

directorship. Table 3, Panel A, also reveals that, on average, 74.7 percent of superannuation funds have at least one director on the board who holds accounting and financial qualifications (*FINANCIAL*) and 36.9 percent of superannuation funds have at least one director on the board who has prior superannuation fund experience (*EXPERIENCE*). Moreover, the mean board size is 6.283, which is lower than that reported in prior studies (e.g. mean of 7.6 in Liu (2014), and 8.16 in Tan and Cam (2015)).<sup>100</sup>

< Insert Table 3 Panel A >

< Insert Table 3 Panel B >

Panel B of Table 3 displays descriptive statistics and the mean differences of variables between retail and industry superannuation funds. The univariate analysis reveals that performance, fees and many of the governance variables are statistically different between retail and industry superannuation funds. Industry superannuation funds have higher performance (*ROA* and *EXCESS\_ROA*) and lower fees (*OP\_EXP\_RATIO* and *EXCESS\_OP\_EXP\_RATIO*) than retail superannuation funds, although retail superannuation funds generally employ good governance practices. Specifically, industry superannuation funds outperform retail superannuation funds by 1.084 percent based on *ROA*. Also, the mean *EXCESS\_ROA* for industry superannuation funds (0.432 percent) is higher than retail superannuation funds (-0.710 percent). Moreover, on average, industry superannuation funds have a lower *OP\_EXP\_RATIO* (0.581 percent) than retail superannuation funds (0.880 percent). After adjusting the operating expense ratio for each year, the mean *EXCESS\_OP\_EXP\_RATIO* for industry superannuation funds (-0.003 percent) remained lower than retail superannuation funds (0.298 percent). While the outcomes are better for industry superannuation funds, the mean *GOV\_INDEX* for retail superannuation funds (3.695) is higher than industry superannuation funds (2.972). One possible reason for better governance employed by retail superannuation funds is that financial institutions, which operate retail superannuation funds, comply with the ASX Corporate Governance Principles, *Corporations Act 2001 (Cth)*, and *APRA Prudential Standards*. Furthermore, as expected, the mean of *BFSIZE* for retail superannuation funds (5.136) is lower than industry superannuation funds (8.833) as industry superannuation funds employ an equal representation model. Because retail superannuation funds do not have to comply with the equal representation model, retail

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<sup>100</sup> The reason for this variation in board size compared with other studies is because of the differences in the sample. Specifically, Liu (2014) uses 100 observations for the period 2006; and Tan and Cam (2015) use 81 not-for-profit superannuation funds for the period between 2009 and 2011.

superannuation funds have a higher proportion of independent directors on the board than industry superannuation funds, 44.3 percent versus 9.5 percent respectively.<sup>101</sup> Panel B also reveals that, as expected, the mean of *BUSY\_DIR* for retail superannuation funds (0.689) is higher than industry superannuation funds (0.180). As retail superannuation funds are affiliated with their parent company, typically ASX-listed financial institutions, directors of retail superannuation funds are more likely to have multiple directorships on ASX-listed companies.

In addition, the mean of the control variables are statistically different between retail and industry superannuation funds. In particular, the mean of *INV\_OPTIONS* for retail superannuation funds (233 investment options) is much higher than industry superannuation funds (13 investment options). Retail superannuation funds also have 18.7 percent more members above preservation age (*PRS\_AGE*) than industry superannuation funds.

### 2.5.2 Correlation matrix

Table 4 presents a correlation matrix for the variables included in the regression models. Spearman correlation coefficients are above the diagonal and Pearson correlation coefficients are below the diagonal. It reveals that, as expected, *GOV\_INDEX* is positively correlated with *EXCESS\_ROA* (Pearson correlation is 0.0810 and Spearman correlation is -0.0222 (insignificant)) and negatively correlated with *EXCESS\_OP\_EXP\_RATIO* (Pearson correlation is -0.1037 and Spearman correlation is -0.1001). The correlation between *BFSIZE* is positively (negatively) correlated with *EXCESS\_ROA* (*EXCESS\_OP\_EXP\_RATIO*).

Furthermore, *Ln\_TA* are positively correlated with *EXCESS\_ROA* (Pearson correlation is 0.2898 and Spearman correlation is 0.2960) and negatively correlated with *EXCESS\_OP\_EXP\_RATIO* (Pearson correlation is -0.3271 and Spearman correlation is -0.3066). This suggests that larger superannuation funds have higher excess return and lower excess operating expense ratios. *PRS\_AGE* is negatively correlated with *EXCESS\_ROA* (Pearson correlation is -0.1104 and Spearman correlation is -0.2288) and *ROA* (Pearson correlation is -0.0779 and Spearman correlation is -0.1846), indicating that superannuation funds with older aged members are correlated with lower excess return which could be due to allocating investments in conservative asset classes with lower expected returns.

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<sup>101</sup> The percentage of independent directors on the board of not-for-profit superannuation in Tan and Cam (2015) study is 9 percent.

< Insert Table 4: Correlation coefficient matrix >

### 2.5.3 The association between the governance practices and performance of Australian superannuation funds (*H1*)

Table 5 presents the results estimating the association between governance practices (*GOV\_INDEX*) and excess return on asset (*EXCESS\_ROA*).<sup>102</sup> Using an unbalanced panel dataset, all the regression models in Table 5 cluster standard errors by funds. In Panel A, column (1) of Table 5, the R-squared of the regression is 18.9 percent. As the performance, fees and board structures are different between retail and industry superannuation funds, the regression model is estimated separately for retail and industry superannuation funds. Panels A and B of Table 5 present findings on the association between *EXCESS\_ROA* and governance practices of retail superannuation funds and industry superannuation funds, respectively.

< Insert Table 5 Panel A >

In column (1), Panel A of Table 5, for retail superannuation funds, the coefficient on *GOV\_INDEX* (coef. = 0.129,  $p < 0.10$ ) is positively associated with *EXCESS\_ROA*, supporting *H1*. This indicates that an increase of one point of the *GOV\_INDEX* generates a higher *EXCESS\_ROA* of 0.129 percent. This finding suggests that retail superannuation funds with good governance practices generate higher excess return on assets. Columns (2) to (8) examine the effect of individual governance variables on the performance of retail superannuation funds.<sup>103</sup> Out of the seven governance variables, the coefficient on *FINANCIAL* (coef. = 0.518,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 0.769,  $p < 0.01$ ) show a positive and significant association with *EXCESS\_ROA*. This suggests that retail superannuation funds with directors who have financial qualifications and prior superannuation industry experience generate higher *EXCESS\_ROA*. The final column (9) includes all individual governance variables simultaneously to examine the effect of individual governance variables in the pooled regression estimation. The results again reveal a positive and significant coefficient on *EXPERIENCE* (coef. = 0.716,  $p < 0.05$ ), whilst other governance variables show an insignificant association with *EXCESS\_ROA*.

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<sup>102</sup> The excess return on assets (*EXCESS\_ROA*) is used rather than the raw return to measure the performance of superannuation funds. The excess return is used to measure fund performance as it is a relative return in comparison to the overall performance of superannuation funds. The raw return (*ROA*) as an alternate measure of performance is examined in Section 2.6.2 as an additional test.

<sup>103</sup> The regression results including individual governance variables from column (2) to (8) need to be interpreted with caution as other governance variables are not included as controls in these step-wise regression models.

Consistent with predictions, the coefficient on *Ln\_TA* reveals a positive and significant association with *EXCESS\_ROA*. The findings reveal that retail superannuation funds with larger assets generate a greater excess return on assets. The positive (negative) correlation between *Ln\_TA* and *EXCESS\_ROA* (*EXCESS\_OP\_EXP\_RATIO*) supports the findings, which suggests that superannuation funds with larger assets manage costs across asset-units efficiently. Interestingly, the positive and significant coefficients on *Ln\_INV\_OPTIONS* in all columns indicate that retail superannuation funds with more investment options generate higher excess return on assets than those funds with a smaller number of investment options. One possible explanation is that retail superannuation funds with a higher number of investment options allocate assets and manage more complex investments with careful consideration of risk preferences of each member, rather than allocating assets into default funds.

< Insert Table 5 Panel B >

In Panel B of Table 5, for industry superannuation funds, the coefficient on *GOV\_INDEX* is insignificant, not supporting *H1*. Except for *BUSY\_DIR*, other governance variables are insignificant.<sup>104</sup> In contrast to the findings in Liu (2014), the coefficient on *BUSY\_DIR* (coef. = 1.143,  $p < 0.10$ ) has a positive and significant association with *EXCESS\_ROA*. This indicates busy directors on the board play an important role in strengthening the performance of industry superannuation funds as they make use of board experience obtained from other outside directorships.

Interestingly, opposite to predictions, the coefficients on *PRS\_AGE* in all regression estimations in Panel B of Table 5 exhibit a positive and significant association with *EXCESS\_ROA*. A possible explanation is that as members reach retirement, they have obtained more investment knowledge through investment experience and make conscientious investment decisions to maximise their retirement benefits, which are an important source of income, when they retire.

In sum, the findings indicate that good governance practices do not always improve the performance of retail and industry superannuation funds. Retail superannuation funds benefit from directors with financial qualifications and prior superannuation fund experience, while industry superannuation funds benefit from having busy directors on the board. It is evident

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<sup>104</sup> In untabulated results, an indicator variable, which is equal to 1 if the board consists at least one-third of independent directors, is included in the regression model and the coefficient shows a positive and significant association with *EXCESS\_ROA* of industry superannuation funds (coef. = 1.913,  $p < 0.10$ ).

that some governance variables are more beneficial for retail superannuation funds than industry superannuation funds and vice-versa, as these funds have different institutional arrangements from one another.

#### **2.5.4 The association between the governance practices and fees of Australian superannuation funds (H2)**

Table 6 provides the results for the association between governance practices and fees (*EXCESS\_OP\_EXP\_RATIO*) of Australian superannuation funds. Based on Panel A, column (1) of Table 6, the R-squared of the regression is 11.3 percent. Although the findings show no evidence to conclude that overall good governance practices reduce the superannuation fund costs, some individual governance characteristics explain the fees of Australian superannuation funds.

<Insert Table 6 Panel A>

Panel A of Table 6 reports the regression results of Model (2) for retail superannuation funds. In column (1), the insignificant coefficient on *GOV\_INDEX*, reveals that good governance practices have no association with *EXCESS\_OP\_EXP\_RATIO*. Specifically, out of the seven governance variables, the coefficients on *BUSY\_DIR* (coef. = 0.055,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 0.074,  $p < 0.10$ ) are positive and significant, while the other governance variables are insignificant. Consistent with predictions, the findings reveal that a one unit change in *BUSY\_DIR* increases *EXCESS\_OP\_EXP\_RATIO* by 0.055 percent. This indicates that busy directors do not perform their responsibilities and duties to minimise the costs for members perhaps due to their lack of time and effort (Fich and Shivdasani, 2006), and/or advocating outsourcing.<sup>105</sup> Interestingly, contrary to predictions, retail superannuation funds with directors who have prior experience increase the excess operating expense ratio by 0.074 points. One possible explanation for this positive association is that superannuation funds are complex, and require highly demanded expert directors who command higher fees, so that there is less reliance on external service providers (Cooper et al., 2010). In column (9), when all individual governance variables are included in the regression Model (2), the results remain

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<sup>105</sup> Australian superannuation funds outsource many of their functions to external service providers (Liu and Arnold, 2010; Liu and Ooi, 2019). Liu and Arnold (2010) find that superannuation funds outsource functions such as administrative services, asset allocation, auditing, custody, actuarial services, investment management, legal services, and sales and marketing.

the same. The coefficient on *BUSY\_DIR* (coef. = 0.063,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 0.065,  $p < 0.10$ ) is positive and significant.

Contrary to predictions, a negative and significant coefficient on *Ln\_INV\_OPTIONS* (coef. =  $-0.076$ ,  $p < 0.01$  in column (1)) indicates that retail superannuation funds with a larger number of investment options charge a lower *EXCESS\_OP\_EXP\_RATIO*. One possible explanation is that members who invest outside the default fund products (e.g. MySuper products) are less costly for superannuation funds to manage as these members are knowledgeable and intelligent investors who spend time and effort in constructing their portfolio according to their risk preferences.

The results for retail superannuation funds show that the governance index, which captures good governance practices, has no association with *EXCESS\_OP\_EXP\_RATIO*. However, some individual governance variables, such as busy directors and directors with prior superannuation fund experience, are positively associated with *EXCESS\_OP\_EXP\_RATIO*.

< Insert Table 6 Panel B >

Panel B of Table 6 presents the regression results for industry superannuation funds. The coefficient on *GOV\_INDEX* is insignificant, not supporting *H2*. Although good governance practices employed by industry superannuation funds have no association with *EXCESS\_OP\_EXP\_RATIO*, a number of governance characteristics are significant. Consistent with predictions, the coefficients on *IND\_DIR* (coef. =  $-0.651$ ,  $p < 0.10$ ) and *IND\_CHAIR* (coef. =  $-0.236$ ,  $p < 0.05$ ) have a negative and significant association with *EXCESS\_OP\_EXP\_RATIO*. The findings support the board independence recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014)—that is, industry superannuation funds with more independent directors and an independent chairperson on the board enhance members' outcomes. This finding differs to the findings in Liu (2014) and Tan and Cam (2015) which find no association between board independence and fees charged by Australian superannuation funds.

All control variables are significant. As expected, the coefficient on *Ln\_TA* (coef. =  $-0.217$ ,  $p < 0.01$  in column (1)) is negative and *Ln\_INV\_OPTIONS* (coef. = 0.094,  $p < 0.01$  in column (1)) is positive. The findings indicate that industry superannuation funds with larger assets and a lower number of investment options charge a lower operating expense ratio.

The results of industry superannuation funds in Panel B of Table 6, show that good governance practices employed by industry superannuation funds on aggregate have no association with *EXCESS\_OP\_EXP\_RATIO*. However, in particular, independent directors and an independent chairperson on the board of industry superannuation funds help to reduce the operating costs for members.

In sum, although good governance practices have no effects on both retail and industry superannuation funds fees, there are a number of individual governance variables that play an important role in reducing operating costs. In particular, busy directors and directors with prior superannuation fund experience play a significant role in the operating expense ratio of retail superannuation funds; while board independence play a significant role in the operating expense ratio of industry superannuation funds. The findings show that having more independent directors on the boards of industry superannuation funds helps to reduce operating costs, while less busy directors and directors with prior superannuation funds on the board of retail superannuation funds help to reduce operating costs. The findings of industry superannuation funds support the board independence recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014).

Overall, some findings in this thesis differ from prior evidence from superannuation funds in Liu (2014) and Tan and Cam (2015). This could be due to a different sample size and sample period. Based on the findings in this thesis, a busy board is positively associated with performance of industry funds while Liu (2014) finds the opposite. Also, while board independence reduce the fees of industry superannuation funds, Liu (2014) and Tan and Cam (2015) do not find such association.

## **2.6 Additional tests**

### **2.6.1 The effect of the implementation of the governance disclosure requirements**

To examine the effect of the implementation of the governance disclosure requirements, which requires Australian superannuation funds to disclose the remuneration and details of directors and executives under s29QB of *the SIS Act 1993*, the sample is separated into two sub-sample periods.<sup>106</sup> This disclosure requirement of governance practices of Australian superannuation funds enhances the transparency, reduces information asymmetry, and consequently mitigates

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<sup>106</sup> Specifically, since 1 July 2014, superannuation funds are required to disclose information including directors' profiles, qualifications, experience, interest and duties, and compensation either in their annual reports or on their websites.

agency conflicts between management and members. Moreover, due to enhanced disclosures, some superannuation funds may adjust their behavior which improves or alters the outcomes for members. It is expected that superannuation funds can gain trust and security from members by disclosing the improvements in their governance practices. The first sub-sample period is from 2010 to 2014 and the second sub-sample period is from 2015 to 2016. Table A1.1.1A and A1.1.1B show summary statistics and the mean differences of variables between the two periods for retail and industry superannuation funds respectively.

< Insert Table A1.1.1A >

In Table A1.1.1A, the findings reveal that *ROA*, *EXCESS\_ROA* and *OP\_EXP\_RATIO* and many of the governance variables of retail superannuation funds (e.g. *GOV\_INDEX*, *IND\_DIR*, *IND\_CHAIR*, *FEMALE\_DIR*, *BUSY\_DIR*, *FINANCIAL*, and *EXPERIENCE*) are statistically different before and after the implementation of the governance disclosure requirements. The mean *ROA* has decreased by 2.230 percent, while the mean *EXCESS\_ROA* has increased by 0.505 percent. Also, the mean *OP\_EXP\_RATIO* has decreased by 0.186 percent. Moreover, the mean of the governance variables has changed in the directions predicted in Section 2.4.2 of this chapter. For example, on average, the mean of *IND\_DIR* has increased from the period 2010–2014 to the period 2015–2016, from 41.0 percent to 51.1 percent. The mean *BUSY\_DIR* has decreased by 0.406, indicating that directors on the board of superannuation funds have less outside directorships on ASX-listed companies. One explanation for the decrease in outside directorships is that superannuation funds are aware of and are taking steps to address potential concerns of conflicts of interest that could arise from multiple outside directorships. In sum, after the implementation of the disclosure requirements in 2014, retail superannuation funds have employed better governance practices and generated a higher *EXCESS\_ROA* and lower *OP\_EXP\_RATIO* than the prior sub-sample period 2010-2014.

< Insert Table A1.1.1B >

The sub-period findings for industry superannuation funds displayed in Table A1.1.1B provide similar results to those for retail superannuation funds in Table A1.1.1A. While the mean *ROA* has decreased by 1.729 percent, the mean *EXCESS\_ROA* has increased by 0.890 percent. The mean *OP\_EXP\_RATIO* has decreased by 0.126 percent. Also, the mean *GOV\_INDEX* has increased from 2.766 to 3.482, suggesting that the governance practice of industry superannuation funds have improved. Specifically, the mean *FEMALE\_DIR*, *FINANCIAL* and

*EXPERIENCE* have increased and shown statistically significant mean differences between the two sub-sample periods. The mean of *IND\_DIR* and *IND\_CHAIR* have increased by 2.5 percent and 8.3 percent, respectively; however, they are not statistically different between the two sub-periods. Overall, the governance practices of industry superannuation funds have improved along with a higher *EXCESS\_ROA* and lower *OP\_EXP\_RATIO* from the 2010–2014 sub-sample period to the 2015–2016 sub-sample period.

The regression Model (1) is estimated separately for the two sub-sample periods to examine the association between governance practices of superannuation funds and *EXCESS\_ROA* before and after the implementation of disclosure requirements. Table A1.1.2A shows the regression results of retail superannuation funds for the period from 2010–2014; while Table A1.1.2B shows the regression results of retail superannuation funds for the period 2015–2016.

< Insert Table A1.1.2A >

In Table A1.1.2A, the coefficient on *GOV\_INDEX* is insignificant, not supporting *H1*. Out of the seven governance variables, contrary to predictions, the coefficients on *IND\_DIR* (coef. =  $-1.372$ ,  $p < 0.10$ ) and *IND\_CHAIR* (coef. =  $-0.496$ ,  $p < 0.10$ ) have a negative and significant association with *EXCESS\_ROA*. This finding reveals that retail superannuation funds with independent directors and an independent chairperson on the board generate lower excess return on asset for the period 2010–2014. The results in the correlation matrix in Table 4 show that *IND\_DIR* and *IND\_CHAIR* are positively correlated with *BUSY\_DIR* and negatively correlated with *EXPERIENCE*, suggesting that independent directors and an independent chairperson may not manage the funds effectively due to a lack of time and effort from having multiple outside directorships, and insufficient knowledge and experience in the superannuation fund industry. Furthermore, it could also be that independent directors and chairperson have insufficient information about the funds as the CEOs disclose less information, limiting the ability of independent directors to perform their monitoring and advisory role effectively (Adams and Ferreira, 2009). However, in column (9), when all seven governance variables are included in a single regression estimation, none of the governance variables are statistically significant.

< Insert Table A1.1.2B >

In Table A1.1.2B, the insignificant coefficient on *GOV\_INDEX*, suggests that better governance practices show no association with *EXCESS\_ROA* after the implementation of the

governance disclosure requirements.<sup>107</sup> This suggests that any changes in governance practices were not associated with higher returns. Further, contrary to predictions, the coefficients on *IND\_CHAIR* (coef. = -1.851,  $p < 0.10$ ) and *BUSY\_DIR* (coef. = 2.380,  $p < 0.05$ ) are negative and positive, respectively. The findings suggest that an independent chairperson on the board of retail superannuation funds has a negative influence on performance, whereas busy directors on the board enhance the performance of retail superannuation funds. It is possible that busy directors incorporate board experience from other boards of ASX-listed companies in managing superannuation funds. Consistent with predictions, the coefficients on *FINANCIAL* (coef. = 0.781,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 1.096,  $p < 0.01$ ) have a positive and significant association with *EXCESS\_ROA*. In column (9), when all seven governance variables are included in a single regression estimation, the results remain similar to the findings from column (2) to column (8). In particular, the findings reveal a negative coefficient on *IND\_CHAIR* (coef. = -5.471,  $p < 0.05$ ) and positive coefficients on *BUSY\_DIR* (coef. = 3.790,  $p < 0.01$ ) and *EXPERIENCE* (coef. = 0.779,  $p < 0.10$ ).

< Insert Table A1.1.2C >

Next, Table A1.1.2C shows the regression results of industry superannuation funds for the period from 2010–2014 and Table A1.1.2D shows the regression results of industry superannuation funds for the period 2015–2016. Similar to the main findings, the results in Table A1.1.2C show an insignificant association between *GOV\_INDEX* and *EXCESS\_ROA*. More importantly, in column (2), the coefficient on *IND\_DIR* (coef. = 8.173,  $p < 0.05$ ) is positive. This finding is consistent with the recommendations from both the Cooper Review (2010) and the Murray Inquiry (2014). The finding suggests that industry superannuation funds with more independent directors on the board for the period 2010–2014 generate an 8.173 percent higher *EXCESS\_ROA*. Moreover, in the final column (9) with all governance variables in a single regression estimation, the coefficients on *IND\_DIR* (coef. = 6.968,  $p < 0.10$ ) and *BUSY\_DIR* (coef. = 1.077,  $p < 0.05$ ) are positive and significant.

< Insert Table A1.1.2D >

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<sup>107</sup> In Table A1.1.1A, there are some variations in the standard deviation of *EXCESS\_ROA* (standard deviations for retail 2010–2014 and retail 2015–2016 are 2.805 and 1.816, respectively), while the standard deviation of *GOV\_INDEX* for the two sub-sample periods are largely unchanged (standard deviations for retail 2010–2014 and retail 2015–2016 are 1.726 and 1.859, respectively).

In Table A1.1.2D, after the introduction of the disclosure requirements in 2014, all governance variables show an insignificant association with *EXCESS\_ROA* of industry superannuation funds. Despite the improvement in governance practices of industry superannuation funds from the period 2010–2014 to the period 2015–2016 (the mean of *GOV\_INDEX* in Table A1.1.1B has increased by 0.716), none of the governance variables enhances the performance of industry superannuation funds after the implementation of disclosure requirements. This suggests that the adoption of new governance arrangements did not improve member returns.

In sum, there is no evidence that the governance index is associated with excess return on assets before and after the implementation of the governance disclosure requirements. The findings are similar to the main results for industry superannuation funds but not for retail superannuation funds. Furthermore, a number of individual governance practices show significant results. For retail superannuation funds, busy directors, directors with financial qualifications and prior superannuation fund experience are positively associated with, and independent directors and an independent chairperson are negatively associated with, *EXCESS\_ROA*. For industry superannuation funds, independent directors are positively associated with *EXCESS\_ROA*. Interestingly, retail superannuation funds' boards with more independent directors and an independent chairperson have detrimental effects on performance, whereas, industry superannuation funds' boards with more independent directors enhance the performance.

< Insert Table A1.1.3A >

Table A1.1.3A and A1.1.3B present the regression results of the association between governance practices and the *EXCESS\_OP\_EXP\_RATIO* of retail superannuation funds for the period 2010–2014 and for the period 2015–2016 respectively. In column (1) of Table A1.1.3A, the coefficient on *GOV\_INDEX* (coef. =  $-0.025$ ,  $p < 0.05$ ) has a negative and significant association with *EXCESS\_OP\_EXP\_RATIO*, supporting *H2*. This suggests that retail superannuation funds with good governance practices minimise operating costs for members. Consistent with predictions, the coefficients on *IND\_DIR* (coef. =  $-0.269$ ,  $p < 0.01$ ), *IND\_CHAIR* (coef. =  $-0.130$ ,  $p < 0.01$ ) and *FEMALE\_DIR* (coef. =  $-0.291$ ,  $p < 0.01$ ) have a negative and significant association with *EXCESS\_OP\_EXP\_RATIO*. The findings indicate that retail superannuation funds with an independent chairperson, more independent directors and female directors on the board charge a lower excess operating expense ratio prior to the introduction of disclosure requirements. When all individual governance variables are included

in a single regression estimation, none of the governance variables are significant. This could be due to a multicollinearity issue where the linear relationships of some of the explanatory variables are highly related.<sup>108</sup> The correlations matrix table shows high correlations among the explanatory variables: based on Pearson correlation, explanatory variables coefficients range between  $-0.4331$  (between *FEMALE* and *TENURE*) and  $0.6911$  (between *IND\_DIR* and *IND\_CHAIR*); based on Spearman correlation, explanatory variables coefficients range between  $-0.6058$  (between *FEMALE* and *TENURE*) and  $0.7660$  (between *IND\_DIR* and *IND\_CHAIR*). Nevertheless, the coefficient signs of the seven governance variables remain the same, except the coefficient on *FINANCIAL*.

The control variables of *Ln\_INV\_OPTIONS* and *PRS\_AGE* display significant coefficients. Opposite to predictions, a negative and significant coefficient is found on *Ln\_INV\_OPTIONS* (coef. =  $-0.053$ ,  $p < 0.10$  in column (9)), meaning that retail superannuation funds with more investment options have a lower *EXCESS\_OP\_EXP\_RATIO*. Interestingly, the coefficient on *PRS\_AGE* (coef. =  $0.438$ ,  $p < 0.05$  in column (9)) has a positive association with *EXCESS\_OP\_EXP\_RATIO*. This suggests that there are increased costs involved in processing retirement benefit payments (e.g. account-based pension and lump-sum payments) as members reach their retirement phase where they are eligible to withdraw their retirement benefits.

< Insert Table A1.1.3B >

In Table A1.1.3B, for retail superannuation funds, the coefficient on *GOV\_INDEX* is insignificant in the sub-sample period 2015–2016, which is similar to the main findings. Although in Table A1.1.1A, *EXCESS\_OP\_EXP\_RATIO* decreases by 0.09 percent and *GOV\_INDEX* increases by 0.915 points from the period 2010–2014 to the period 2015–2016, good governance practices of retail superannuation funds have no association with *EXCESS\_OP\_EXP\_RATIO*. However, some individual governance variables show a significant association with *EXCESS\_OP\_EXP\_RATIO*. Interestingly, the coefficient on *IND\_DIR* changes from a negative sign in the period 2010–2014 to a positive sign in the period 2015–2016. The positive and significant coefficient on *IND\_DIR* (coef. =  $0.871$ ,  $p < 0.10$ , in column (9)) in the period 2015–2016 reveals that retail superannuation funds with more independent directors on the board charge higher operating expenses. One possible explanation for this positive association is that directors' compensation is included in administration and

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<sup>108</sup> *IND\_DIR* and *IND\_CHAIR* show a value of 16 and 12, respectively, under the variance inflation factors (VIF) test.

operating expenses; prior research shows independent directors receive higher compensation than other directors on the board (Liu and Ooi, 2016).<sup>109</sup> The coefficient on *IND\_CHAIR* (coef. = -0.633,  $p < 0.05$ ) is negative and significant. While retail superannuation funds with more independent directors on the board have a higher operating expense ratio, retail superannuation funds with an independent chairperson on the board have a lower operating expense ratio. A possible explanation for this finding is that the total compensation of independent directors on the board of retail superannuation funds outweighs their benefits, whereas an independent chairperson on the board reduces the operating and administration expenses. Further, the proportion of independent directors on the board of retail superannuation funds has increased by 10 percent in the period from 2015–2016 as shown in Table A1.1.1A. Moreover, the positive and significant coefficient on *EXPERIENCE* (coef. = 0.105,  $p < 0.05$ , in column (9)) reveals that retail superannuation funds with directors who have prior superannuation fund experience charge a higher operating expense ratio; these directors are aware of the superannuation industry and regulations, performing other activities where they satisfy all compliance requirements.

In column (9), with all governance variables included in the regression Model (2), the results remain similar, except for the

As expected, a negative and significant coefficient is found on *Ln\_TA* (coef. = -0.218,  $p < 0.01$  in column (1)). This indicates that superannuation funds with larger assets are more efficient and have an advantage in spreading their costs across asset-units. Moreover, a positive and significant coefficient on *Ln\_INV\_OPTIONS* (coef. = 0.041,  $p < 0.05$  in column (1)) indicates that superannuation funds with a larger number of investment options charge a higher *EXCESS\_OP\_EXP\_RATIO*. This reveals that, along with an increase in the number of investment options after the introduction of the new disclosure requirements (increased by 134 investment options, as shown in Table A1.1.1A), more investment options offered by retail superannuation funds are costly and inefficient for funds to manage. Furthermore, the coefficient on *PRS\_AGE* (coef. = -2.435,  $p < 0.01$  in column (1)) is negative and significant. This suggests that retail superannuation funds with a larger proportion of members who have reached their preservation age charge a lower operating expense ratio. The change in the

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<sup>109</sup> Item 10 of APRA SRS 330.0 *Statement of Financial Performance* includes (i) administration expenses, (ii) member initiated activity, (iii) advertising/marketing, (iv) commissions, (v) director/individual trustee expenses, and (vi) operating expenses. Director/individual trustee expenses include compensation for directors to carry out their functions (duties and responsibilities) as a director.

coefficient sign from a positive sign in the period 2010–2014 to a negative sign in the period 2015–2016 indicates that retail superannuation funds became more efficient in managing retirement benefits for older members.

In sum, the results show that retail superannuation funds with good governance practices in the sample period 2010–2014 charge a lower operating expense ratio, whereas retail superannuation funds with good governance practices have no association with *EXCESS\_OP\_EXP\_RATIO* in the sub-sample period 2015–2016. Prior to the implementation of governance disclosure requirements, retail superannuation funds with an independent chairperson, and more independent and female directors on the board, charge a lower operating expense ratio. After the implementation of governance disclosure requirements, however, an increase in the proportion of independent directors on the board led to higher operating costs; this suggests that the costs of having more independent directors outweighs the benefits.

< Insert Table A1.1.3C >

Table A1.1.3C and A1.1.3D present the regression results of the association between governance practices and the *EXCESS\_OP\_EXP\_RATIO* of industry superannuation funds for the period 2010–2014 and for the period 2015–2016, respectively. Similar to the main findings, the coefficient on *GOV\_INDEX* of industry superannuation funds for the period 2010–2014 is insignificant. Despite this, the coefficients on *IND\_DIR* and *IND\_CHAIR* are significant. As expected, the coefficients on *IND\_DIR* (coef. =  $-0.726$ ,  $p < 0.10$ ) and *IND\_CHAIR* (coef. =  $-0.240$ ,  $p < 0.01$ ) are negative. The findings suggest that industry superannuation funds with more independent directors and an independent chairperson on the board charge lower fees prior to the implementation of governance disclosure requirements, supporting the Cooper Review (2010) and the Murray Inquiry (2014) recommendations on board independence. Moreover, the negative and significant coefficient on *B\_SIZE* (coef. =  $-0.026$ ,  $p < 0.01$ , in column (9)) suggests that industry superannuation funds with larger boards charge a lower operating expense ratio. In column (9), with all governance variables in a single regression estimation, the coefficients on *IND\_CHAIR* (coef. =  $-0.264$ ,  $p < 0.01$ ) and *TENURE* (coef. =  $-0.015$ ,  $p < 0.01$ ) show significant results. Contrary to predictions, *TENURE* has negative and significant coefficients, indicating that industry superannuation funds with long-tenured directors on the board help to reduce the operating expense ratio. Perhaps these long-tenured directors obtain more knowledge and information about the operation of the superannuation fund so that they can manage and operate the business more efficiently in the best interest of members. Moreover,

the coefficients on  $Ln\_TA$  (coef. =  $-0.238$ ,  $p < 0.01$  in column (1)) and  $Ln\_INV\_OPTIONS$  (coef. =  $0.087$ ,  $p < 0.01$  in column (1)) are negative and positive, respectively.

< Insert Table A1.1.3D >

Similar to the main findings, the results for the sub-sample period 2015–2016 in Table A1.1.3D show that the coefficient on  $GOV\_INDEX$  is insignificant. None of the individual governance variables show a significant association with  $EXCESS\_OP\_EXP\_RATIO$ .

In sum, the findings of no association between governance practices and fees of superannuation funds before and after the implementation of governance disclosure requirements are similar to the main results except for the sub-sample period 2010–2014 for retail superannuation funds. Some individual governance variables, such as board independence and female directors, are associated with  $EXCESS\_OP\_EXP\_RATIO$ . Interestingly, the findings of the board independence of retail superannuation funds show interesting results. The negative impact of independent directors on the operating expense ratio of retail superannuation funds highlights that having more independent directors is not always beneficial for reducing the cost as the associated costs may outweigh the benefits.

## **2.6.2 Alternate measures of performance and governance index**

The association between governance practices and performance is investigated further by using alternate performance measures and a revised measure of  $GOV\_INDEX$ . Specifically, alternate performance measures, the excess of APRA rate of return ( $EXCESS\_ROR$ ) and return on asset ( $ROA$ ), is used to test the association between governance practices and the performance of superannuation funds. The APRA rate of return (ROR) is measured as net earnings after tax divided by cash flow adjusted net assets.  $EXCESS\_ROR$  is calculated as the difference between the superannuation fund's ROR and the median ROR for each year. The findings are analysed in the order of retail, industry and full (both retail and industry superannuation funds) samples.

### **Retail superannuation funds**

< Insert Table A1.2.1A >

< Insert Table A1.2.1B >

< Insert Table A1.2.1C >

First, the results of the association between governance practices and *EXCESS\_ROR* for the pooled sample, and the two sub-sample periods of retail superannuation funds, are shown in Table A1.2.1A, A1.2.1B and A1.2.1C respectively. Consistent with the main findings using *EXCESS\_ROA* in Panel A of Table 5, the coefficient on *GOV\_INDEX* has a positive and significant association with *EXCESS\_ROR* in Table A1.2.1A. Moreover, the findings for the individual governance variables remain similar. Overall, the findings are generally the same as the primary findings, which show that retail superannuation funds with good governance practices generate higher excess investment returns.

< Insert Table A1.2.2A >

< Insert Table A1.2.2B >

< Insert Table A1.2.2C >

Second, the results of the association between governance practices and *ROA* for the pooled sample, and the two sub-sample periods of retail superannuation funds, are shown in Table A1.2.2A, A1.2.2B and A1.2.2C respectively. In Table A1.2.2A, the coefficient on *GOV\_INDEX* has an insignificant association with *ROA*, which is inconsistent with the main findings in Panel A of Table 5. However, the insignificant coefficient on *GOV\_INDEX* in Table A1.2.2B and A1.2.2C is consistent with the results in Table A1.1.2A and A1.1.2B. Moreover, contrary to the main results, the coefficients on many of the individual governance variables are insignificant.

< Insert Table A1.2.3 >

Third, as additional testing, the effect of governance disclosure requirements on superannuation fund performance is examined including an indicator variable denoting the period after 2014 (*POST2014*), and an interaction term between each governance variable and *POST2014*. The results for retail superannuation funds are shown in Table A1.2.3. The insignificant coefficient on the interaction variable (*GOV\_INDEX\_P2014*) suggests that changes in governance practices of retail superannuation funds after 2014 did not improve performance. The findings show that the coefficient on *IND\_DIR* (coef. =  $-1.046$ ,  $p < 0.10$ ) is negative. Moreover, the coefficient on *FINANCIAL\_P2014* (coef. =  $0.876$ ,  $p < 0.05$ ) is positive, indicating that directors with financial qualifications help to enhance the performance of retail superannuation funds after 2014.

< Insert Table A1.2.4A >

< Insert Table A1.2.4B >

< Insert Table A1.2.4C >

Finally, to test the robustness of the governance index (*GOV\_INDEX*), the association between three different variations of the governance index and *EXCESS\_ROA* is examined. The results of the pooled sample, and the two sub-sample periods of retail superannuation funds, are presented in Table A1.2.4A, A1.2.4B and A1.2.4C respectively. Instead of a score of 1 for having at least one director with financial qualifications on the board, a score of 1 is given if *FINANCIAL* is greater than the 50<sup>th</sup> percentile; instead of a score of 1 for having at least one director with prior superannuation fund experience, a score of 1 is given if *EXPERIENCE* is greater than the 50<sup>th</sup> percentile. The coefficient on *GOV\_INDEX* in column (1) is the same as in the main results; *GOV\_INDEX1*<sup>110</sup> in column (2) consists of seven governance variables except where a score of 1 is given if *FINANCIAL* and *EXPERIENCE* is greater than the 50<sup>th</sup> percentile, while all other variables stays the same; *GOV\_INDEX2*<sup>111</sup> in column (3) consists of seven governance variables except where a score of 1 is given if *FINANCIAL* is greater than the 50<sup>th</sup> percentile, while all else stays the same; and *GOV\_INDEX3*<sup>112</sup> in column (4) consists of seven governance variables except where a score of 1 is given if *EXPERIENCE* is greater than the 50<sup>th</sup> percentile, while all else stays the same.

In Table A1.2.4A, for the pooled sample of retail superannuation funds, the coefficients on all other variations of *GOV\_INDEX* from column (2) to column (4) are insignificant. This indicates that *EXCESS\_ROA* is sensitive to the various measures of the governance index. The coefficients on all various measures of *GOV\_INDEX* for the two sub-sample periods in Table A1.2.4B and A1.2.4C are also insignificant.

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<sup>110</sup> The alternate governance index, *GOV\_INDEX1*, is the sum of seven governance variables. A score of 1 is given if: *IND\_DIR* is greater than or equal to the 33<sup>rd</sup> percentile; *IND\_CHAIR* equals 1; *FEMALE\_DIR* is greater than the 50<sup>th</sup> percentile; *BUSY\_DIR* is less than the 50<sup>th</sup> percentile; *FINANCIAL* is greater than the 50<sup>th</sup> percentile; *EXPERIENCE* is greater than the 50<sup>th</sup> percentile; and *TENURE* is less than the 50<sup>th</sup> percentile; 0 otherwise.

<sup>111</sup> The alternate governance index, *GOV\_INDEX2*, is the sum of seven governance variables. A score of 1 is given if: *IND\_DIR* is greater than or equal to the 33<sup>rd</sup> percentile; *IND\_CHAIR* equals 1; *FEMALE\_DIR* is greater than the 50<sup>th</sup> percentile; *BUSY\_DIR* is less than the 50<sup>th</sup> percentile; *FINANCIAL* is greater than the 50<sup>th</sup> percentile; *EXPERIENCE* equals 1; and *TENURE* is less than the 50<sup>th</sup> percentile; 0 otherwise.

<sup>112</sup> The alternate governance index, *GOV\_INDEX3*, is the sum of seven governance variables. A score of 1 is given if: *IND\_DIR* is greater than or equal to the 33<sup>rd</sup> percentile; *IND\_CHAIR* equals 1; *FEMALE\_DIR* is greater than the 50<sup>th</sup> percentile; *BUSY\_DIR* is less than the 50<sup>th</sup> percentile; *FINANCIAL* equals 1; *EXPERIENCE* is greater than the 50<sup>th</sup> percentile; and *TENURE* is less than the 50<sup>th</sup> percentile; 0 otherwise.

## Industry superannuation funds

< Insert Table A1.3.1A >

< Insert Table A1.3.1B >

< Insert Table A1.3.1C >

An alternate performance measure of *EXCESS\_ROR* is used to examine the effect of governance practices on the performance of industry superannuation funds. The results for the pooled sample, and the two sub-sample periods of industry superannuation funds are shown in Table A1.3.1A, A1.3.1B and A1.3.1C respectively. Consistent with the main findings in Panel B of Table 5, the coefficient on *GOV\_INDEX* has an insignificant association with *EXCESS\_ROR* in all three tables. In Table A1.3.1A, the significant positive coefficient on *BUSY\_DIR* (coef. = 1.594,  $p < 0.01$ ) supports the primary findings that industry superannuation funds with busy directors generate higher excess investment returns. Opposite to predictions, the coefficient on *FINANCIAL* (coef. = -0.757,  $p < 0.10$ ) is negative. Overall, the findings with an alternate performance measure of *EXCESS\_ROR* are similar to the main findings.

< Insert Table A1.3.2A >

< Insert Table A1.3.2B >

< Insert Table A1.3.2C >

In addition, the association between the governance practices of industry superannuation funds and an alternate performance measure of *ROA*, as a dependent variable, is examined. The findings for the pooled sample, and two sub-sample periods of industry superannuation funds, are shown in Table A1.3.2A, A1.3.2B and A1.3.2C respectively. The results are similar to the main findings in Panel B of Table 5. The coefficients on *GOV\_INDEX* are insignificant in all three tables. Moreover, the coefficient on *BUSY\_DIR* (coef. = 1.402,  $p < 0.05$ ) is positive and significant for the pooled sample in Table A1.3.2A; the coefficients on *IND\_DIR* (coef. = 8.047,  $p < 0.05$ ) and *FINANCIAL* (coef. = 0.943,  $p < 0.10$ ) are positive and significant for the sub-sample period 2010–2014 in Table A1.3.2B.

< Insert Table A1.3.3 >

Further, an indicator variable (*POST2014*) and interaction terms between each governance variable and *POST2014* are included in the regression Model (1) to investigate whether the governance disclosure requirements influence the performance (*EXCESS\_ROA*) of industry superannuation funds. In Table A1.3.3, consistent with the main findings, the coefficients on *GOV\_INDEX* and *GOV\_INDEX\_P2014* are insignificant, indicating that good governance practices of industry superannuation funds have no association with performance even after the implementation of governance disclosure requirements. Similar to the main findings, the coefficient on *BUSY\_DIR* (coef. = 1.161,  $p < 0.05$ ) has a positive and significant association with *EXCESS\_ROA*.

< Insert Table A1.3.4A >

< Insert Table A1.3.4B >

< Insert Table A1.3.4C >

Subsequently, three different measures of *GOV\_INDEX*, which includes variations to the governance variables of *FINANCIAL* and *EXPERIENCE*, are examined to check the robustness of the main findings for industry superannuation funds. The results for the pooled sample and the two sub-sample periods of industry superannuation funds are displayed in Table A1.3.4A, A1.3.4B and A1.3.4C respectively. Consistent with the main results, the coefficients on various measures of *GOV\_INDEX* are insignificant in all three tables.

### **Pooled regression with both retail and industry superannuation funds**

In addition to the separate sample of retail and industry superannuation funds, both types of superannuation funds are pooled into the same regression. The total observations increases to 928 observations for the period 2010–2016. An indicator variable, *RETAIL*, is equal to 1 if the superannuation fund is a retail superannuation fund, 0 otherwise. Although there are multicollinearity issues with the variable of *RETAIL* (the variance inflation factor (VIF) test shows that *RETAIL* dummy has almost 50 in column (1) of Table A1.4.1A), the variable is included in the regressions as there are differences between retail and industry superannuation funds.

< Insert Table A1.4.1A >

First, the association between governance practices and *EXCESS\_ROA* is examined by applying the regression Model (1). The findings for the full sample, and two sub-sample periods, of both retail and industry superannuation funds are shown in Table A1.4.1A, A1.4.1B and A1.4.1C respectively. Similar to the main findings in Panel A of Table 5, the results in column (1), Table A1.4.1A, show a positive and significant coefficient on *GOV\_INDEX* (coef. = 0.135,  $p < 0.05$ ), indicating that a one point increase of the *GOV\_INDEX* generates higher *EXCESS\_ROA* by 0.135 percent. Moreover, the coefficients on *FINANCIAL* (coef. = 0.421,  $p < 0.10$ ) and *EXPERIENCE* (coef. = 0.635,  $p < 0.01$ ) show a positive and significant association with *EXCESS\_ROA*.

A number of control variables are significant. Interestingly, the negative and significant coefficients on *RETAIL*, indicate that industry superannuation funds generate a higher excess return on asset than retail superannuation funds. In column (1), the results reveal that industry superannuation funds generate a 3.893 percent higher excess return on assets than retail superannuation funds. This finding is consistent with the findings in the correlation matrix (Table 4) and the descriptive summary in Table 3 Panel B. However, this evidence is not conclusive and is to be reported with caution due to potential omitted correlated variables.<sup>113</sup> Furthermore, the coefficients on *Ln\_TA* (coef. = 0.341,  $p < 0.01$  in column (1)) and *Ln\_INV\_OPTIONS* (coef. = 0.149,  $p < 0.05$ ) reveal a positive and significant association with *EXCESS\_ROA*.

< Insert Table A1.4.1B >

< Insert Table A1.4.1C >

The full sample is then separated into two sub-sample periods to examine the before and after effect of the implementation of disclosure requirements. Consistent with the findings for retail and industry superannuation funds for both sub-sample periods 2010–2014 and 2015–2016 in Table A1.1.2A, A1.1.2B, A1.1.2C and A1.1.2D, the coefficient on *GOV\_INDEX* for both sub-sample periods show an insignificant association with *EXCESS\_ROA* in Table A1.4.1B and A1.4.1C. While none of the individual governance variables is significant for the sub-sample period 2010–2014 of pooled sample in Table A1.4.1B, the coefficients on *BUSY\_DIR* (coef. = 2.367,  $p < 0.05$ ), *FINANCIAL* (coef. = 0.584,  $p < 0.10$ ) and *EXPERIENCE* (coef. = 0.786,  $p < 0.05$ )

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<sup>113</sup> As discussed in Section 2.2.2, the performance between industry and retail superannuation funds varies due to a number of other factors including the demographics of members, investment options, investment strategies and asset allocations.

are positive for the sub-sample period 2015–2016 of the pooled sample presented in Table A1.4.1C. The findings suggest that the aggregate good governance practices are not impacted by the introduction of the governance disclosure requirements. Specifically, however, superannuation funds with busy directors, and directors with financial qualifications and prior superannuation fund experience, increase the excess investment returns after the introduction of governance disclosure requirements.

< Insert Table A1.4.2 >

Second, consistent with the findings for the full sample in Table A1.4.1A, A1.4.1B and A1.4.1C, when the interaction term is included to capture the effect of governance disclosure requirements after 2014, the results are generally similar. Consistent with findings for the sub-sample period 2015–2016 in Table A1.4.1C, the interaction term *GOV\_INDEX\_P2014* is insignificant. Furthermore, the coefficient on *FINANCIAL\_P2014* (coef. = 0.721,  $p < 0.05$ ) is positive and significant. The findings indicate that good governance practices have no association with better investment performance of Australian superannuation funds, even after the implementation of the governance disclosure requirements; however, directors with financial qualifications play an important role in enhancing the performance of superannuation funds after the introduction of the governance disclosure requirements.

< Insert Table A1.4.3A >

< Insert Table A1.4.3B >

< Insert Table A1.4.3C >

Third, an alternate performance measure of *EXCESS\_ROR* is used to test the robustness of the findings in Table A1.4.1A, A1.4.1B and A1.4.1C. Consistent with the findings using *EXCESS\_ROA*, the results for the full sample of both retail and industry superannuation funds show a positive and significant association between *GOV\_INDEX* (coef. = 0.163,  $p < 0.05$ ) and *EXCESS\_ROR* in Table A1.4.3A. Similar to the findings in Table A1.4.1A, the coefficients on *FINANCIAL* (coef. = 0.425,  $p < 0.10$ ) and *EXPERIENCE* (coef. = 0.518,  $p < 0.05$ ) have a positive and significant association with *EXCESS\_ROR* in Table A1.4.3A. Moreover, the results for both sub-sample periods 2010–2014 and 2015–2016, presented in Table A1.4.3B and A1.4.3C respectively, show the insignificant association between *GOV\_INDEX* and *EXCESS\_ROR*.

< Insert Table A1.4.4A >

< Insert Table A1.4.4B >

< Insert Table A1.4.4C >

Finally, the results for the effect of variations of the *GOV\_INDEX* measures (including variations to the governance variables of *FINANCIAL* and *EXPERIENCE*) on *EXCESS\_ROA* is examined. In Table A1.4.4A, for the full sample, the coefficients on various governance index measures in column (2), (3) and (4) are insignificant, while the association between *GOV\_INDEX* and *EXCESS\_ROA* is positive and significant in column (1). The results are sensitive to different measures of the governance index for the full sample of retail and industry superannuation funds. This indicates that when the governance index is measured differently, the good governance practices have no association with *EXCESS\_ROA*. However, for the period 2010–2014 and 2015–2016, shown in Table A1.4.4B and A1.4.4C respectively, the results are robust to the various governance index measures. The coefficients on all governance index measures are insignificant in both sub-sample periods.

### **2.6.3 Alternate measures of fees and governance index**

Alternate measures of fees, *OP\_EXP\_RATIO*<sup>114</sup> and *EXCESS\_OP\_EXP\_MEMACC*, and various measures of *GOV\_INDEX* are examined further to investigate the association between governance practices and fees of superannuation funds. Excess operating expenses per account (*EXCESS\_OP\_EXP\_MEMACC*) is measured as the total administration and operating expenses divided by total number of member accounts. The findings are presented in the order of retail, industry and full (both retail and industry superannuation funds) sample.

#### **Retail superannuation funds**

< Insert Table A2.1.1A >

< Insert Table A2.1.1B >

< Insert Table A2.1.1C >

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<sup>114</sup> An operating expense ratio (*OP\_EXP\_RATIO*) is measured as total administration and operating expenses divided by total assets. Year fixed effects are included in the regression estimation to control for the year effects.

Table A2.1.1A, A2.1.1B and A2.1.1C present the results on the association between governance practices of retail superannuation funds and *OP\_EXP\_RATIO* for the pooled sample and the two sub-sample periods respectively. Similar to the main findings in Panel A of Table 6, the coefficient on *GOV\_INDEX* is insignificant, while the coefficients on *BUSY\_DIR* (coef. = 0.059,  $p < 0.01$ ) and *EXPERIENCE* (coef. = 0.089,  $p < 0.05$ ) are positive. This indicates that although good governance practices have no association with *OP\_EXP\_RATIO*, retail superannuation funds with less busy directors and directors with prior superannuation fund experience reduce the operating expense ratio. Moreover, the findings for both sub-sample periods in Table A2.1.1B and A2.1.1C resemble the findings in Table A1.1.3A and A1.1.3B. In Table A2.1.1B for the period 2010–2014, a negative and significant coefficient on *GOV\_INDEX* (coef. =  $-0.023$ ,  $p < 0.10$ ) suggests that good governance practices employed by retail superannuation funds help to reduce the operating expense ratio. In particular, independent directors, an independent chairperson and female directors on the board play a key role in reducing fees. The findings are similar to the main findings.

< Insert Table A2.1.2A >

< Insert Table A2.1.2B >

< Insert Table A2.1.2C >

In addition, an alternate measure of fees, *EXCESS\_OP\_EXP\_MEMACC*, is used as the dependent variable to examine the effect of governance practices on administration and operating expenses charged per account. Table A2.1.2A reports the regression results for the pooled sample of retail superannuation funds. The significant coefficient on *GOV\_INDEX* (coef. =  $-26.187$ ,  $p < 0.05$ ), reveals that good governance practices have a negative association with *EXCESS\_OP\_EXP\_MEMACC*, supporting *H2*. This indicates that retail superannuation funds with a unit increase in good governance practices charge, on average, 26.187 points lower operating expenses per member account. Specifically, out of the seven governance variables, the coefficients on *IND\_DIR* (coef. =  $-199.018$ ,  $p < 0.01$ ), *IND\_CHAIR* (coef. =  $-143.202$ ,  $p < 0.01$ ), *FEMALE\_DIR* (coef. =  $-179.508$ ,  $p < 0.10$ ), *BUSY\_DIR* (coef. =  $61.344$ ,  $p < 0.01$ ) and *FINANCIAL* (coef. =  $-78.269$ ,  $p < 0.05$ ) are significant. Consistent with predictions, the findings indicate that retail superannuation funds with an independent chairperson, more independent directors, more female directors, less busy directors, and directors with financial qualifications on the boards charge lower operating expenses per member account. The findings support the

board independence recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014).

In contrast to predictions, the coefficients on *Ln\_INV\_OPTIONS* (coef. = -68.260,  $p < 0.01$  in column (1)) and *PRS\_AGE* (coef. = 927.840,  $p < 0.01$  in column (1)) are negative and positive, respectively. The findings indicate that retail superannuation funds with a larger number of investment options and fewer older members are associated with lower *EXCESS\_OP\_EXP\_MEMACC*.

Table A2.1.2B presents the regression results of the association between governance practices and the *EXCESS\_OP\_EXP\_MEMACC* of retail superannuation funds for the period 2010–2014. Similar to the findings in Table A1.1.3A, the coefficient on *GOV\_INDEX* (coef. = -28.951,  $p < 0.05$ ) has a negative and significant association with *EXCESS\_OP\_EXP\_MEMACC* in column (1). This suggests that retail superannuation funds with good governance practices minimise operating costs for members. Consistent with predictions, the coefficients on *IND\_DIR* (coef. = -311.966,  $p < 0.01$ ) and *IND\_CHAIR* (coef. = -143.593,  $p < 0.01$ ) have negative and significant association with *EXCESS\_OP\_EXP\_RATIO\_MEMACC*; the coefficient on *BUSY\_DIR* (coef. = 100.205,  $p < 0.01$ ) has a positive and significant association with *EXCESS\_OP\_EXP\_RATIO\_MEMACC*. The findings indicate that retail superannuation funds with an independent chairperson, more independent directors and less busy directors on the board, charge lower operating expenses per member account. When all individual governance variables are included in a single regression, *IND\_DIR* (coef. = -262.645,  $p < 0.10$ ) and *BUSY\_DIR* (coef. = 75.031,  $p < 0.05$ ) remained significant.

Table A2.1.2C presents the results for retail superannuation funds for the period 2015–2016. Similar to the findings in Table A1.1.3B, the insignificant coefficient on *GOV\_INDEX* in Table A2.1.2C indicates that good governance practices of retail superannuation funds have no association with *EXCESS\_OP\_EXP\_MEMACC*. Moreover, the coefficient on *EXPERIENCE* (coef. = 36.129,  $p < 0.10$ ) is positive and significant, suggesting that retail superannuation funds with directors who have prior superannuation fund experience charge higher operating expenses per member account. The coefficient on *B\_SIZE* (coef. = 31.845,  $p < 0.05$  in column (1)) is positive and significant. As expected, retail superannuation funds with larger boards charge higher operating expenses per member account. In column (9), with all governance variables included in a single regression estimation, the coefficients on *IND\_CHAIR* (coef. = -281.166,  $p < 0.10$ ) is negative.

< Insert Table A2.1.3 >

When an indicator variable (*POST2014*) and interaction terms between each governance variable and *POST2014* are included in the regression estimation, the coefficient on *GOV\_INDEX* is insignificant and the coefficient on *GOV\_INDEX\_P2014* (coef. = 0.028,  $p < 0.10$ ) is positive (in Table A2.1.3). This indicates that after the implementation of governance disclosure requirements, retail superannuation funds with good governance practices are associated with higher operating costs. Similar to the findings in Table A1.1.3A and A1.1.3B, the coefficients on *BUSY\_DIR* (coef. = 0.058,  $p < 0.01$ ) and *EXPERIENCE\_P2014* (coef. = 0.104,  $p < 0.10$ ) are positive and significant.

< Insert Table A2.1.4A >

< Insert Table A2.1.4B >

< Insert Table A2.1.4C >

To test the robustness of the results of the association between *GOV\_INDEX* and *EXCESS\_OP\_EXP\_RATIO*, three variations of *GOV\_INDEX* with modifications of *FINANCIAL* and *EXPERIENCE* are examined. The findings in Table A2.1.4A resemble the main findings. All coefficients on *GOV\_INDEX* are insignificant in the pooled sample and sub-sample period 2015–2016, and negative in the sub-sample period 2010–2014. Therefore, the association between *GOV\_INDEX* and *EXCESS\_OP\_EXP\_RATIO* is robust to different governance index specification.

### **Industry superannuation funds**

< Insert Table A2.2.1A >

< Insert Table A2.2.1B >

< Insert Table A2.2.1C >

Table A2.2.1A, A2.2.1B and A2.2.1C present the results of the association between governance practices of industry superannuation funds and *OP\_EXP\_RATIO* for the pooled sample and the two sub-sample periods respectively. Consistent with the main findings in Panel B of Table 6, the coefficient on *GOV\_INDEX* is insignificant. More importantly, the coefficients on *IND\_DIR* (coef. = -0.661,  $p < 0.01$ ) and *IND\_CHAIR* (coef. = -0.231,  $p < 0.01$ ) have a negative

and significant association with *OP\_EXP\_RATIO* for industry superannuation funds in Table A2.2.1A. The findings support the board independence recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014), suggesting industry superannuation funds benefit from having independent directors on the board. The findings for the sub-sample periods in Table A2.2.1B and A2.2.1C are similar to the findings in Table A1.1.3C and A1.1.3D. In both sub-sample periods, the findings show no association between *GOV\_INDEX* and *OP\_EXP\_RATIO*. Specifically, independent directors and an independent chairperson on the board of industry superannuation funds promote a lower *OP\_EXP\_RATIO* before the implementation of governance disclosure requirements; and busy directors help to reduce *OP\_EXP\_RATIO* after the implementation of governance disclosure requirements. The findings for industry superannuation funds are robust to an alternate fee measure of *OP\_EXP\_RATIO*.

< Insert Table A2.2.2A >

< Insert Table A2.2.2B >

< Insert Table A2.2.2C >

To further examine the association between governance practices and operating fees of industry superannuation funds, *EXCESS\_OP\_EXP\_MEMACC* is used as a dependent variable to estimate the regression. Similar to the main findings in Panel B of Table 6, the insignificant coefficient on *GOV\_INDEX* in Table A2.2.2A indicates that good governance practices of industry superannuation funds have no association with excess operating expenses per account. Despite this, the results in column (9) show that the coefficients on *IND\_CHAIR* (coef. = -27.094,  $p < 0.05$ ), *BUSY\_DIR* (coef. = -36.281,  $p < 0.01$ ) and *FINANCIAL\_DIR* (coef. = -16.364,  $p < 0.05$ ) are negative and significant. This suggests that industry superannuation funds with an independent chairperson, busy directors and directors with financial qualifications help to reduce the operating expenses per member account.

Consistent with predictions, the results for the sub-sample period 2010–2014 in Table A2.2.2B show a negative and significant coefficient on *GOV\_INDEX* (coef. = -4.544,  $p < 0.10$ ). This indicates that a unit increase in good governance practices by industry superannuation funds results in a 4.544 points lower operating expenses per member account. Particularly, independent directors (*IND\_DIR*), female directors (*FEMALE\_DIR*), busy directors

(*BUSY\_DIR*) and longer-tenured directors (*TENURE*) on the board of industry superannuation funds are negatively associated with *EXCESS\_OP\_EXP\_MEMACC*.

Furthermore, consistent with the findings in Table A1.1.3D, the coefficient of *GOV\_INDEX* for the sub-sample period 2015–2016 is insignificant in Table A2.2.2C. Out of the seven governance variables, *FINANCIAL* (coef. = -4.023,  $p < 0.10$ ) has a negative and significant association with *EXCESS\_OP\_EXP\_MEMACC*, meaning that industry superannuation funds with directors who have financial qualifications on the board charge lower operating expenses per member account in the period between 2015–2016.

Overall, the findings of the pooled sample of industry superannuation funds show similar findings to the main results where *GOV\_INDEX* has no association with fees. Although the findings show limited evidence to conclude that good governance practices reduce the operating costs for superannuation fund members, some individual governance characteristics, particularly, board independence and busy directors, explain lower operating expenses of industry superannuation funds.

< Insert Table A2.2.3 >

An indicator variable (*POST2014*) and interaction terms between each governance variable and *POST2014* are included in the regression estimation to examine the effect of governance disclosure requirements on the fees (*EXCESS\_OP\_EXP\_RATIO*) of industry superannuation funds. In Table A2.2.3, consistent with the main findings, the coefficients on *GOV\_INDEX* and *GOV\_INDEX\_P2014* are insignificant. Consistent with the main findings in Table 6, the coefficients on *IND\_CHAIR* (coef. = -0.203,  $p < 0.05$ ) and *BUSY\_DIR\_P2014* (coef. = -0.172,  $p < 0.10$ ) are negative and significant. This indicates that industry superannuation funds with independent directors, an independent chairperson and busy directors help to reduce the operating costs.

< Insert Table A2.2.4A >

< Insert Table A2.2.4B >

< Insert Table A2.2.4C >

Various alternate measures of *GOV\_INDEX* are used to test the robustness of the association between *GOV\_INDEX* and *EXCESS\_OP\_EXP\_RATIO* of industry superannuation funds. The

coefficient on *GOV\_INDEX* for the pooled sample of industry superannuation funds in Table A2.2.4A are consistent with the main findings. Also, the coefficient on *GOV\_INDEX* for the two sub-sample periods in Table A2.2.4B and A2.2.4C are consistent with the findings in Table A1.1.3C and A1.1.3D.

### **Pooled regression with both retail and industry superannuation funds**

Both retail and industry superannuation funds are pooled into the same regression estimation to examine the association between governance practices and fees of Australian superannuation funds. Initially, the full sample of both retail and industry superannuation funds are used to examine the association between governance practices and *EXCESS\_OP\_EXP\_RATIO*; this is followed by estimating the effects of governance practices on alternate measures of fees (*OP\_EXP\_RATIO* and *EXCESS\_OP\_EXP\_MEMACC*), with various measures of *GOV\_INDEX* used for sensitivity tests. The total number of observations are 928 and a dummy variable, *RETAIL*, is included in the regression as there are differences between retail and industry superannuation funds as shown in Table 3.

< Insert Table A2.3.1A >

< Insert Table A2.3.1B >

< Insert Table A2.3.1C >

First, Table A2.3.1A reports the regression results of the association between governance practices and *EXCESS\_OP\_EXP\_RATIO* for the full sample. Consistent with the findings for retail and industry superannuation funds in Panel A and B of Table 6, respectively, the coefficient on *GOV\_INDEX* is insignificant in Table A2.3.1A. Out of the seven governance variables, the coefficient on *IND\_CHAIR* (coef. =  $-0.169$ ,  $p < 0.05$ ) is negative and the coefficients on *BUSY\_DIR* (coef. =  $0.051$ ,  $p < 0.10$ ) is positive. While it is costly for members to have more busy directors on the board of Australian superannuation funds, an independent chairperson of the board helps to charge a lower operating expense ratio.

The results testing the association between governance practices and the *EXCESS\_OP\_EXP\_RATIO* of Australian superannuation funds before and after the implementation of the disclosure requirements, in Table A2.3.1B and A2.3.1C respectively, display similar findings with retail superannuation funds for the two sub-sample periods in

Table A1.1.3A and A1.1.3B. The coefficients on *GOV\_INDEX* is negative and significant for the period 2010–2014 in Table A2.3.1B and insignificant for the period 2015–2016 in Table A2.3.1C. Consistent with the findings in Table A1.1.3A, the coefficients on *IND\_DIR* (coef. =  $-0.220$ ,  $p < 0.05$ ), *IND\_CHAIR* (coef. =  $-0.139$ ,  $p < 0.01$ ) and *FEMALE\_DIR* (coef. =  $-0.187$ ,  $p < 0.10$ ) are significant in Table A2.3.1B. The findings indicate that good governance practices and particularly, board independence, and female directors on the board, help to reduce the operating expense ratio in the sub-sample period 2010–2014. After the implementation of governance disclosure requirements, the significant coefficients on *IND\_CHAIR* (coef. =  $-0.561$ ,  $p < 0.05$ ) and *EXPERIENCE* (coef. =  $0.073$ ,  $p < 0.05$ ) indicate that Australian superannuation funds with an independent chair and less directors who have financial qualifications are associated with a lower excess operating expense ratio.

< Insert Table A2.3.2A >

< Insert Table A2.3.2B >

< Insert Table A2.3.2C >

Second, the findings on the association between governance practices and *OP\_EXP\_RATIO* for the full sample and both sub-sample periods, in Table A2.3.2A, A2.3.2B and A2.3.2C, support the findings using *EXCESS\_OP\_EXP\_RATIO* in Table A2.3.1A, A2.3.1B and A2.3.1C. The coefficient on *GOV\_INDEX* (coef. =  $-0.020$ ,  $p < 0.10$ ) is negative and significant for the period 2010–2014 in Table A2.3.2B, while insignificant for the full sample in Table A2.3.2A and the sub-sample period 2015–2016 in Table A2.3.2C. In Table A2.3.2A, although the coefficient on *GOV\_INDEX* is insignificant, Australian superannuation funds with an independent chairperson (*IND\_CHAIR*, coef. =  $-0.075$ ,  $p < 0.05$ ), less busy directors (*BUSY\_DIR*, coef. =  $0.053$ ,  $p < 0.01$ ), and no directors with prior superannuation fund experience (*EXPERIENCE*, coef. =  $0.050$ ,  $p < 0.10$ ) on the board help to reduce the operating expense ratio. Specifically, for the period 2010–2014, superannuation funds with more independent directors (*IND\_DIR*, coef. =  $-0.208$ ,  $p < 0.01$ ), an independent chairperson (*IND\_CHAIR*, coef. =  $-0.125$ ,  $p < 0.01$ ), less busy directors (*BUSY\_DIR*, coef. =  $0.057$ ,  $p < 0.05$ ), and directors with shorter tenure (*TENURE*, coef. =  $0.017$ ,  $p < 0.05$ ), charge a lower operating expense ratio; for the period 2015–2016, superannuation funds with more independent directors (*IND\_DIR*, coef. =  $0.365$ ,  $p < 0.01$ ) and directors with prior superannuation industry experience (*EXPERIENCE*, coef. =  $0.054$ ,  $p < 0.10$ ) charge a higher operating expense ratio.

< Insert Table A2.3.3A >

< Insert Table A2.3.3B >

< Insert Table A2.3.3C >

Third, to investigate the association between governance practices and fees of Australian superannuation funds, an alternate measure of fees, *EXCESS\_OP\_EXP\_MEMACC*, is used. Table A2.3.3A displays the regression results for the full sample of both retail and industry superannuation funds and finds a significant positive coefficient on *GOV\_INDEX* (coef. = -17.385,  $p < 0.10$ ). The findings suggest that a unit increase in the governance index decreases the operating expenses per member account by 17.385 points. Further, consistent with predictions, coefficients on *IND\_DIR* (coef. = -169.596,  $p < 0.05$ ), *IND\_CHAIR* (coef. = -113.387,  $p < 0.01$ ), *FEMALE\_DIR* (coef. = -109.797,  $p < 0.10$ ) and *BUSY\_DIR* (coef. = 56.376,  $p < 0.10$ ) are significant. This indicates that superannuation funds with independent directors, an independent chairperson, more female directors and less busy directors charge lower operating expenses per member account.

Table A2.3.3B and A2.3.3C present the regression results for the association between governance practices and the *EXCESS\_OP\_EXP\_MEMACC* before and after the implementation of the disclosure requirements of the full sample. The findings are consistent with the findings for retail superannuation funds in Table A1.1.3A and A1.1.3B and the findings for the full sample in Table A2.3.1B and A2.3.1C. On the one hand, the coefficient on *GOV\_INDEX* (coef. = -24.349,  $p < 0.05$ ) is negative and significant in Table A2.3.3B, on the other hand, the coefficient on *GOV\_INDEX* is insignificant in Table A2.3.3C. This indicates that good governance practices help to reduce the operating expenses charged per account before the implementation of governance disclosure requirements in 2014; however, after the disclosure of good governance practices, there is no association with operating expenses per member account. Furthermore, the coefficients on *IND\_DIR* (coef. = -280.817,  $p < 0.01$ ), *IND\_CHAIR* (coef. = -120.500,  $p < 0.01$ ) and *BUSY\_DIR* (coef. = 86.242,  $p < 0.01$ ) are significant for the period 2010–2014 in Table A2.3.3B; and the coefficient on *EXPERIENCE* (coef. = 33.988,  $p < 0.10$ ) is positive for the period 2015–2016 in Table A2.3.3C. The findings suggest that for the period 2010–2014, having independent directors, an independent chairperson and less busy directors on the board of Australian superannuation funds help reduce the operating expense per member account; whereas, having directors with prior

superannuation fund experience on the board results in higher operating expenses per member account in the period 2015–2016.

< Insert Table A2.3.4A >

< Insert Table A2.3.4B >

< Insert Table A2.3.4C >

Finally, the regression results between various measures of *GOV\_INDEX* (including variations to the governance variables of *FINANCIAL* and *EXPERIENCE*) and *EXCESS\_OP\_EXP\_RATIO* display results similar to the findings in Table A2.3.1A, A2.3.1B and A2.3.1C. In Table A2.3.4A and A2.3.4C, for the full sample and sub-sample period 2015–2016 respectively, the coefficients on *GOV\_INDEX* in all columns are insignificant. The significant negative coefficient on *GOV\_INDEX* for the sub-sample period 2010–2014 persists throughout various measures of *GOV\_INDEX* in Table A2.3.4B. The results are robust to different governance index measures.

#### **2.6.4 Estimating regression Model (1) with the proportion of asset allocations**

Superannuation funds allocate their assets into various asset classes (e.g liquid and illiquid assets) depending on their investment objectives. These differences in the proportion of assets allocated into various asset classes are included in the regression models to control for the variation in the expected investment returns and fees charged based on different asset classes. Although APRA provides data on asset allocations for Australian superannuation funds, the data on asset allocations is inconsistent before and after 2014 due to changes in the APRA reporting framework under the *Financial Sector (Collection of Data) Act 2001 (Cth)*.<sup>115</sup> Due to the inconsistency in the data, the sample is separated into two sub-periods: for the periods 2010–2013 and 2015–2016. For the 2010–2013 sub-sample, additional asset allocation variables are included: the percentage of investments in (i) cash (*%CASH*), (ii) Australian fixed income (*%AUST\_FIXED\_INC*), (iii) international fixed income (*%INT\_FIXED\_INC*), (iv) Australian equity (*%AUST\_EQUITY*), (v) international equity (*%INT\_EQUITY*), (vi) listed property (*%LISTED\_PROPERTY*), (vii) unlisted property (*%UNLISTED\_PROPERTY*), (viii) other investments (*%OTHER*), and (ix) proportion of assets in default options

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<sup>115</sup> Since 1 July 2013, APRA has made a number of changes in reporting framework. In 2013, APRA released 32 new reporting standards for RSEs, where the requirements of 22 final reporting standards commenced from 1 July 2013 and the remaining 10 to commence from 1 July 2014.

(%*DEFAULT\_INV*). For the 2015–2016 sub-sample, additional asset allocation variables are included: the percentage of investments in (i) cash (%*CASH*), (ii) fixed income (%*FIXED\_INC*), (iii) equity (%*EQUITY*), (iv) property (%*PROPERTY*), (v) infrastructure (%*INFRASTRUCTURE*), (vi) commodities (%*COMMODITIES*), (vii) other investments (%*OTHER*), and (viii) percentage of in-house investments (%*INHOUSE\_INV*).

< Insert Table A3.1A >

< Insert Table A3.1B >

The results of the association between *EXCESS\_ROA* and governance variables of retail superannuation funds with asset allocation as additional control variables for the periods 2010–2013 and 2015–2016 are shown in Table A3.1A and A3.1B, respectively. The results in Table A3.1A and A3.1B show similar results to the results in Table A1.1.2A and A1.1.2B. The coefficient on *GOV\_INDEX* is insignificant for both sub-sample periods. For the 2010–2013 sub-sample in Table A3.1A, none of the governance variables is significant. Moreover, for the 2015–2016 sub-sample in Table A3.1B, the coefficients on *IND\_CHAIR* (coef. = –2.181,  $p < 0.05$ ), *BUSY\_DIR* (coef. = 2.352,  $p < 0.05$ ), *FINANCIAL* (coef. = 0.828,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 1.241,  $p < 0.01$ ) are significant. Furthermore, the asset allocation controls show an insignificant association with *EXCESS\_ROA* in both sub-sample periods.

< Insert Table A3.2A >

< Insert Table A3.2B >

Table A3.2A and A3.2B show the results of the association between *EXCESS\_ROA* and governance variables with asset allocation controls for the sub-sample periods 2010–2013 and 2015–2016 for industry superannuation funds. The findings for the 2010–2013 and 2015–2016 sub-sample periods, in Table A3.2A and A3.2B respectively, show similar results with the results in Table A1.1.2C and A1.1.2D. In both sub-sample periods, the coefficient on *GOV\_INDEX* is insignificant. Furthermore, the coefficient on *FINANCIAL* (coef. = –1.405,  $p < 0.10$ ) is negative and significant in the sub-sample period 2015–2016. Interestingly, in Table A5.2B, the coefficient on %*INHOUSE\_INV* (coef. = –6.461,  $p < 0.05$  in column (1)) is negative and significant, suggesting that industry superannuation funds which have less in-house investments enhance the investment performance in the period 2015–2016.

### 2.6.5 Estimating regression Model (2) with the proportion of asset allocations

< Insert Table A4.1A >

< Insert Table A4.1B >

The results of the association between *EXCESS\_OP\_EXP\_RATIO* and governance variables of retail superannuation funds, with asset allocations as additional control variables, for the period 2010–2013 and 2015–2016 are shown in Table A4.1A and A4.1B respectively. In Table A4.1A, for the sub-sample period 2010–2013, the coefficient on *GOV\_INDEX* is insignificant, which is dissimilar to the findings in Table A1.1.3A. The variation in the results between the two could be due to the differences in the sample size where the year 2014 sample observations are excluded in Table A4.1A. Further, in Table A4.1A, the coefficient on *IND\_CHAIR* (coef. = –0.084,  $p < 0.05$ ) is negative. In Table A4.1B, however, the findings resemble the findings in Table A1.1.3B. The coefficient on *GOV\_INDEX* is insignificant, and the coefficients on *IND\_DIR* (coef. = 0.809,  $p < 0.10$ , in column (9)) and *EXPERIENCE* (coef. = 0.094,  $p < 0.10$ , in column (9)) are positive. Interestingly, the negative and significant coefficient on *%COMMODITIES* (coef. = –9.733,  $p < 0.01$ , in column (1)) indicates that retail superannuation funds with more investments in commodities charge a lower operating expense ratio.

< Insert Table A4.2A >

< Insert Table A4.2B >

Table A4.2A and A4.2B show the results of the association between *EXCESS\_OP\_EXP\_RATIO* and governance variables with asset allocation controls for the sub-sample periods 2010–2013 and 2015–2016 for industry superannuation funds. The findings for the sub-sample periods, in Table A4.2A and A4.2B respectively, show similar results to the results in Table A1.1.3C and A1.1.3D. In both sub-sample periods, the coefficient on *GOV\_INDEX* is insignificant. Furthermore, the coefficients on *IND\_DIR* (coef. = –0.492,  $p < 0.05$ ), *IND\_CHAIR* (coef. = –0.197,  $p < 0.01$ ) and *EXPERIENCE* (coef. = –0.034,  $p < 0.10$ ) are negative, and none of the asset allocation controls are significant in the sub-sample period 2010–2013. In Table A4.2B, for the period 2015–2016, none of the governance variables and the asset allocation controls are significant.

### 2.6.6 Trustee-level regression

Some superannuation fund trustees manage more than one retail superannuation fund. This means that several superannuation funds are managed by the same board, even though these superannuation funds are different in asset size, membership demographics and investment strategies. For the sample in this study, several retail superannuation funds are managed under one trusteeship, whereas for industry superannuation funds there is only one fund for each trusteeship. Therefore, retail superannuation funds are grouped into a unique trustee of superannuation funds using the asset-weighted average of each retail superannuation funds under its trusteeship. The observations for retail superannuation funds are reduced from 640 to 264 observations.

< Insert Table A5.1 >

In Table A5.1, the results of the association between governance practices and performance of trustees of retail superannuation funds show insignificant coefficients on all governance variables. The findings indicate that good governance practices have no association with *EXCESS\_ROA* at the trustee-level.

< Insert Table A5.2 >

Table A5.2 shows the results of the association between governance practices and the operating expense ratio of the trustees of retail superannuation funds. Dissimilar to the main findings in Panel A of Table 6, the coefficient on *GOV\_INDEX* (coef. = 0.043,  $p < 0.05$ ) is positive and significant in Table A5.2, suggesting that retail superannuation funds with good governance practices charge higher operating expenses. The coefficients on all governance variables, except *FEMALE\_DIR* and *TENURE*, show a positive and significant association with *EXCESS\_OP\_EXP\_RATIO*. At the trustee-level, the findings suggest that retail superannuation funds with good governance practices have a higher *EXCESS\_OP\_EXP\_RATIO*; particularly retail superannuation funds with an independent chairperson, more independent directors, busy directors, directors with financial qualifications and prior superannuation experience charge a higher operating expense ratio.

### 2.6.7 Endogeneity

This thesis acknowledges that endogeneity concerns (e.g simultaneity-equation bias and omitted correlated variable bias) could bias the findings (Ferris and Yan, 2007; Wintoki, Linck,

and Netter, 2012).<sup>116</sup> An endogeneity problem arises due to reverse causality. For instance, the current performance and fees of superannuation funds influence the choice of governance practices and consequently influences future performance and fees of superannuation funds (Hermalin and Weisbach, 2003; Wintoki et al., 2012). In other words, superannuation funds with higher performance and lower fees tend to have boards of directors with characteristics which are aligned with better governance practices and vice versa.

< Insert Table A6.1 >

< Insert Table A6.2 >

< Insert Table A7.1 >

< Insert Table A7.2 >

This thesis attempts to mitigate the above endogeneity concern of reverse causality by estimating OLS regression models using lagged governance variables and lagged control variables, and employing fixed effects models.<sup>117</sup> The results for *EXCESS\_ROA* and *EXCESS\_OP\_EXP\_RATIO* with lagged variables and fixed effects models are presented in Table A6 and A7 respectively.<sup>118</sup> Consistent with the main findings in Panel A of Table 5, the results in Table A6.1 for retail superannuation funds show a positive association between governance practices and performance. Similar to the findings in Panel B of Table 5, the results of industry superannuation funds in Table A6.2 show an insignificant coefficient on *GOV\_INDEX*. Furthermore, in Table A7.1, an insignificant association between *GOV\_INDEX* and *EXCESS\_OP\_EXP\_RATIO* of retail superannuation funds depicts similar findings in Panel A of Table 6. In contrast, in Table A7.2, for industry superannuation funds, the coefficient on *GOV\_INDEX* (coef. =  $-0.021$ ,  $p < 0.05$ ) shows a negative and significant association with *EXCESS\_OP\_EXP\_RATIO*, indicating that industry superannuation funds employing good

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<sup>116</sup> Prior superannuation fund literature (Gupta, Jin, Orszag, and Piggott, 2008; Sy, 2008; Nguyen et al., 2012) argues that the governance practices do not change rapidly overtime; therefore, the issue of endogeneity from the causal association between governance and performance/fees of Australian superannuation funds is minimal. Furthermore, Tan and Cam (2015) argue that the contribution of independent directors on the board of industry superannuation funds is limited due to the equal representation model employed by industry superannuation funds, potentially restricting the voice and effectiveness of independent directors as independent directors rely on other directors for nomination and election. Also, independent directors in superannuation funds have fiduciary duties to perform their duties and responsibilities objectively under *the SIS Act 1993*.

<sup>117</sup> Although estimating the regression model using fixed effects model reduces the unobservable heterogeneity bias, the use of fixed effects model is not realistic as the model assumes that current values of independent variables and past values of the dependent variables are independent to each other (Wintoki et al., 2012).

<sup>118</sup> Untabulated regression models are also estimated using lagged governance variables only (not the control variables) and the results remain generally similar.

governance practices charge a lower operating expense ratio. Similar to the main results in Panel B of Table 6, a number of governance variables (*IND\_DIR* (coef. =  $-0.758$ ,  $p < 0.05$ ), *IND\_CHAIR* (coef. =  $-0.237$ ,  $p < 0.05$ ) and *TENURE* (coef. =  $0.017$ ,  $p < 0.01$ )) are significant in Table A7.2.

Another endogeneity problem arises due to omitted correlated variable bias, where some other factors may drive both the outcome and explanatory variable. Some prior studies have used instrumental variables and two-stage-least-squares (2SLS) regression to address this problem of endogeneity (Larcker and Rusticus, 2010). However, Larcker and Rusticus (2010) argue that weak instrumental variables provide estimates that are more biased and are likely to provide wrong statistical inference than OLS estimates (Larcker, Richardson, and Tuna, 2007; Larcker and Rusticus, 2010). This thesis does not perform a Two-Stage least squares (2SLS) regression as it is unable to identify an instrumental variable that explains governance practices but does not determine superannuation fund performance and fees.

In sum, the main results remain similar when using an alternative performance measure and an alternate fee measure, various governance index measures, after controlling for the proportion of asset allocation and investment option quartiles, and when governance variables are lagged. Interestingly, both retail and industry superannuation funds with good governance practices have higher insurance flows and Australian superannuation funds with good governance practices charge a lower investment expense ratio.

## **2.7 Conclusion**

This chapter builds on the governance and superannuation literature by providing evidence on the effect of governance practices on performance and fees of Australian superannuation funds. This chapter argues that governance practices play a critical role in enhancing fund outcomes for members of Australian superannuation funds. The Australian Government has raised concerns about the current board structure and governance practices of Australian superannuation funds. There is no large-scale empirical evidence on the effect of governance practices on fund performance and fees (Coorey and Mather, 2015; Mather, 2017a) to inform these concerns.

This chapter provides evidence on the association between superannuation fund governance, and performance and fees, using a sample of 928 observations of retail and industry superannuation funds from 2010 to 2016. First, the findings in this chapter document

inconsistent evidence on the association between governance practices and performance of Australian superannuation funds. While the results for retail superannuation funds suggest that good governance practices are positively associated with fund performance, the results for industry superannuation funds show no evidence that good governance practices are associated with fund performance. Interestingly, the results of additional testing indicate that the relation between governance practices and fund performance is not influenced by the implementation of governance disclosure requirements introduced in 2014. When individual governance variables are examined separately, directors with financial qualifications and prior superannuation fund experience generate higher excess return on assets for retail superannuation funds. In sub-sample analyses, independent directors and an independent chairperson are negatively associated with performance of retail superannuation funds for the period 2010–2014. For industry superannuation funds, busy directors are positively associated with excess return on assets for the full sample and independent directors are positively associated with performance in the sub-sample period 2010–2014.

Second, this chapter shows limited evidence that governance practices reduce fees of Australian superannuation funds. The results for both retail and industry superannuation funds document that governance practices influence fees, except for retail superannuation funds before the implementation of the governance disclosure requirements. Some individual governance practices show significant results. Retail superannuation funds with busy directors and directors with prior superannuation fund experience charge higher fees. Industry superannuation funds' boards with independent directors and an independent chairperson charge lower fees. However, the evidence on the influence of independent directors on the boards of retail superannuation funds are mixed. Retail superannuation funds with more independent directors are associated with lower fees in the sub-sample period of 2010–2014; however, they are associated with higher fees in the sub-sample period of 2015–2016. Overall, the results are generally robust to alternative governance index measures and performance, and controlling for the proportion of asset allocations.

The findings have implications for regulators and policy-makers as this chapter provides large-scale empirical evidence on what various inquiries viewed as good governance practices of Australian superannuation funds. The findings in this chapter provide evidence relevant to the current debate between the government and industry superannuation funds on the current board structure of superannuation funds, particularly, on mandating independent directors on the

board of Australian superannuation funds. The mixed evidence on the effectiveness of governance practices on performance and fees between retail and industry superannuation funds suggests that recommended governance practices (recommended and discussed by the Cooper Review (2010) and the Murray Inquiry (2014)) may not be appropriate for both retail and industry superannuation funds. However, the evidence on some of the individual governance practices in different sub-sample periods suggests that some governance practices, such as independent directors, busy directors, and directors with financial qualifications and prior superannuation fund experience, are more appropriate and suitable for different types of superannuation funds.

## CHAPTER 2 TABLES AND FIGURES

**Table 1: Definition of variables**

Variable	Definition
<b>Dependent variables</b>	
<i>ROA</i>	return on asset (%), calculated as net earnings after tax divided by total assets;
<i>EXCESS_ROA</i>	excess return on asset (%), calculated as the difference between the superannuation fund's <i>ROA</i> and the median <i>ROA</i> for each year;
<i>OP_EXP_RATIO</i>	operating expense ratio (%), calculated as total administration and operating expenses divided by total assets;
<i>EXCESS_OP_EXP_RATIO</i>	excess return on operating expense ratio (%), calculated as the difference between the superannuation fund's <i>OP_EXP_RATIO</i> and the median <i>OP_EXP_RATIO</i> for each year.
<b>Independent variables</b>	
<i>GOV_INDEX</i>	a measure of governance practices composed of the sum of seven individual components given 1 if: (i) <i>IND_DIR</i> $\geq$ 33rd percentile, 0 otherwise; (ii) <i>IND_CHAIR</i> equals to 1, 0 otherwise; (iii) <i>FEMALE_DIR</i> $>$ median, 0 otherwise; (iv) <i>BUSY_DIR</i> $<$ median, 0 otherwise; (v) <i>FINANCIAL</i> equals to 1, 0 otherwise; (vi) <i>EXPERIENCE</i> equals to 1, 0 otherwise; (vii) <i>TENURE</i> $<$ median, 0 otherwise;
<i>IND_DIR</i>	the percentage of independent directors on the board;
<i>IND_CHAIR</i>	an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise;
<i>FEMALE_DIR</i>	the percentage of female directors on the board;
<i>BUSY_DIR</i>	the average number of outside directorships on ASX-listed companies held by directors;
<i>FINANCIAL</i>	an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification;
<i>EXPERIENCE</i>	an indicator variable equal to 1 if a fund has at least one director with prior superannuation industry experience, 0 otherwise;
<i>TENURE</i>	the average director tenure (in years);
<i>BFSIZE</i>	the total number of directors on the board.
<b>Controls</b>	
<i>RETAIL</i>	an indicator variable equal to 1 if the superannuation fund is a retail superannuation fund, 0 otherwise (industry superannuation fund);
<i>TA (\$million)</i>	the total assets at the end of the period (\$million);
<i>Ln_TA</i>	the natural logarithm of <i>TA</i> ;
<i>INV_OPTIONS</i>	the number of investment options;
<i>Ln_INV_OPTIONS</i>	the natural logarithm of <i>INV_OPTIONS</i> ;
<i>PRS_AGE</i>	the percentage of preservation age - members who are equal to or greater than the age of 50.

**Table 2: Sample selection**

	Fund level
Initial Sample from <i>APRA Statistics Annual Fund-level Superannuation Statistics back series (2010 to 2016)</i>	2,101
<i>Less: Corporate and Public Sector funds</i>	-500
<i>Less: Defined benefit funds</i>	-55
<i>Less: Missing governance data</i>	-510
<i>Less: Missing financial data</i>	-108
Final sample	928

Data source: all governance data is hand collected and financial data is sourced from APRA *Annual Fund-level Superannuation Statistics back series*.

## Table 3 Panel A: Descriptive statistics

This table displays the descriptive statistics for the full sample throughout the sample period between 2010 and 2016.

	Mean	Median	Std.Dev.	min	max
<i>ROA</i>	5.866	6.423	4.020	-2.749	15.093
<i>EXCESS_ROA</i>	-0.355	0.000	2.319	-9.488	4.109
<i>OP_EXP_RATIO</i>	0.787	0.563	0.595	0.044	2.615
<i>EXCESS_OP_EXP_RATIO</i>	0.205	0.000	0.590	-0.589	2.005
<i>GOV_INDEX</i>	3.471	3.000	1.715	0.000	7.000
<i>IND_DIR</i>	0.335	0.200	0.342	0.000	1.000
<i>IND_CHAIR</i>	0.478	0.000	0.500	0.000	1.000
<i>FEMALE_DIR</i>	0.244	0.250	0.202	0.000	0.667
<i>BUSY_DIR</i>	0.531	0.167	0.895	0.000	4.500
<i>FINANCIAL</i>	0.747	1.000	0.435	0.000	1.000
<i>EXPERIENCE</i>	0.369	0.000	0.483	0.000	1.000
<i>TENURE</i>	5.317	5.101	2.592	0.800	11.429
<i>BSIZE</i>	6.283	6.000	2.346	3.000	12.000
<i>RETAIL</i>	0.690	1.000	0.463	0.000	1.000
<i>TA(\$ million)</i>	4,428	1,044	8,061	20	40,410
<i>Ln_TA</i>	6.862	6.952	1.961	3.058	10.606
<i>INV_OPTIONS</i>	165	13	359	1	1,838
<i>Ln_INV_OPTIONS</i>	3.229	2.639	1.870	0.693	7.517
<i>PRS_AGE</i>	0.372	0.286	0.235	0.037	0.888
Observations	928				

*ROA* is net earnings after tax divided by total assets; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets; *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 3 Panel B: Descriptive statistics between retail and industry superannuation funds**

This table displays summary statistics for the sample between retail and industry superannuation funds. The sample consists of 640 fund observations for retail superannuation funds, and 288 fund observations for industry superannuation funds.

	Retail Mean	Retail Std.Dev.	Industry Mean	Industry Std.Dev.	Stat diff.
<i>ROA</i>	5.530	4.065	6.614	3.822	-1.084***
<i>EXCESS_ROA</i>	-0.710	2.538	0.432	1.456	-1.141***
<i>OP_EXP_RATIO</i>	0.880	0.653	0.581	0.361	0.299***
<i>EXCESS_OP_EXP_RATIO</i>	0.298	0.647	-0.003	0.356	0.302***
<i>GOV_INDEX</i>	3.695	1.820	2.972	1.330	0.723***
<i>IND_DIR</i>	0.443	0.354	0.095	0.118	0.348***
<i>IND_CHAIR</i>	0.547	0.498	0.326	0.470	0.220***
<i>FEMALE_DIR</i>	0.262	0.218	0.202	0.153	0.060***
<i>BUSY_DIR</i>	0.689	1.026	0.180	0.251	0.509***
<i>FINANCIAL</i>	0.708	0.455	0.833	0.373	-0.126***
<i>EXPERIENCE</i>	0.356	0.479	0.396	0.490	-0.040
<i>TENURE</i>	4.616	2.282	6.876	2.565	-2.260***
<i>BSIZE</i>	5.136	1.264	8.833	2.182	-3.697***
<i>RETAIL</i>	1.000	0.000	0.000	0.000	1.000
<i>TA(\$million)</i>	3,466	7,254	6,566	9,278	-3,099***
<i>Ln_TA</i>	6.398	1.991	7.895	1.432	-1.497***
<i>INV_OPTIONS</i>	233	414	13	9	220***
<i>Ln_INV_OPTIONS</i>	3.596	2.112	2.413	0.633	1.183***
<i>PRS_AGE</i>	0.430	0.256	0.243	0.092	0.187***
Observations	640		288		

*ROA* is net earnings after tax divided by total assets; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets; *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 4: Correlation coefficients matrix of the variables**

	1	2	3	4	5	6	7	8	9	10	11
1 <i>ROA</i>		0.4807*	-0.0624	-0.0909*	-0.1006*	0.1206*	0.1700*	0.1700*	0.0053	0.0053	-0.1846*
2 <i>EXCESS_ROA</i>	0.3908*		-0.1750*	-0.1763*	-0.0222	0.2943*	0.2960*	0.2960*	-0.039	-0.039	-0.2288*
3 <i>OP_EXP_RATIO</i>	-0.0623*	-0.1583*		0.9969*	-0.1097*	-0.0815*	-0.3101*	-0.3101*	0.0201	0.0201	-0.1075*
4 <i>EXCESS_OP_EXP_RATIO</i>	-0.0841*	-0.1499*	0.9937*		-0.1001*	-0.0802*	-0.3066*	-0.3066*	0.0219	0.0219	-0.1069*
5 <i>GOV_INDEX</i>	0.0038	0.0810*	-0.1256*	-0.1037*		0.1510*	0.2835*	0.2835*	0.2968*	0.2968*	0.2684*
6 <i>BSIZE</i>	0.1079*	0.1997*	-0.2112*	-0.2107*	0.0555*		0.4578*	0.4578*	-0.0639	-0.0639	-0.1545*
7 <i>TA(\$ million)</i>	0.1047*	0.1825*	-0.2421*	-0.2340*	0.2084*	0.2974*		1.0000*	0.3977*	0.3977*	-0.0085
8 <i>Ln_TA</i>	0.1728*	0.2898*	-0.3315*	-0.3271*	0.2405*	0.4661*	0.7262*		0.3977*	0.3977*	-0.0085
9 <i>INV_OPTIONS</i>	-0.0242	-0.0158	0.0523	0.0688*	0.2021*	-0.1319*	0.2333*	0.1845*		1.0000*	0.4643*
10 <i>Ln_INV_OPTIONS</i>	0.0371	0.0754*	0.0247	0.0403	0.2799*	-0.1180*	0.3060*	0.3474*	0.8080*		0.4643*
11 <i>PRS_AGE</i>	-0.0779*	-0.1104*	-0.0136	-0.0051	0.2451*	-0.1767*	-0.0954*	-0.0395	0.4218*	0.4485*	

\* significance at the 10 percent level. All variables are defined in Table 1. Spearman is above the Diagonal and Pearson is below the Diagonal.

**Table 5 Panel A: Superannuation fund performance  
(EXCESS\_ROA) and governance variables of retail funds**

This table provides results of the effect of governance practices on performance of retail superannuation funds. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		-5.534*** (-3.308)	-4.693*** (-2.942)	-4.911*** (-3.110)	-5.133*** (-3.200)	-4.776*** (-2.911)	-5.454*** (-3.394)	-5.011*** (-3.094)	-5.267*** (-3.351)	-4.642*** (-2.811)
GOV_INDEX	+	0.129* (1.916)								
IND_DIR	+		-0.608 (-1.149)							-1.528 (-1.559)
IND_CHAIR	+			-0.198 (-0.841)						0.153 (0.310)
FEMALE_DIR	+				0.226 (0.335)					0.662 (0.721)
BUSY_DIR	-					-0.169 (-1.296)				-0.044 (-0.296)
FINANCIAL	+						0.518** (2.155)			0.439 (1.350)
EXPERIENCE	+							0.769*** (2.756)		0.716** (2.353)
TENURE	-								0.047 (0.568)	0.038 (0.458)
BSIZE	-	0.102 (0.924)	0.148 (1.308)	0.136 (1.226)	0.126 (1.110)	0.099 (0.874)	0.110 (1.004)	0.090 (0.804)	0.136 (1.273)	0.097 (0.839)
Ln_TA	+	0.280** (2.418)	0.266** (2.394)	0.270** (2.402)	0.279** (2.428)	0.267** (2.302)	0.281** (2.447)	0.268** (2.324)	0.277** (2.409)	0.260** (2.321)
Ln_INV_OPTIONS	+	0.169** (2.360)	0.202*** (2.758)	0.195*** (2.706)	0.183*** (2.578)	0.180** (2.482)	0.166** (2.286)	0.159** (2.247)	0.185*** (2.608)	0.163** (2.263)
PRS_AGE	-	-1.191 (-1.179)	-1.033 (-1.085)	-1.077 (-1.106)	-1.111 (-1.115)	-1.146 (-1.159)	-1.163 (-1.134)	-1.240 (-1.227)	-1.132 (-1.129)	-1.133 (-1.153)
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.189	0.193	0.190	0.187	0.192	0.192	0.196	0.188	0.211
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 5 Panel B: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds

This table provides results of the effect of governance practices on performance of industry superannuation funds. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)					
<i>Constant</i>		-7.456* (-1.852)	-5.719 (-1.411)	-6.879* (-1.781)	-6.401 (-1.486)	-7.355* (-1.832)	-8.253** (-1.977)	-7.385* (-1.691)	-6.845* (-1.837)	-6.618 (-1.459)
<i>GOV_INDEX</i>	+	-0.018 (-0.155)								
<i>IND_DIR</i>	+		3.621 (1.459)							3.083 (1.308)
<i>IND_CHAIR</i>	+			0.213 (0.329)						0.008 (0.012)
<i>FEMALE_DIR</i>	+				1.763 (1.081)					1.520 (1.171)
<i>BUSY_DIR</i>	-					1.143* (1.783)				0.987* (1.875)
<i>FINANCIAL</i>	+						-0.697 (-1.453)			-0.792 (-1.577)
<i>EXPERIENCE</i>	+							-0.017 (-0.046)		-0.172 (-0.462)
<i>TENURE</i>	-								-0.040 (-0.586)	-0.025 (-0.383)
<i>BSIZE</i>	-	-0.082 (-0.409)	-0.082 (-0.424)	-0.081 (-0.408)	-0.098 (-0.472)	-0.095 (-0.481)	-0.082 (-0.417)	-0.083 (-0.397)	-0.097 (-0.498)	-0.121 (-0.589)
<i>Ln_TA</i>	+	0.604 (1.198)	0.329 (0.644)	0.527 (1.048)	0.530 (1.089)	0.595 (1.241)	0.782 (1.414)	0.594 (1.043)	0.558 (1.201)	0.628 (0.910)
<i>Ln_INV_OPTIONS</i>	+	0.123 (0.543)	0.130 (0.517)	0.119 (0.503)	-0.026 (-0.104)	0.114 (0.481)	0.104 (0.443)	0.117 (0.514)	0.101 (0.430)	-0.002 (-0.008)
<i>PRS_AGE</i>	-	8.994*** (4.235)	9.677*** (4.366)	9.137*** (4.273)	8.282*** (4.205)	9.179*** (4.208)	8.719*** (3.857)	8.996*** (4.266)	9.390*** (4.059)	9.103*** (3.850)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.302	0.312	0.303	0.309	0.312	0.309	0.302	0.303	0.335
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 6 Panel A: Superannuation fund fees  
(*EXCESS\_OP\_EXP\_RATIO*) and governance variables of retail  
funds**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		0.347 (0.885)	0.347 (0.886)	0.344 (0.882)	0.354 (0.908)	0.103 (0.262)	0.353 (0.898)	0.419 (1.054)	0.369 (0.939)	0.181 (0.463)
GOV_INDEX	-	0.005 (0.367)								
IND_DIR	-		0.030 (0.261)							0.154 (1.176)
IND_CHAIR	-			-0.042 (-0.660)						-0.110 (-1.501)
FEMALE_DIR	-				-0.057 (-0.542)					-0.140 (-1.110)
BUSY_DIR	+					0.055** (2.066)				0.063** (2.165)
FINANCIAL	-						0.013 (0.272)			0.050 (1.138)
EXPERIENCE	-							0.074* (1.952)		0.065* (1.879)
TENURE	+								-0.006 (-0.419)	-0.011 (-0.758)
BSIZE	+	-0.029 (-1.406)	-0.029 (-1.368)	-0.027 (-1.295)	-0.027 (-1.288)	-0.021 (-1.050)	-0.028 (-1.369)	-0.031 (-1.468)	-0.029 (-1.387)	-0.024 (-1.145)
Ln_TA	-	0.049 (0.745)	0.050 (0.775)	0.050 (0.774)	0.050 (0.766)	0.078 (1.266)	0.049 (0.748)	0.039 (0.592)	0.051 (0.775)	0.068 (1.100)
Ln_INV_OPTIONS	+	-0.076*** (-2.913)	-0.076*** (-2.991)	-0.072*** (-2.814)	-0.073*** (-2.809)	-0.073*** (-2.870)	-0.076*** (-2.892)	-0.078*** (-3.052)	-0.075*** (-2.887)	-0.073*** (-2.969)
PRS_AGE	?	0.015 (0.049)	0.010 (0.033)	0.048 (0.159)	0.038 (0.128)	-0.016 (-0.058)	0.022 (0.075)	0.012 (0.040)	0.036 (0.122)	-0.013 (-0.045)
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.113	0.00276	0.114	0.00432	0.125	0.112	0.00213	0.113	2.92e-06
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 6 Panel B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of industry funds

This table provides evidence on the association between the governance practices and fees of industry superannuation funds. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		1.510*** (2.820)	1.291*** (3.104)	1.192*** (3.351)	1.593*** (2.709)	1.553*** (2.719)	1.578** (2.573)	1.516*** (2.763)	1.449** (2.596)	1.166*** (3.323)
GOV_INDEX	-	-0.006 (-0.565)								
IND_DIR	-		-0.651* (-1.734)							-0.343 (-1.444)
IND_CHAIR	-			-0.236** (-2.030)						-0.199* (-1.712)
FEMALE_DIR	-				0.093 (0.949)					0.032 (0.273)
BUSY_DIR	+					0.005 (0.043)				-0.018 (-0.223)
FINANCIAL	-						0.018 (0.512)			0.002 (0.069)
EXPERIENCE	-							-0.010 (-0.610)		0.008 (0.759)
TENURE	+								0.008 (1.369)	-0.000 (-0.035)
BSIZE	+	-0.018 (-1.116)	-0.018 (-1.229)	-0.019 (-1.629)	-0.019 (-1.170)	-0.018 (-1.089)	-0.018 (-1.108)	-0.018 (-1.107)	-0.015 (-0.981)	-0.019 (-1.359)
Ln_TA	-	-0.217*** (-2.738)	-0.177*** (-3.231)	-0.160*** (-3.110)	-0.226** (-2.643)	-0.223** (-2.639)	-0.228** (-2.492)	-0.218** (-2.659)	-0.218** (-2.608)	-0.152*** (-3.381)
Ln_INV_OPTIONS	+	0.094** (2.307)	0.089** (2.609)	0.087*** (2.817)	0.084* (1.992)	0.091** (2.323)	0.091** (2.309)	0.092** (2.315)	0.094** (2.431)	0.083** (2.311)
PRS_AGE	?	0.591 (1.464)	0.468 (1.453)	0.432 (1.459)	0.553 (1.381)	0.592 (1.425)	0.598 (1.466)	0.593 (1.464)	0.515 (1.297)	0.377 (1.111)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.210	0.278	0.154	0.210	0.208	0.209	0.209	0.197	0.154
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## APPENDICES

### Appendix A1.1 Before and after the governance disclosure requirements introduced in 2014

**Table A1.1.1A: Descriptive statistics of *retail* funds for two sub-periods, 2010–2014 and 2015–2016**

This table displays summary statistics for retail superannuation funds between two sub-periods. The sample consists of 434 fund observations for the period 2010–2014, and 206 fund observations for the period 2015–2016.

	Retail 2010–2014 Mean	Retail 2010–2014 Std.Dev.	Retail 2015–2016 Mean	Retail 2015–2016 Std.Dev.	Stat diff.
<i>ROA</i>	6.248	4.395	4.018	2.705	-2.230***
<i>EXCESS_ROA</i>	-0.872	2.805	-0.367	1.816	0.505**
<i>OP_EXP_RATIO</i>	0.940	0.682	0.754	0.569	-0.186***
<i>EXCESS_OP_EXP_RATIO</i>	0.327	0.680	0.237	0.569	-0.090
<i>GOV_INDEX</i>	3.401	1.726	4.316	1.859	0.915***
<i>IND_DIR</i>	0.410	0.344	0.511	0.368	0.100***
<i>IND_CHAIR</i>	0.498	0.501	0.650	0.478	0.153***
<i>FEMALE_DIR</i>	0.241	0.203	0.306	0.242	0.065***
<i>BUSY_DIR</i>	0.819	1.170	0.413	0.528	-0.406***
<i>FINANCIAL</i>	0.615	0.487	0.903	0.297	0.288***
<i>EXPERIENCE</i>	0.235	0.425	0.612	0.489	0.377***
<i>TENURE</i>	4.525	2.365	4.807	2.088	0.282
<i>BSIZE</i>	5.046	1.338	5.325	1.071	0.279***
<i>RETAIL</i>	1.000	0.000	1.000	0.000	0.000
<i>TA(\$ million)</i>	3,019	6,128	4,409	9,131	1,390**
<i>Ln_TA</i>	6.305	1.969	6.593	2.026	0.288*
<i>INV_OPTIONS</i>	190	351	324	511	134***
<i>Ln_INV_OPTIONS</i>	3.409	2.034	3.989	2.221	0.579***
<i>PRS_AGE</i>	0.412	0.255	0.466	0.254	0.054**
Observations	434		206		

*ROA* is net earnings after tax divided by total assets; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets; *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation fund, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.1B: Descriptive statistics of *industry* funds for two sub-periods, 2010–2014 and 2015–2016**

This table displays summary statistics for industry superannuation funds between two sub-periods. The sample consists of 205 fund observations for the period 2010–2014, and 83 fund observations for the period 2015–2016.

	Industry 2010–2014 Mean	Industry 2010–2014 Std.Dev.	Industry 2015–2016 Mean	Industry 2015–2016 Std.Dev.	Stat diff.
<i>ROA</i>	7.112	4.107	5.383	2.649	-1.729***
<i>EXCESS_ROA</i>	0.175	1.443	1.065	1.293	0.890***
<i>OP_EXP_RATIO</i>	0.618	0.381	0.491	0.288	-0.126***
<i>EXCESS_OP_EXP_RATIO</i>	0.005	0.381	-0.025	0.288	-0.030
<i>GOV_INDEX</i>	2.766	1.300	3.482	1.272	0.716***
<i>IND_DIR</i>	0.088	0.109	0.113	0.136	0.025
<i>IND_CHAIR</i>	0.302	0.460	0.386	0.490	0.083
<i>FEMALE_DIR</i>	0.183	0.149	0.251	0.151	0.069***
<i>BUSY_DIR</i>	0.190	0.266	0.154	0.207	-0.036
<i>FINANCIAL</i>	0.800	0.401	0.916	0.280	0.116**
<i>EXPERIENCE</i>	0.307	0.463	0.614	0.490	0.307***
<i>TENURE</i>	6.892	2.618	6.836	2.446	-0.056
<i>BSIZE</i>	8.815	2.195	8.880	2.161	0.065
<i>RETAIL</i>	0.000	0.000	0.000	0.000	0.000
<i>TA(\$ million)</i>	5,610	7,690	8,926	12,093	3,314***
<i>Ln_TA</i>	7.764	1.419	8.218	1.420	0.454**
<i>INV_OPTIONS</i>	11	8	16	10	5***
<i>Ln_INV_OPTIONS</i>	2.313	0.603	2.660	0.642	0.347***
<i>PRS_AGE</i>	0.230	0.089	0.273	0.092	0.043***
Observations	205		83		

*ROA* is net earnings after tax divided by total assets; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets; *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.2A: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds for the period 2010–2014. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j Trustee\ Indicators + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
Constant		-5.673** (-2.250)	-4.908** (-2.017)	-5.295** (-2.164)	-5.513** (-2.184)	-5.920** (-2.269)	-5.524** (-2.202)	-5.608** (-2.237)	-5.639** (-2.250)	-4.188 (-1.527)
GOV_INDEX	+	0.043 (0.394)								
IND_DIR	+		-1.372* (-1.873)							-2.280 (-1.499)
IND_CHAIR	+			-0.496* (-1.680)						-0.150 (-0.189)
FEMALE_DIR	+				0.625 (0.643)					2.296 (1.611)
BUSY_DIR	-					0.229 (0.719)				0.022 (0.063)
FINANCIAL	+						-0.053 (-0.145)			0.164 (0.412)
EXPERIENCE	+							0.266 (0.351)		0.332 (0.412)
TENURE	-								0.013 (0.111)	-0.027 (-0.240)
BSIZE	-	-0.206 (-1.310)	-0.160 (-1.020)	-0.179 (-1.146)	-0.224 (-1.390)	-0.162 (-0.939)	-0.191 (-1.215)	-0.203 (-1.251)	-0.187 (-1.236)	-0.266 (-1.469)
Ln_TA	+	0.327** (2.348)	0.333** (2.558)	0.327** (2.474)	0.329** (2.364)	0.332** (2.396)	0.327** (2.358)	0.326** (2.352)	0.328** (2.369)	0.341*** (2.604)
Ln_INV_OPTIONS	+	0.253*** (2.848)	0.300*** (3.365)	0.285*** (3.256)	0.250*** (2.872)	0.267*** (3.023)	0.257*** (2.929)	0.256*** (2.955)	0.255*** (2.921)	0.292*** (3.202)
PRS_AGE	-	-1.546 (-1.098)	-1.392 (-1.099)	-1.474 (-1.129)	-1.534 (-1.094)	-1.489 (-1.050)	-1.540 (-1.097)	-1.542 (-1.100)	-1.542 (-1.100)	-1.287 (-0.983)
Observations		434	434	434	434	434	434	434	434	434
R-squared		0.243	0.255	0.250	0.243	0.246	0.243	0.244	0.243	0.263
Trustee FE		Yes	Yes							

The OLS regression is estimated using the sub-sample of 434 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.2B: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds for the period 2015–2016. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		-2.128 (-0.956)	-2.180 (-1.206)	-1.405 (-0.788)	-1.958 (-1.041)	0.409 (0.188)	-3.057 (-1.554)	-1.241 (-0.691)	-1.913 (-0.989)	5.163* (1.764)
GOV_INDEX	+	-0.019 (-0.097)								
IND_DIR	+		-0.113 (-0.056)							3.212 (1.375)
IND_CHAIR	+			-1.851* (-1.699)						-5.471** (-2.273)
FEMALE_DIR	+				-2.624 (-1.320)					-0.861 (-0.340)
BUSY_DIR	-					2.380** (2.435)				3.790*** (2.858)
FINANCIAL	+						0.781** (2.119)			-0.988 (-1.036)
EXPERIENCE	+							1.096*** (2.634)		0.779* (1.677)
TENURE	-								-0.097 (-0.522)	-0.030 (-0.116)
BSIZE	-	0.346 (1.179)	0.354 (0.908)	0.546 (1.569)	0.434 (1.444)	-0.251 (-0.686)	0.357 (1.215)	0.049 (0.168)	0.361 (1.216)	-0.463 (-1.079)
Ln_TA	+	0.047 (0.432)	0.047 (0.429)	0.052 (0.473)	0.056 (0.516)	0.062 (0.568)	0.046 (0.426)	0.048 (0.426)	0.042 (0.374)	-0.075 (0.629)
Ln_INV_OPTIONS	+	0.123 (1.293)	0.123 (1.293)	0.111 (1.173)	0.111 (1.179)	0.109 (1.138)	0.123 (1.306)	0.106 (1.082)	0.124 (1.303)	0.068 (0.648)
PRS_AGE	-	-1.632 (-1.627)	-1.633 (-1.636)	-1.545 (-1.583)	-1.538 (-1.557)	-1.559 (-1.525)	-1.641 (-1.638)	-1.608 (-1.589)	-1.646 (-1.642)	-1.365 (-1.302)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.257	0.257	0.264	0.263	0.277	0.259	0.289	0.258	0.333
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.2C: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds for the period between 2010–2014**

This table provides evidence on the association between the governance practices and performance of industry superannuation funds for the period 2010–2014. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j Trustee\ Indicators + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		1.957 (0.238)	4.210 (0.557)	3.948 (0.514)	1.606 (0.200)	1.053 (0.131)	-0.418 (-0.048)	0.996 (0.110)	1.516 (0.197)	1.130 (0.110)
GOV_INDEX	+	0.042 (0.211)								
IND_DIR	+		8.173** (2.244)							6.968* (1.718)
IND_CHAIR	+			0.961 (1.569)						0.708 (1.080)
FEMALE_DIR	+				0.474 (0.260)					1.271 (0.694)
BUSY_DIR	-					0.941 (1.592)				1.077** (1.975)
FINANCIAL	+						-0.860 (-1.344)			-0.706 (-1.014)
EXPERIENCE	+							-0.100 (-0.156)		-0.374 (-0.562)
TENURE	-								-0.003 (-0.034)	0.061 (0.593)
BSIZE	-	-0.028 (-0.117)	0.017 (0.076)	-0.022 (-0.102)	-0.026 (-0.105)	-0.030 (-0.122)	-0.014 (-0.057)	-0.025 (-0.097)	-0.024 (-0.104)	0.021 (0.094)
Ln_TA	+	-0.250 (-0.316)	-0.592 (-0.807)	-0.468 (-0.617)	-0.208 (-0.282)	-0.223 (-0.301)	0.089 (0.101)	-0.148 (-0.164)	-0.204 (-0.277)	-0.310 (-0.271)
Ln_INV_OPTIONS	+	0.273 (0.702)	0.362 (0.897)	0.325 (0.844)	0.255 (0.641)	0.249 (0.644)	0.197 (0.470)	0.276 (0.691)	0.274 (0.692)	0.245 (0.562)
PRS_AGE	-	6.418** (2.000)	6.834** (2.117)	6.666** (2.009)	6.222* (1.805)	6.558* (1.906)	6.032* (1.789)	6.456* (1.862)	6.498* (1.868)	5.621 (1.438)
Observations		205	205	205	205	205	205	205	205	205
R-squared		0.336	0.365	0.344	0.336	0.342	0.345	0.336	0.336	0.383
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 205 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.2D: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and performance of industry superannuation funds for the period 2015–2016. The results in this table are from estimating the following OLS regression:

$$EXCESS\_ROA = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (1)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		-10.142 (-0.240)	-2.084 (-0.048)	-3.251 (-0.076)	-2.896 (-0.066)	-4.255 (-0.101)	-3.665 (-0.083)	-6.955 (-0.153)	-5.450 (-0.124)	-10.603 (-0.216)
GOV_INDEX	+	-0.235 (-0.629)								
IND_DIR	+		1.462 (0.286)							0.423 (0.044)
IND_CHAIR	+			-3.154 (-0.129)						6.594 (1.410)
FEMALE_DIR	+				2.842 (0.593)					3.311 (0.480)
BUSY_DIR	-					0.849 (0.363)				1.097 (0.359)
FINANCIAL	+						-0.873 (-0.934)			-1.094 (-0.851)
EXPERIENCE	+							-0.277 (-0.397)		-0.362 (-0.438)
TENURE	-								0.058 (0.169)	0.038 (0.103)
BSIZE	-	-0.517 (-0.668)	-0.615 (-0.658)	-0.560 (-0.725)	-0.621 (-0.778)	-0.567 (-0.731)	-0.603 (-0.749)	-0.542 (-0.698)	-0.556 (-0.709)	-0.680 (-0.655)
Ln_TA	+	0.260 (0.046)	-0.658 (-0.111)	-0.545 (-0.093)	-0.592 (-0.099)	-0.491 (-0.085)	-0.375 (-0.062)	-0.243 (-0.040)	-0.379 (-0.064)	0.157 (0.024)
Ln_INV_OPTIONS	+	0.495 (0.381)	0.909 (0.521)	0.767 (0.563)	1.053 (0.729)	0.847 (0.585)	0.796 (0.571)	0.864 (0.609)	0.915 (0.571)	1.503 (0.625)
PRS_AGE	-	33.031 (1.141)	29.379 (1.071)	30.154 (1.066)	26.661 (0.893)	30.923 (1.070)	30.145 (1.047)	32.044 (1.155)	29.608 (1.036)	28.955 (0.929)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.539	0.531	0.530	0.537	0.532	0.533	0.534	0.531	0.550
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.3A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds for the period 2010–2014. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j Trustee\ Indicators + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
Constant		-0.347 (-1.226)	-0.519* (-1.906)	-0.421 (-1.493)	-0.444 (-1.504)	-0.447 (-1.555)	-0.296 (-0.999)	-0.294 (-1.013)	-0.392 (-1.275)	-0.436 (-1.198)
GOV_INDEX	-	-0.025** (-2.029)								
IND_DIR	-		-0.269*** (-2.649)							-0.094 (-0.583)
IND_CHAIR	-			-0.130*** (-2.953)						-0.028 (-0.364)
FEMALE_DIR	-				-0.291*** (-2.785)					-0.134 (-1.054)
BUSY_DIR	+					0.045 (1.453)				0.039 (1.103)
FINANCIAL	-						0.006 (0.154)			0.036 (0.950)
EXPERIENCE	-							-0.002 (-0.065)		0.012 (0.300)
TENURE	+								0.013 (0.796)	0.003 (0.203)
BSIZE	+	-0.012 (-0.483)	-0.015 (-0.631)	-0.016 (-0.667)	-0.006 (-0.219)	-0.014 (-0.586)	-0.019 (-0.757)	-0.019 (-0.754)	-0.014 (-0.554)	0.000 (0.005)
Ln_TA	-	0.143** (2.569)	0.174*** (3.248)	0.155*** (2.739)	0.148** (2.562)	0.144*** (2.634)	0.128** (2.165)	0.128** (2.182)	0.133** (2.356)	0.020 (0.572)
Ln_INV_OPTIONS	+	-0.087*** (-2.832)	-0.082*** (-2.756)	-0.084*** (-2.809)	-0.085*** (-2.801)	-0.086*** (-2.827)	-0.091*** (-2.923)	-0.090*** (-2.945)	-0.093*** (-3.073)	-0.053* (-1.830)
PRS_AGE	?	0.381 (1.502)	0.411* (1.728)	0.380 (1.519)	0.395 (1.551)	0.361 (1.464)	0.381 (1.492)	0.381 (1.495)	0.340 (1.445)	0.438** (2.434)
Observations		434	434	434	434	434	434	434	434	434
R-squared		0.0133	0.0346	0.0408	0.182	0.0150	0.166	0.166	0.0116	0.394
Trustee FE		Yes	Yes							

The OLS regression is estimated using the sub-sample of 434 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.3B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds for the period 2015–2016. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j Trustee\ Indicators + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		2.649*** (5.448)	2.497*** (4.343)	2.791*** (5.589)	2.753*** (5.215)	2.702*** (5.249)	2.682*** (5.216)	2.937*** (5.990)	2.639*** (5.209)	2.863*** (6.083)
GOV_INDEX	-	0.017 (1.163)								
IND_DIR	-		0.402 (0.978)							0.871* (1.877)
IND_CHAIR	-			-0.102 (-1.007)						-0.633** (-2.296)
FEMALE_DIR	-				-0.150 (-0.765)					-0.299 (-1.224)
BUSY_DIR	+					-0.029 (-0.466)				-0.058 (-0.589)
FINANCIAL	-						0.041 (1.023)			-0.063 (-0.778)
EXPERIENCE	-							0.099 (1.636)		0.105** (2.061)
TENURE	+								0.013 (0.717)	0.017* (1.681)
BSIZE	+	-0.014 (-0.444)	-0.043 (-0.808)	-0.003 (-0.089)	-0.008 (-0.304)	-0.006 (-0.162)	-0.012 (-0.403)	-0.041 (-0.965)	-0.014 (-0.444)	-0.029 (-0.757)
Ln_TA	-	-0.218*** (-2.680)	-0.191** (-2.063)	-0.228*** (-2.789)	-0.221*** (-2.706)	-0.222*** (-2.713)	-0.221*** (-2.701)	-0.244*** (-3.294)	-0.217** (-2.577)	-0.210*** (-2.839)
Ln_INV_OPTIONS	+	0.041** (1.995)	0.051 (1.571)	0.033* (1.975)	0.033 (1.529)	0.040** (2.043)	0.039* (1.923)	0.025 (1.218)	0.043* (1.898)	0.005 (0.236)
PRS_AGE	?	-2.435*** (-4.401)	-2.509*** (-4.236)	-2.355*** (-4.552)	-2.355*** (-4.546)	-2.394*** (-4.605)	-2.387*** (-4.486)	-2.222*** (-4.760)	-2.418*** (-4.283)	-2.408*** (-5.678)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.0688	0.456	0.0713	0.0708	0.0705	0.398	0.0673	0.401	0.620
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.3C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices and fees of industry superannuation funds for the period 2010–2014. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j Trustee\ Indicators + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		1.733*** (3.186)	1.591*** (3.532)	1.342*** (4.024)	1.769*** (3.063)	1.738*** (2.971)	1.786*** (2.959)	1.653*** (2.878)	1.737*** (3.126)	1.331*** (3.960)
GOV_INDEX	–	-0.001 (-0.073)								
IND_DIR	–		-0.726* (-1.903)							-0.256 (-1.555)
IND_CHAIR	–			-0.240*** (-2.840)						-0.264*** (-3.102)
FEMALE_DIR	–				0.174 (1.399)					0.043 (0.333)
BUSY_DIR	+					-0.012 (-0.125)				-0.073 (-1.470)
FINANCIAL	–						0.029 (0.663)			-0.011 (-0.369)
EXPERIENCE	–							-0.022 (-0.992)		-0.014 (-0.743)
TENURE	+								0.000 (0.031)	-0.015** (-2.540)
BSIZE	+	-0.017 (-0.982)	-0.021 (-1.398)	-0.018* (-1.817)	-0.019 (-1.058)	-0.017 (-0.950)	-0.018 (-0.969)	-0.018 (-1.005)	-0.017 (-1.010)	-0.026*** (-2.726)
Ln_TA	–	-0.238*** (-3.158)	-0.204*** (-3.547)	-0.173*** (-3.558)	-0.240*** (-3.109)	-0.238*** (-2.983)	-0.249*** (-2.953)	-0.226*** (-2.788)	-0.239*** (-3.053)	-0.142*** (-2.999)
Ln_INV_OPTIONS	+	0.087** (2.145)	0.079** (2.149)	0.074** (2.382)	0.080** (2.087)	0.087** (2.233)	0.090** (2.185)	0.088** (2.187)	0.087** (2.125)	0.074** (2.287)
PRS_AGE	?	0.315 (0.843)	0.284 (0.826)	0.271 (0.875)	0.215 (0.605)	0.313 (0.833)	0.330 (0.864)	0.306 (0.803)	0.314 (0.837)	0.248 (0.726)
Observations		205	205	205	205	205	205	205	205	205
R-squared		0.225	0.198	0.368	0.238	0.226	0.202	0.207	0.203	0.148
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 205 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1.3D: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and fees of industry superannuation funds for the period 2015–2016. The results in this table are from estimating the following OLS regression:

$$EXCESS\_OP\_EXP\_RATIO = \alpha + \beta_1 GOV\_INDEX + \beta_2 BSIZE + \beta_3 Ln\_TA + \beta_4 Ln\_INV\_OPTIONS + \beta_5 PRS\_AGE + \beta_j \text{Trustee Indicators} + \varepsilon_i \quad (2)$$

VARIABLES	Pred. sign	(1)	(2)	(3)	(11)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		0.765 (1.127)	0.624 (0.949)	0.854 (0.664)	0.709 (1.009)	0.791 (1.100)	0.685 (1.009)	0.785 (1.152)	0.488 (0.801)	0.668 (0.973)
GOV_INDEX	-	0.003 (0.318)								
IND_DIR	-		-0.086 (-0.527)							-0.182 (-0.700)
IND_CHAIR	-			-0.142 (-0.183)						0.717 (0.604)
FEMALE_DIR	-				0.153 (0.918)					0.195 (0.785)
BUSY_DIR	+					-0.093 (-1.386)				-0.068 (-0.686)
FINANCIAL	-						-0.005 (-0.649)			0.014 (0.541)
EXPERIENCE	-							0.008 (0.575)		0.007 (0.467)
TENURE	+								0.006 (0.839)	0.002 (0.217)
BSIZE	+	-0.003 (-0.481)	0.001 (0.096)	-0.002 (-0.271)	-0.006 (-0.714)	-0.002 (-0.271)	-0.003 (-0.408)	-0.003 (-0.480)	-0.002 (-0.328)	0.001 (0.066)
Ln_TA	-	-0.143 (-1.489)	-0.126 (-1.388)	-0.133 (-0.981)	-0.135 (-1.380)	-0.139 (-1.376)	-0.132 (-1.394)	-0.142 (-1.518)	-0.117 (-1.348)	-0.131 (-0.870)
Ln_INV_OPTIONS	+	0.092*** (2.872)	0.081** (2.431)	0.089** (2.014)	0.104*** (2.716)	0.080** (2.284)	0.089*** (2.913)	0.086*** (2.730)	0.103*** (2.880)	0.087 (1.213)
PRS_AGE	?	0.564 (1.190)	0.646 (1.302)	0.600 (0.868)	0.412 (0.704)	0.516 (1.054)	0.600 (1.251)	0.543 (1.068)	0.547 (1.102)	0.323 (0.337)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.090	0.180	0.990	0.278	0.127	0.211	0.234	0.103	0.991
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *TA(\$million)* is total assets at the end of the period in thousands; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *INV\_OPTIONS* is the number of investment options; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A1.2 Alternate measure of performance for retail superannuation funds

**Table A1.2.1A: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *retail* funds**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_ROR*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		-6.720*** (-3.719)	-6.011*** (-3.539)	-6.089*** (-3.606)	-6.253*** (-3.668)	-6.052*** (-3.603)	-6.447*** (-3.798)	-6.144*** (-3.636)	-6.064*** (-3.596)	-5.901*** (-3.423)
<i>GOV_INDEX</i>	+	0.152* (1.897)								
<i>IND_DIR</i>	+		-0.181 (-0.352)							-0.915 (-0.914)
<i>IND_CHAIR</i>	+			-0.049 (-0.183)						-0.055 (-0.094)
<i>FEMALE_DIR</i>	+				0.565 (0.740)					0.771 (0.682)
<i>BUSY_DIR</i>	-					-0.057 (-0.454)				0.063 (0.418)
<i>FINANCIAL</i>	+						0.435* (1.748)			0.430 (1.239)
<i>EXPERIENCE</i>	+							0.555* (1.774)		0.484 (1.345)
<i>TENURE</i>	-								-0.023 (-0.261)	-0.032 (-0.353)
<i>BSIZE</i>	-	0.135 (1.156)	0.171 (1.455)	0.168 (1.428)	0.156 (1.291)	0.156 (1.270)	0.146 (1.245)	0.138 (1.165)	0.165 (1.398)	0.141 (1.128)
<i>Ln_TA</i>	+	0.346*** (3.264)	0.337*** (3.269)	0.338*** (3.281)	0.347*** (3.318)	0.339*** (3.256)	0.344*** (3.288)	0.337*** (3.234)	0.341*** (3.273)	0.334*** (3.259)
<i>Ln_INV_OPTIONS</i>	+	0.270*** (3.495)	0.288*** (3.729)	0.286*** (3.750)	0.275*** (3.648)	0.281*** (3.658)	0.271*** (3.476)	0.271*** (3.517)	0.283*** (3.693)	0.278*** (3.524)
<i>PRS_AGE</i>	-	-1.465* (-1.834)	-1.397* (-1.772)	-1.404* (-1.773)	-1.404* (-1.763)	-1.412* (-1.786)	-1.427* (-1.798)	-1.474* (-1.849)	-1.400* (-1.765)	-1.412* (-1.780)
Observations		637	637	637	637	637	637	637	637	637
R-squared		0.212	0.210	0.209	0.210	0.209	0.211	0.213	0.209	0.217
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 637 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.1B: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_ROR* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
<i>Constant</i>		-7.141** (-2.411)	-6.259** (-2.156)	-6.626** (-2.269)	-6.755** (-2.293)	-6.896** (-2.305)	-6.886** (-2.354)	-6.751** (-2.336)	-6.325** (-2.135)	-4.645 (-1.456)
<i>GOV_INDEX</i>	+	0.128 (0.898)								
<i>IND_DIR</i>	+		-0.887 (-1.091)							-2.383 (-1.469)
<i>IND_CHAIR</i>	+			-0.223 (-0.574)						-0.008 (-0.008)
<i>FEMALE_DIR</i>	+				1.039 (0.876)					2.388 (1.270)
<i>BUSY_DIR</i>	-					0.064 (0.178)				-0.028 (-0.072)
<i>FINANCIAL</i>	+						0.108 (0.258)			0.304 (0.693)
<i>EXPERIENCE</i>	+							-0.244 (-0.252)		-0.254 (-0.248)
<i>TENURE</i>	-								-0.098 (-0.707)	-0.147 (-1.104)
<i>BSIZE</i>	-	-0.196 (-1.165)	-0.138 (-0.828)	-0.153 (-0.912)	-0.207 (-1.175)	-0.153 (-0.828)	-0.161 (-0.949)	-0.152 (-0.868)	-0.193 (-1.155)	-0.269 (-1.325)
<i>Ln_TA</i>	+	0.431*** (3.076)	0.421*** (3.153)	0.423*** (3.120)	0.435*** (3.117)	0.424*** (3.106)	0.428*** (3.095)	0.426*** (3.098)	0.422*** (3.012)	0.412*** (3.094)
<i>Ln_INV_OPTIONS</i>	+	0.319*** (3.252)	0.355*** (3.626)	0.340*** (3.526)	0.314*** (3.319)	0.342*** (3.472)	0.326*** (3.339)	0.332*** (3.488)	0.338*** (3.536)	0.380*** (3.851)
<i>PRS_AGE</i>	-	-1.834 (-1.609)	-1.767 (-1.622)	-1.800 (-1.612)	-1.797 (-1.560)	-1.797 (-1.613)	-1.818 (-1.606)	-1.810 (-1.611)	-1.826 (-1.617)	-1.683 (-1.568)
Observations		431	431	431	431	431	431	431	431	431
R-squared		0.224	0.227	0.225	0.224	0.225	0.224	0.224	0.225	0.236
Trustee FE		Yes	Yes							

The OLS regression is estimated using the sub-sample of 431 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.1C: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_ROR* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-4.258*	-4.411**	–	–	-1.449	-5.160**	-3.318*	-3.946**	3.405
<i>GOV_INDEX</i>	+	(-1.915) -0.016 (-0.077)	(-2.417)	3.633** (-2.008)	4.071** (-2.121)	(-0.702)	(-2.525)	(-1.891)	(-2.036)	(1.164)
<i>IND_DIR</i>	+		0.212 (0.102)							3.610 (1.456)
<i>IND_CHAIR</i>	+			-1.597 (-1.342)						-5.250** (-2.005)
<i>FEMALE_DIR</i>	+				-2.655 (-1.282)					-1.054 (-0.403)
<i>BUSY_DIR</i>	-					2.613** (2.493)				4.011*** (2.722)
<i>FINANCIAL</i>	+						0.769* (1.932)			-1.053 (-0.998)
<i>EXPERIENCE</i>	+							1.139** (2.456)		0.818* (1.647)
<i>TENURE</i>	-								-0.124 (-0.558)	-0.102 (-0.334)
<i>BFSIZE</i>	-	0.387 (1.195)	0.370 (0.871)	0.560 (1.443)	0.477 (1.427)	-0.267 (-0.706)	0.398 (1.228)	0.079 (0.251)	0.406 (1.232)	-0.526 (-1.188)
<i>Ln_TA</i>	+	0.200** (2.111)	0.199** (2.090)	0.204** (2.139)	0.210** (2.190)	0.217** (2.258)	0.200** (2.113)	0.201** (2.046)	0.194** (2.011)	0.225** (2.053)
<i>Ln_INV_OPTIONS</i>	+	0.224*** (2.683)	0.226*** (2.693)	0.214** (2.562)	0.213** (2.548)	0.209** (2.442)	0.224*** (2.704)	0.207** (2.352)	0.225*** (2.683)	0.170* (1.753)
<i>PRS_AGE</i>	-	-1.240 (-1.603)	-1.258 (-1.631)	-1.165 (-1.566)	-1.144 (-1.513)	-1.159 (-1.437)	-1.248 (-1.618)	-1.214 (-1.525)	-1.255 (-1.626)	-0.995 (-1.175)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.366	0.366	0.370	0.371	0.385	0.367	0.392	0.368	0.430
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.2A: Superannuation fund performance (*ROA*) and governance variables of *retail* funds**

This table provides evidence on the association between the governance practices of retail superannuation funds and *ROA*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		2.183 (1.336)	2.724* (1.692)	2.543 (1.621)	2.402 (1.527)	2.843* (1.794)	2.193 (1.411)	2.421 (1.566)	2.355 (1.538)	2.560 (1.593)
<i>GOV_INDEX</i>	+	0.086 (1.121)								
<i>IND_DIR</i>	+		-0.319 (-0.574)							-0.703 (-0.755)
<i>IND_CHAIR</i>	+			-0.028 (-0.105)						0.116 (0.240)
<i>FEMALE_DIR</i>	+				0.550 (0.793)					1.142 (1.252)
<i>BUSY_DIR</i>	-					-0.196 (-1.395)				-0.214 (-1.394)
<i>FINANCIAL</i>	+						0.381 (1.395)			0.291 (0.930)
<i>EXPERIENCE</i>	+							0.460 (1.403)		0.467 (1.364)
<i>TENURE</i>	-								0.040 (0.517)	0.088 (1.092)
<i>BSIZE</i>	-	0.106 (0.926)	0.118 (1.016)	0.114 (0.988)	0.109 (0.934)	0.089 (0.770)	0.114 (0.989)	0.109 (0.944)	0.122 (1.101)	0.091 (0.814)
<i>Ln_TA</i>	+	0.299*** (2.674)	0.285*** (2.616)	0.290*** (2.639)	0.302*** (2.696)	0.285** (2.554)	0.302*** (2.711)	0.295*** (2.655)	0.295*** (2.669)	0.284*** (2.598)
<i>Ln_INV_OPTIONS</i>	+	0.156** (2.159)	0.167** (2.298)	0.163** (2.259)	0.152** (2.139)	0.162** (2.237)	0.155** (2.152)	0.156** (2.172)	0.160** (2.229)	0.159** (2.248)
<i>PRS_AGE</i>	-	-1.120 (-1.166)	-1.107 (-1.204)	-1.119 (-1.200)	-1.102 (-1.142)	-1.094 (-1.162)	-1.076 (-1.096)	-1.103 (-1.150)	-1.127 (-1.183)	-0.976 (-1.048)
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.706	0.707	0.706	0.706	0.708	0.707	0.706	0.706	0.711
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 640 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.2B: Superannuation fund performance (*ROA*) and governance variables of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of retail superannuation funds and *ROA* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		1.351 (0.556)	1.844 (0.757)	1.670 (0.695)	1.815 (0.745)	1.681 (0.674)	1.518 (0.628)	1.507 (0.628)	1.372 (0.570)	2.560 (0.952)
<i>GOV_INDEX</i>	+	0.113 (0.887)								
<i>IND_DIR</i>	+		-0.475 (-0.581)							-0.826 (-0.552)
<i>IND_CHAIR</i>	+			-0.110 (-0.287)						-0.534 (-0.649)
<i>FEMALE_DIR</i>	+				1.716 (1.596)					3.008** (2.128)
<i>BUSY_DIR</i>	-					-0.053 (-0.166)				-0.293 (-0.857)
<i>FINANCIAL</i>	+						0.078 (0.211)			0.056 (0.152)
<i>EXPERIENCE</i>	+							0.574 (0.753)		0.753 (0.930)
<i>TENURE</i>	-								0.047 (0.395)	0.103 (0.848)
<i>BSIZE</i>	-	-0.158 (-0.933)	-0.128 (-0.752)	-0.130 (-0.767)	-0.198 (-1.139)	-0.137 (-0.763)	-0.128 (-0.750)	-0.151 (-0.864)	-0.108 (-0.639)	-0.250 (-1.343)
<i>Ln_TA</i>	+	0.367*** (2.801)	0.365*** (2.903)	0.364*** (2.861)	0.371*** (2.812)	0.363*** (2.832)	0.368*** (2.839)	0.365*** (2.848)	0.370*** (2.874)	0.368*** (2.983)
<i>Ln_INV_OPTIONS</i>	+	0.280*** (3.071)	0.295*** (3.317)	0.292*** (3.260)	0.270*** (2.989)	0.289*** (3.230)	0.281*** (3.131)	0.285*** (3.206)	0.279*** (3.146)	0.286*** (3.194)
<i>PRS_AGE</i>	-	-1.156 (-0.891)	-1.178 (-0.981)	-1.182 (-0.967)	-1.091 (-0.824)	-1.180 (-0.959)	-1.167 (-0.909)	-1.174 (-0.940)	-1.172 (-0.920)	-1.039 (-0.869)
Observations		434	434	434	434	434	434	434	434	434
R-squared		0.712	0.713	0.713	0.713	0.713	0.712	0.713	0.713	0.719
Year FE		Yes								
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 434 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.2C: Superannuation fund performance (*ROA*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of retail superannuation funds and *ROA* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)				
<i>Constant</i>		5.812*** (2.637)	4.779*** (2.664)	5.100*** (2.833)	5.034*** (2.714)	6.796*** (3.061)	4.845** (2.480)	5.246*** (2.839)	5.109*** (2.718)	11.383*** (3.641)
<i>GOV_INDEX</i>	+	-0.194 (-0.935)								
<i>IND_DIR</i>	+		0.160 (0.088)							2.890 (1.130)
<i>IND_CHAIR</i>	+			-0.627 (-0.507)						-4.715* (-1.734)
<i>FEMALE_DIR</i>	+				-2.062 (-0.988)					-0.818 (-0.322)
<i>BUSY_DIR</i>	-					1.799** (2.003)				3.497** (2.505)
<i>FINANCIAL</i>	+						-0.009 (-0.019)			-0.958 (-1.063)
<i>EXPERIENCE</i>	+							0.535 (0.961)		0.600 (1.047)
<i>TENURE</i>	-								-0.087 (-0.505)	-0.058 (-0.245)
<i>BSIZE</i>	-	0.212 (0.752)	0.205 (0.552)	0.291 (0.795)	0.291 (0.956)	-0.220 (-0.591)	0.218 (0.761)	0.106 (0.349)	0.232 (0.796)	-0.430 (-0.981)
<i>Ln_TA</i>	+	0.060 (0.528)	0.049 (0.430)	0.052 (0.451)	0.058 (0.504)	0.061 (0.540)	0.050 (0.436)	0.050 (0.434)	0.046 (0.393)	0.072 (0.596)
<i>Ln_INV_OPTIONS</i>	+	0.099 (1.009)	0.109 (1.097)	0.104 (1.056)	0.099 (1.001)	0.098 (0.994)	0.108 (1.094)	0.103 (1.037)	0.108 (1.087)	0.071 (0.670)
<i>PRS_AGE</i>	-	-1.494 (-1.481)	-1.583 (-1.566)	-1.545 (-1.544)	-1.496 (-1.490)	-1.520 (-1.478)	-1.574 (-1.554)	-1.575 (-1.550)	-1.580 (-1.556)	-1.384 (-1.312)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.686	0.684	0.684	0.686	0.689	0.684	0.686	0.684	0.700
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.3: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds with interactions**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>VARIABLES</i>	Pred. sign	Coeff. (t-stats)								
<i>Constant</i>		-5.068*** (-2.952)	-4.247*** (-2.643)	-4.518*** (-2.820)	-4.768*** (-2.881)	-4.633*** (-2.688)	-5.154*** (-3.142)	-4.857*** (-3.000)	-4.794*** (-2.859)	-4.459*** (-2.644)
<i>GOV_INDEX</i>	+	0.092 (1.265)								
<i>GOV_INDEX_P2014</i>	+	-0.084 (-0.864)								
<i>POST2014</i>	?	0.827* (1.859)	0.428 (1.482)	0.519* (1.721)	0.825** (2.551)	0.422** (1.993)	-0.300 (-0.923)	0.312 (1.433)	0.281 (0.675)	0.155 (0.182)
<i>IND_DIR</i>	+		-1.046* (-1.911)							-1.785* (-1.701)
<i>IND_DIR_P2014</i>	+		0.333 (0.741)							0.311 (0.401)
<i>IND_CHAIR</i>	+			-0.371 (-1.527)						0.108 (0.209)
<i>IND_CHAIR_P2014</i>	+			0.081 (0.219)						0.728 (0.981)
<i>FEMALE_DIR</i>	+				0.253 (0.292)					1.230 (1.117)
<i>FEMALE_DIR_P2014</i>	+				-0.944 (-1.055)					-2.864* (-1.939)
<i>BUSY_DIR</i>	-					-0.080 (-0.573)				0.010 (0.054)
<i>BUSY_DIR_P2014</i>	-					0.184 (0.513)				0.079 (0.199)
<i>FINANCIAL</i>	+						0.195 (0.696)			0.366 (1.028)
<i>FINANCIAL_P2014</i>	+						0.876** (2.337)			0.658 (1.148)
<i>EXPERIENCE</i>	+							0.553 (1.399)		0.394 (0.904)
<i>EXPERIENCE_P2014</i>	+							0.048 (0.130)		0.456 (0.983)
<i>TENURE</i>	-								0.007 (0.083)	0.015 (0.162)
<i>TENURE_P2014</i>	-								0.052 (0.657)	-0.095 (-0.910)
<i>BSIZE</i>	-	0.069 (0.602)	0.115 (1.000)	0.094 (0.827)	0.075 (0.642)	0.070 (0.583)	0.100 (0.878)	0.074 (0.641)	0.090 (0.810)	0.066 (0.509)
<i>Ln_TA</i>	+	0.266** (2.230)	0.252** (2.269)	0.256** (2.255)	0.258** (2.158)	0.261** (2.235)	0.272** (2.327)	0.264** (2.185)	0.262** (2.185)	0.250** (2.220)
<i>Ln_INV_OPTIONS</i>	+	0.144** (2.018)	0.177** (2.456)	0.165** (2.330)	0.153** (2.159)	0.149** (2.095)	0.140** (1.959)	0.143** (2.038)	0.154** (2.164)	0.166** (2.216)
<i>PRS_AGE</i>	-	-1.449 (-1.370)	-1.291 (-1.324)	-1.368 (-1.355)	-1.453 (-1.380)	-1.396 (-1.360)	-1.349 (-1.265)	-1.408 (-1.342)	-1.459 (-1.378)	-1.166 (-1.192)
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.195	0.204	0.199	0.196	0.196	0.198	0.198	0.195	0.220
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *POST2014* is an indicator variable set to 1 if year  $\geq$  2015, 0 otherwise; *GOV\_INDEX\_P2014* is an interaction between *GOV\_INDEX* and *POST2014*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_P2014* is an interaction between *IND\_DIR* and *POST2014*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *IND\_CHAIR\_P2014* is an interaction between *IND\_CHAIR* and *POST2014*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\_P2014* is an interaction between *FEMALE\_DIR* and *POST2014*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\_P2014* is an interaction between *BUSY\_DIR* and *POST2014*; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *FINANCIAL\_P2014* is an interaction between *FINANCIAL* and *POST2014*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *EXPERIENCE\_P2014* is an interaction between *EXPERIENCE* and *POST2014*; *TENURE* is the average director tenure; *TENURE\_P2014* is an interaction between *TENURE* and *POST2014*; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.4A: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *retail* funds**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of retail superannuation funds.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-5.534*** (-3.308)	-5.280*** (-3.164)	-5.440*** (-3.293)	-5.377*** (-3.182)
<i>GOV_INDEX</i>	+	0.129* (1.916)			
<i>GOV_INDEX1</i>	+		0.063 (0.825)		
<i>GOV_INDEX2</i>	+			0.107 (1.623)	
<i>GOV_INDEX3</i>	+				0.090 (1.143)
<i>BSIZE</i>	-	0.102 (0.924)	0.120 (1.088)	0.107 (0.972)	0.115 (1.043)
<i>Ln_TA</i>	+	0.280** (2.418)	0.277** (2.413)	0.279** (2.419)	0.278** (2.411)
<i>Ln_INV_OPTIONS</i>	+	0.169** (2.360)	0.184** (2.572)	0.175** (2.432)	0.180** (2.527)
<i>PRS_AGE</i>	-	-1.191 (-1.179)	-1.137 (-1.141)	-1.169 (-1.163)	-1.155 (-1.155)
Observations		640	640	640	640
R-squared		0.189	0.188	0.188	0.188
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.4B: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of retail superannuation funds for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-5.673** (-2.250)	-5.636** (-2.230)	-5.673** (-2.250)	-5.636** (-2.230)
<i>GOV_INDEX</i>	+	0.043 (0.394)			
<i>GOV_INDEX1</i>	+		0.034 (0.280)		
<i>GOV_INDEX2</i>	+			0.043 (0.394)	
<i>GOV_INDEX3</i>	+				0.034 (0.280)
<i>BSIZE</i>	-	-0.206 (-1.310)	-0.201 (-1.295)	-0.206 (-1.310)	-0.201 (-1.295)
<i>Ln_TA</i>	+	0.327** (2.348)	0.327** (2.350)	0.327** (2.348)	0.327** (2.350)
<i>Ln_INV_OPTIONS</i>	+	0.253*** (2.848)	0.254*** (2.892)	0.253*** (2.848)	0.254*** (2.892)
<i>PRS_AGE</i>	-	-1.546 (-1.098)	-1.540 (-1.094)	-1.546 (-1.098)	-1.540 (-1.094)
Observations		434	434	434	434
R-squared		0.243	0.243	0.243	0.243
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 434 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2.4C: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of retail superannuation funds for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-2.128 (-0.956)	-1.836 (-0.876)	-1.425 (-0.654)	-2.317 (-1.094)
<i>GOV_INDEX</i>	+	-0.019 (-0.097)			
<i>GOV_INDEX1</i>	+		-0.094 (-0.546)		
<i>GOV_INDEX2</i>	+			-0.171 (-1.020)	
<i>GOV_INDEX3</i>	+				0.022 (0.122)
<i>BSIZE</i>	-	0.346 (1.179)	0.345 (1.184)	0.346 (1.192)	0.345 (1.175)
<i>Ln_TA</i>	+	0.047 (0.432)	0.051 (0.472)	0.054 (0.494)	0.045 (0.408)
<i>Ln_INV_OPTIONS</i>	+	0.123 (1.293)	0.119 (1.267)	0.117 (1.253)	0.124 (1.305)
<i>PRS_AGE</i>	-	-1.632 (-1.627)	-1.612 (-1.610)	-1.591 (-1.596)	-1.648 (-1.637)
Observations		206	206	206	206
R-squared		0.257	0.258	0.260	0.257
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A1.3 Alternate measure of performance for industry superannuation funds

**Table A1.3.1A: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *industry* funds**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_ROR*.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		-15.825*** (-4.336)	-12.192*** (-3.611)	-14.164*** (-4.446)	-13.661*** (-3.604)	-15.392*** (-4.319)	-15.586*** (-3.973)	-15.921*** (-3.855)	-13.677*** (-3.875)	-18.340*** (-3.996)
<i>GOV_INDEX</i>	+	-0.136 (-0.915)								
<i>IND_DIR</i>	+		3.473 (1.145)							3.824 (1.425)
<i>IND_CHAIR</i>	+			0.048 (0.070)						-0.238 (-0.314)
<i>FEMALE_DIR</i>	+				1.171 (0.591)					0.671 (0.440)
<i>BUSY_DIR</i>	-					1.594*** (2.603)				1.543*** (2.993)
<i>FINANCIAL</i>	+						-0.757* (-1.873)			-0.837* (-1.789)
<i>EXPERIENCE</i>	+							-0.327 (-0.674)		-0.506 (-1.028)
<i>TENURE</i>	-								-0.038 (-0.541)	-0.039 (-0.524)
<i>BSIZE</i>	-	-0.170 (-0.895)	-0.177 (-0.973)	-0.178 (-0.937)	-0.188 (-0.971)	-0.196 (-1.042)	-0.178 (-0.942)	-0.191 (-0.936)	-0.192 (-1.025)	-0.235 (-1.144)
<i>Ln_TA</i>	+	1.816*** (4.512)	1.421*** (4.564)	1.653*** (4.825)	1.629*** (4.454)	1.680*** (4.889)	1.880*** (4.208)	1.846*** (3.828)	1.640*** (4.609)	1.942*** (3.744)
<i>Ln_INV_OPTIONS</i>	+	0.110 (0.448)	0.068 (0.267)	0.056 (0.224)	-0.039 (-0.135)	0.053 (0.223)	0.042 (0.170)	0.084 (0.329)	0.041 (0.172)	0.027 (0.088)
<i>PRS_AGE</i>	-	6.843*** (2.904)	7.492*** (3.298)	6.868*** (2.990)	6.363*** (2.757)	7.095*** (3.041)	6.537*** (2.643)	6.904*** (3.011)	7.215*** (2.661)	7.548*** (2.879)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.359	0.363	0.356	0.358	0.370	0.362	0.359	0.357	0.392
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.1B: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_ROR* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-14.558** (-2.198)	-10.656* (-1.929)	-11.773** (-2.000)	-13.322** (-2.404)	-13.786** (-2.417)	-15.245** (-2.346)	-15.948** (-2.038)	-13.257** (-2.290)	-17.895* (-1.843)
<i>GOV_INDEX</i>	+	-0.113 (-0.435)								
<i>IND_DIR</i>	+		7.848** (2.074)							7.803* (1.946)
<i>IND_CHAIR</i>	+			0.586 (1.170)						0.138 (0.221)
<i>FEMALE_DIR</i>	+				-0.175 (-0.081)					0.336 (0.162)
<i>BUSY_DIR</i>	-					1.120** (2.045)				1.369*** (2.759)
<i>FINANCIAL</i>	+						-0.891 (-1.512)			-0.856 (-1.337)
<i>EXPERIENCE</i>	+							-0.548 (-0.630)		-0.855 (-0.916)
<i>TENURE</i>	-								-0.002 (-0.019)	0.009 (0.081)
<i>BSIZE</i>	-	-0.136 (-0.593)	-0.112 (-0.594)	-0.150 (-0.727)	-0.149 (-0.670)	-0.159 (-0.706)	-0.141 (-0.610)	-0.164 (-0.669)	-0.151 (-0.684)	-0.134 (-0.590)
<i>Ln_TA</i>	+	1.696** (2.322)	1.199** (2.079)	1.411** (2.302)	1.573*** (2.593)	1.549** (2.477)	1.875** (2.419)	1.880** (2.156)	1.571*** (2.578)	1.906* (1.792)
<i>Ln_INV_OPTIONS</i>	+	-0.032 (-0.077)	0.054 (0.124)	0.000 (0.001)	-0.025 (-0.059)	-0.059 (-0.149)	-0.110 (-0.259)	-0.014 (-0.033)	-0.031 (-0.074)	-0.038 (-0.080)
<i>PRS_AGE</i>	-	4.913 (1.067)	5.045 (1.152)	4.822 (1.060)	4.815 (1.026)	4.795 (1.031)	4.240 (0.900)	4.522 (0.937)	4.720 (1.003)	4.195 (0.782)
Observations		205	205	205	205	205	205	205	205	205
R-squared		0.372	0.390	0.373	0.370	0.377	0.377	0.377	0.370	0.416
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 205 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.1C: Superannuation fund performance (*EXCESS\_ROR*) and governance variables of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_ROR* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		7.077 (0.225)	16.627 (0.566)	15.266 (0.516)	15.743 (0.535)	14.147 (0.472)	14.693 (0.486)	8.948 (0.276)	12.813 (0.403)	4.801 (0.135)
<i>GOV_INDEX</i>	+	-0.279 (-0.683)								
<i>IND_DIR</i>	+		1.704 (0.290)							0.547 (0.051)
<i>IND_CHAIR</i>	+			-7.392 (-0.468)						3.730 (0.877)
<i>FEMALE_DIR</i>	+				3.809 (0.751)					4.631 (0.624)
<i>BUSY_DIR</i>	-					0.947 (0.509)				1.256 (0.519)
<i>FINANCIAL</i>	+						-1.212 (-1.126)			-1.488 (-1.029)
<i>EXPERIENCE</i>	+							-0.472 (-0.572)		-0.591 (-0.601)
<i>TENURE</i>	-								0.064 (0.175)	0.036 (0.094)
<i>BSIZE</i>	-	-0.637 (-0.703)	-0.752 (-0.684)	-0.688 (-0.756)	-0.770 (-0.814)	-0.695 (-0.761)	-0.747 (-0.792)	-0.656 (-0.723)	-0.684 (-0.741)	-0.846 (-0.703)
<i>Ln_TA</i>	+	-0.796 (-0.201)	-1.885 (-0.502)	-1.754 (-0.467)	-1.817 (-0.480)	-1.693 (-0.449)	-1.517 (-0.390)	-1.238 (-0.313)	-1.568 (-0.406)	-0.750 (-0.177)
<i>Ln_INV_OPTIONS</i>	+	0.910 (0.729)	1.399 (0.800)	1.233 (0.989)	1.615 (1.157)	1.322 (0.998)	1.273 (0.991)	1.397 (1.061)	1.398 (0.944)	2.217 (0.914)
<i>PRS_AGE</i>	-	13.404 (0.509)	9.081 (0.371)	9.985 (0.390)	5.303 (0.193)	10.843 (0.414)	9.974 (0.383)	13.210 (0.539)	9.376 (0.364)	8.825 (0.311)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.547	0.538	0.537	0.547	0.539	0.541	0.547	0.538	0.570
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.2A: Superannuation fund performance (*ROA*) and governance variables of *industry* funds**

This table provides evidence on the association between the governance practices of industry superannuation funds and *ROA*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		10.923 (0.759)	12.480 (0.928)	11.944 (0.874)	10.027 (0.718)	13.003 (0.933)	9.580 (0.647)	10.783 (0.739)	14.074 (1.035)	12.991 (0.954)
<i>GOV_INDEX</i>	+	-0.072 (-0.569)								
<i>IND_DIR</i>	+		3.400 (1.254)							2.678 (1.001)
<i>IND_CHAIR</i>	+			0.335 (0.403)						0.122 (0.136)
<i>FEMALE_DIR</i>	+				1.372 (0.894)					0.881 (0.713)
<i>BUSY_DIR</i>	-					1.402** (2.132)				1.304** (2.296)
<i>FINANCIAL</i>	+						-0.614 (-1.503)			-0.712 (-1.517)
<i>EXPERIENCE</i>	+							-0.076 (-0.189)		-0.256 (-0.653)
<i>TENURE</i>	-								-0.059 (-0.824)	-0.044 (-0.642)
<i>BSIZE</i>	-	-0.059 (-0.268)	-0.068 (-0.321)	-0.064 (-0.293)	-0.089 (-0.394)	-0.073 (-0.331)	-0.066 (-0.293)	-0.069 (-0.298)	-0.079 (-0.366)	-0.100 (-0.454)
<i>Ln_TA</i>	+	-0.439 (-0.299)	-0.634 (-0.459)	-0.552 (-0.389)	-0.314 (-0.221)	-0.635 (-0.445)	-0.276 (-0.180)	-0.428 (-0.286)	-0.612 (-0.425)	-0.575 (-0.401)
<i>Ln_INV_OPTIONS</i>	+	-0.003 (-0.012)	-0.003 (-0.014)	-0.017 (-0.073)	-0.103 (-0.390)	-0.059 (-0.270)	-0.033 (-0.145)	-0.019 (-0.079)	-0.051 (-0.223)	-0.113 (-0.423)
<i>PRS_AGE</i>	-	6.075** (2.282)	7.152*** (2.754)	6.472** (2.483)	6.119** (2.436)	5.891** (2.340)	5.974** (2.277)	6.200** (2.441)	6.721** (2.467)	6.378** (2.278)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.906	0.908	0.906	0.907	0.908	0.907	0.906	0.907	0.911
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 288 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.2B: Superannuation fund performance (*ROA*) and governance variables of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of industry superannuation funds and *ROA* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		25.880 (1.365)	26.482 (1.558)	30.502* (1.774)	25.898 (1.330)	26.865 (1.469)	24.200 (1.217)	25.746 (1.293)	28.422 (1.543)	28.443 (1.354)
<i>GOV_INDEX</i>	+	0.009 (0.042)								
<i>IND_DIR</i>	+		8.047** (2.200)							5.690 (1.389)
<i>IND_CHAIR</i>	+			1.231 (1.492)						0.763 (0.976)
<i>FEMALE_DIR</i>	+				-0.034 (-0.018)					0.072 (0.032)
<i>BUSY_DIR</i>	-					0.943* (1.668)				1.129** (1.966)
<i>FINANCIAL</i>	+						-0.750 (-1.422)			-0.731 (-1.149)
<i>EXPERIENCE</i>	+							-0.029 (-0.043)		-0.315 (-0.455)
<i>TENURE</i>	-								-0.074 (-0.814)	-0.027 (-0.309)
<i>BFSIZE</i>	-	0.053 (0.211)	0.077 (0.338)	0.063 (0.287)	0.055 (0.210)	0.051 (0.196)	0.066 (0.245)	0.054 (0.200)	0.031 (0.124)	0.070 (0.315)
<i>Ln_TA</i>	+	-2.102 (-1.105)	-2.219 (-1.297)	-2.601 (-1.485)	-2.104 (-1.076)	-2.183 (-1.191)	-1.887 (-0.933)	-2.087 (-1.045)	-2.314 (-1.241)	-2.333 (-1.071)
<i>Ln_INV_OPTIONS</i>	+	0.130 (0.275)	0.238 (0.483)	0.186 (0.395)	0.129 (0.267)	0.086 (0.180)	0.050 (0.103)	0.128 (0.268)	0.146 (0.303)	0.116 (0.246)
<i>PRS_AGE</i>	-	5.910 (1.572)	6.553* (1.756)	6.049 (1.640)	5.929 (1.540)	5.873 (1.512)	5.377 (1.389)	5.898 (1.479)	5.907 (1.513)	5.638 (1.351)
Observations		205	205	205	205	205	205	205	205	205
R-squared		0.925	0.929	0.927	0.925	0.926	0.926	0.925	0.925	0.930
Year FE		Yes								
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 205 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.2C: Superannuation fund performance (*ROA*) and governance variables of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of industry superannuation funds and *ROA* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		1.744 (0.022)	4.067 (0.048)	4.144 (0.050)	3.738 (0.043)	5.719 (0.068)	6.493 (0.077)	7.390 (0.092)	1.937 (0.023)	12.783 (0.144)
<i>GOV_INDEX</i>	+	-0.242 (-0.620)								
<i>IND_DIR</i>	+		1.474 (0.273)							0.065 (0.007)
<i>IND_CHAIR</i>	+			5.942 (0.446)						7.255 (0.530)
<i>FEMALE_DIR</i>	+				2.842 (0.583)					3.548 (0.512)
<i>BUSY_DIR</i>	-					0.892 (0.353)				1.417 (0.444)
<i>FINANCIAL</i>	+						-0.907 (-0.856)			-1.319 (-0.857)
<i>EXPERIENCE</i>	+							-0.316 (-0.447)		-0.444 (-0.532)
<i>TENURE</i>	-								0.058 (0.166)	0.035 (0.092)
<i>BFSIZE</i>	-	-0.516 (-0.650)	-0.615 (-0.645)	-0.560 (-0.715)	-0.621 (-0.767)	-0.567 (-0.718)	-0.605 (-0.738)	-0.539 (-0.674)	-0.556 (-0.698)	-0.681 (-0.627)
<i>Ln_TA</i>	+	-0.204 (-0.022)	-0.599 (-0.062)	-0.601 (-0.063)	-0.578 (-0.059)	-0.786 (-0.082)	-0.680 (-0.071)	-0.945 (-0.102)	-0.434 (-0.045)	-1.362 (-0.138)
<i>Ln_INV_OPTIONS</i>	+	0.558 (0.343)	0.902 (0.453)	0.775 (0.445)	1.051 (0.578)	0.894 (0.470)	0.843 (0.465)	0.985 (0.539)	0.923 (0.480)	1.796 (0.644)
<i>PRS_AGE</i>	-	30.182 (1.325)	29.732 (1.232)	29.820 (1.223)	26.747 (0.991)	29.174 (1.207)	28.275 (1.183)	27.843 (1.155)	29.279 (1.209)	19.603 (0.699)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.890	0.888	0.888	0.890	0.889	0.889	0.889	0.888	0.894
Year FE		Yes								
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 83 fund observations. *ROA* is net earnings after tax divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.3: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds with interactions**

This table provides evidence on the association between the governance practices and performance of industry superannuation funds.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		-2.408 (-0.413)	-0.687 (-0.120)	-1.640 (-0.304)	-1.696 (-0.283)	-0.682 (-0.124)	-2.967 (-0.503)	-2.647 (-0.423)	-1.558 (-0.283)	-1.581 (-0.245)
<i>GOV_INDEX</i>	+	-0.097 (-0.924)								
<i>GOV_INDEX_P2014</i>	+	0.174 (1.016)								
<i>POST2014</i>	?	0.037 (0.062)	0.510* (1.674)	0.470 (1.522)	0.397 (1.179)	0.384 (1.309)	0.245 (0.475)	0.387 (0.918)	1.142 (1.525)	0.058 (0.061)
<i>IND_DIR</i>	+		2.819 (0.980)							3.313 (1.073)
<i>IND_DIR_P2014</i>	+		0.714 (0.444)							-0.715 (-0.587)
<i>IND_CHAIR</i>	+			0.082 (0.108)						-0.030 (-0.040)
<i>IND_CHAIR_P2014</i>	+			0.356 (0.912)						0.155 (0.419)
<i>FEMALE_DIR</i>	+				1.180 (0.778)					0.835 (0.689)
<i>FEMALE_DIR_P2014</i>	+				0.707 (0.666)					0.450 (0.366)
<i>BUSY_DIR</i>	-					1.161** (2.402)				1.132** (2.307)
<i>BUSY_DIR_P2014</i>	-					1.749 (1.541)				1.327 (1.058)
<i>FINANCIAL</i>	+						-0.715 (-1.594)			-0.622 (-1.253)
<i>FINANCIAL_P2014</i>	+						0.393 (0.822)			-0.006 (-0.014)
<i>EXPERIENCE</i>	+							-0.212 (-0.447)		-0.356 (-0.679)
<i>EXPERIENCE_P2014</i>	+							0.386 (0.825)		0.370 (0.712)
<i>TENURE</i>	-								-0.013 (-0.193)	-0.009 (-0.124)
<i>TENURE_P2014</i>	-								-0.077 (-0.876)	0.007 (0.077)
<i>BSIZE</i>	-	-0.085 (-0.405)	-0.084 (-0.422)	-0.078 (-0.384)	-0.100 (-0.471)	-0.083 (-0.423)	-0.077 (-0.379)	-0.086 (-0.392)	-0.092 (-0.470)	-0.107 (-0.496)
<i>Ln_TA</i>	+	0.169 (0.267)	-0.131 (-0.210)	0.029 (0.047)	0.093 (0.149)	-0.143 (-0.230)	0.273 (0.399)	0.171 (0.240)	0.041 (0.068)	0.056 (0.065)
<i>Ln_INV_OPTIONS</i>	+	-0.009 (-0.043)	0.037 (0.171)	0.030 (0.145)	-0.122 (-0.502)	0.074 (0.382)	-0.012 (-0.059)	0.009 (0.045)	-0.020 (-0.107)	-0.019 (-0.077)
<i>PRS_AGE</i>	-	7.008*** (3.282)	7.633*** (3.642)	7.167*** (3.226)	6.657*** (3.523)	8.661*** (3.535)	6.900*** (3.115)	7.133*** (3.489)	7.400*** (3.178)	8.768*** (3.013)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.322	0.327	0.321	0.323	0.343	0.326	0.320	0.321	0.361
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *POST2014* is an indicator variable set to 1 if year ≥ 2015, 0 otherwise; *GOV\_INDEX\_P2014* is an interaction between *GOV\_INDEX* and *POST2014*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_P2014* is an interaction between *IND\_DIR* and *POST2014*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *IND\_CHAIR\_P2014* is an interaction between *IND\_CHAIR* and *POST2014*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\_P2014* is an interaction between *FEMALE\_DIR* and *POST2014*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\_P2014* is an interaction between *BUSY\_DIR* and *POST2014*; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *FINANCIAL\_P2014* is an interaction between *FINANCIAL* and *POST2014*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *EXPERIENCE\_P2014* is an interaction between *EXPERIENCE* and *POST2014*; *TENURE* is the average director tenure; *TENURE\_P2014* is an interaction between *TENURE* and *POST2014*; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.4A: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *industry* funds**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of industry superannuation funds.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-5.799 (-1.206)	-6.010 (-1.291)	-6.908 (-1.469)	-5.250 (-1.133)
<i>GOV_INDEX</i>	+	-0.018 (-0.155)			
<i>GOV_INDEX1</i>	+		-0.063 (-0.449)		
<i>GOV_INDEX2</i>	+			-0.142 (-1.125)	
<i>GOV_INDEX3</i>	+				0.041 (0.321)
<i>BSIZE</i>	-	-0.082 (-0.409)	-0.079 (-0.393)	-0.074 (-0.368)	-0.085 (-0.431)
<i>Ln_TA</i>	+	0.604 (1.198)	0.625 (1.317)	0.716 (1.466)	0.552 (1.136)
<i>Ln_INV_OPTIONS</i>	+	0.123 (0.543)	0.137 (0.610)	0.165 (0.725)	0.099 (0.438)
<i>PRS_AGE</i>	-	8.994*** (4.235)	9.016*** (4.206)	8.892*** (3.995)	8.947*** (4.365)
Observations		288	288	288	288
R-squared		0.302	0.303	0.306	0.303
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.4B: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of industry superannuation funds for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		1.957 (0.238)	2.346 (0.297)	1.957 (0.238)	2.346 (0.297)
<i>GOV_INDEX</i>	+	0.042 (0.211)			
<i>GOV_INDEX1</i>	+		0.094 (0.528)		
<i>GOV_INDEX2</i>	+			0.042 (0.211)	
<i>GOV_INDEX3</i>	+				0.094 (0.528)
<i>BSIZE</i>	–	–0.028 (–0.117)	–0.031 (–0.129)	–0.028 (–0.117)	–0.031 (–0.129)
<i>Ln_TA</i>	+	–0.250 (–0.316)	–0.291 (–0.384)	–0.250 (–0.316)	–0.291 (–0.384)
<i>Ln_INV_OPTIONS</i>	+	0.273 (0.702)	0.281 (0.728)	0.273 (0.702)	0.281 (0.728)
<i>PRS_AGE</i>	–	6.418** (2.000)	6.231** (2.021)	6.418** (2.000)	6.231** (2.021)
Observations		205	205	205	205
R-squared		0.336	0.338	0.336	0.338
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 205 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3.4C: Superannuation fund performance (*EXCESS\_ROA*) and governance index of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of industry superannuation funds for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-10.471 (-0.540)	-6.445 (-0.408)	-8.463 (-0.506)	-9.404 (-0.518)
<i>GOV_INDEX</i>	+	-0.235 (-0.629)			
<i>GOV_INDEX1</i>	+		-0.456 (-1.408)		
<i>GOV_INDEX2</i>	+			-0.480 (-1.412)	
<i>GOV_INDEX3</i>	+				-0.228 (-0.644)
<i>BSIZE</i>	-	-0.517 (-0.668)	-0.487 (-0.664)	-0.525 (-0.722)	-0.499 (-0.639)
<i>Ln_TA</i>	+	0.260 (0.046)	-0.439 (-0.098)	0.408 (0.086)	-0.161 (-0.030)
<i>Ln_INV_OPTIONS</i>	+	0.495 (0.381)	0.949 (0.724)	0.469 (0.406)	0.735 (0.549)
<i>PRS_AGE</i>	-	33.031 (1.141)	31.150 (1.238)	28.624 (1.145)	34.181 (1.151)
Observations		83	83	83	83
R-squared		0.539	0.563	0.565	0.539
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A1.4 Alternate measure of performance for both retail and industry superannuation funds

**Table A1.4.1A: Superannuation fund performance (*EXCESS\_ROA*) and governance variables**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROA*.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
<i>Constant</i>		-1.898* (-1.770)	-1.778* (-1.689)	-1.745* (-1.645)	-1.910* (-1.771)	-1.579 (-1.413)	-2.059* (-1.904)	-1.479 (-1.390)	-2.043* (-1.872)	-2.342** (-1.993)
<i>GOV_INDEX</i>	+	0.135** (2.301)								
<i>IND_DIR</i>	+		-0.354 (-0.684)							-1.307 (-1.447)
<i>IND_CHAIR</i>	+			-0.046 (-0.209)						0.132 (0.324)
<i>FEMALE_DIR</i>	+				0.777 (1.224)					1.072 (1.363)
<i>BUSY_DIR</i>	-					-0.141 (-1.107)				-0.069 (-0.499)
<i>FINANCIAL</i>	+						0.421* (1.943)			0.294 (1.042)
<i>EXPERIENCE</i>	+							0.635*** (2.989)		0.588*** (2.611)
<i>TENURE</i>	-								0.023 (0.399)	0.035 (0.597)
<i>BSIZE</i>	-	0.033 (0.335)	0.066 (0.648)	0.059 (0.594)	0.044 (0.430)	0.041 (0.402)	0.045 (0.456)	0.038 (0.402)	0.063 (0.651)	0.035 (0.355)
<i>RETAIL</i>	-	-3.893*** (-3.474)	-3.329*** (-2.942)	-3.576*** (-3.335)	-3.564*** (-3.353)	-3.586*** (-3.351)	-3.605*** (-3.339)	-3.725*** (-3.325)	-3.477*** (-3.108)	-2.426* (-1.916)
<i>Ln_TA</i>	+	0.341*** (2.927)	0.333*** (2.948)	0.339*** (2.964)	0.348*** (2.984)	0.337*** (2.857)	0.345*** (2.974)	0.320*** (2.733)	0.348*** (2.984)	0.307*** (2.644)
<i>Ln_INV_OPTIONS</i>	+	0.149** (2.096)	0.180** (2.462)	0.173** (2.421)	0.154** (2.162)	0.162** (2.254)	0.152** (2.115)	0.146** (2.074)	0.168** (2.368)	0.138* (1.936)
<i>PRS_AGE</i>	-	-0.850 (-0.798)	-0.675 (-0.672)	-0.713 (-0.693)	-0.760 (-0.721)	-0.754 (-0.721)	-0.786 (-0.729)	-0.914 (-0.858)	-0.731 (-0.687)	-0.878 (-0.839)
Observations		928	928	928	928	928	928	928	928	928
R-squared		0.234	0.235	0.233	0.232	0.235	0.235	0.240	0.232	0.251
Trustee FE		Yes	Yes							

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.1B: Superannuation fund performance (*EXCESS\_ROA*) and governance variables for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROA* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-0.075 (-0.052)	-0.324 (-0.237)	-0.163 (-0.116)	-0.104 (-0.072)	-0.293 (-0.190)	0.066 (0.046)	-0.036 (-0.025)	-0.120 (-0.076)	-0.502 (-0.311)
<i>GOV_INDEX</i>	+	0.049 (0.504)								
<i>IND_DIR</i>	+		-1.046 (-1.465)							-1.818 (-1.332)
<i>IND_CHAIR</i>	+			-0.254 (-0.926)						0.192 (0.315)
<i>FEMALE_DIR</i>	+				0.658 (0.752)					1.587 (1.363)
<i>BUSY_DIR</i>	-					0.259 (0.862)				0.114 (0.338)
<i>FINANCIAL</i>	+						-0.144 (-0.438)			-0.036 (-0.096)
<i>EXPERIENCE</i>	+							0.079 (0.174)		0.053 (0.114)
<i>TENURE</i>	-								0.005 (0.061)	-0.008 (-0.099)
<i>BSIZE</i>	-	-0.153 (-1.182)	-0.128 (-0.963)	-0.139 (-1.043)	-0.165 (-1.226)	-0.120 (-0.857)	-0.139 (-1.046)	-0.143 (-1.085)	-0.139 (-1.095)	-0.167 (-1.202)
<i>RETAIL</i>	-	-5.719*** (-2.759)	-4.905** (-2.379)	-5.457*** (-2.669)	-5.572*** (-2.675)	-5.742*** (-2.801)	-5.643*** (-2.738)	-5.663*** (-2.750)	-5.601*** (-2.585)	-4.407* (-1.943)
<i>Ln_TA</i>	+	0.321** (2.209)	0.335** (2.457)	0.329** (2.364)	0.324** (2.246)	0.329** (2.290)	0.323** (2.250)	0.322** (2.215)	0.324** (2.253)	0.339** (2.430)
<i>Ln_INV_OPTIONS</i>	+	0.223** (2.489)	0.267*** (2.951)	0.249*** (2.821)	0.221** (2.522)	0.243*** (2.720)	0.232*** (2.629)	0.228*** (2.598)	0.227*** (2.584)	0.260*** (2.842)
<i>PRS_AGE</i>	-	-1.506 (-0.951)	-1.345 (-0.946)	-1.432 (-0.975)	-1.495 (-0.961)	-1.432 (-0.899)	-1.484 (-0.947)	-1.492 (-0.947)	-1.489 (-0.944)	-1.291 (-0.877)
Observations		639	639	639	639	639	639	639	639	639
R-squared		0.276	0.286	0.281	0.277	0.280	0.277	0.276	0.276	0.290
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 639 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.1C: Superannuation fund performance (*EXCESS\_ROA*) and governance variables for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROA* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.020 (0.009)	0.032 (0.012)	-0.688 (-0.267)	0.048 (0.022)	2.328 (0.948)	-0.766 (-0.321)	0.584 (0.270)	0.082 (0.030)	3.579 (0.885)
<i>GOV_INDEX</i>	+	-0.048 (-0.290)								
<i>IND_DIR</i>	+		0.314 (0.164)							2.778 (1.152)
<i>IND_CHAIR</i>	+			-1.151 (-0.962)						-5.393** (-2.398)
<i>FEMALE_DIR</i>	+				-1.181 (-0.616)					0.120 (0.052)
<i>BUSY_DIR</i>	-					2.367** (2.384)				3.702*** (3.020)
<i>FINANCIAL</i>	+						0.584* (1.772)			-0.814 (-1.050)
<i>EXPERIENCE</i>	+							0.786** (2.149)		0.529 (1.420)
<i>TENURE</i>	-								-0.018 (-0.115)	0.005 (0.029)
<i>BSIZE</i>	-	0.107 (0.317)	0.083 (0.201)	0.196 (0.489)	0.137 (0.388)	-0.323 (-0.851)	0.116 (0.342)	-0.075 (-0.224)	0.104 (0.309)	-0.469 (-1.095)
<i>RETAIL</i>	-	-0.838 (-1.079)	-1.207 (-0.632)	0.319 (0.201)	-0.940* (-1.657)	-1.613*** (-2.666)	-0.921 (-1.616)	-1.086* (-1.843)	-1.056 (-0.919)	1.373 (0.494)
<i>Ln_TA</i>	+	0.052 (0.459)	0.048 (0.422)	0.053 (0.465)	0.054 (0.478)	0.066 (0.579)	0.049 (0.436)	0.050 (0.431)	0.049 (0.423)	0.078 (0.642)
<i>Ln_INV_OPTIONS</i>	+	0.117 (1.195)	0.121 (1.227)	0.111 (1.134)	0.113 (1.154)	0.107 (1.065)	0.119 (1.217)	0.107 (1.066)	0.119 (1.219)	0.072 (0.671)
<i>PRS_AGE</i>	-	-1.569 (-1.500)	-1.608 (-1.540)	-1.532 (-1.496)	-1.541 (-1.486)	-1.491 (-1.387)	-1.591 (-1.522)	-1.575 (-1.498)	-1.590 (-1.520)	-1.325 (-1.227)
Observations		289	289	289	289	289	289	289	289	289
R-squared		0.379	0.379	0.381	0.380	0.398	0.379	0.396	0.378	0.432
Number of fund1		151	151	151	151	151	151	151	151	151
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.2: Superannuation fund performance (*EXCESS\_ROA*) and governance variables with interactions**

This table provides evidence on the association between the governance practices and performance of Australian superannuation funds.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>VARIABLES</i>	Pred. sign	Coeff. (t-stats)	Coeff. (t-stats)							
<i>Constant</i>		-1.236 (-1.089)	-1.207 (-1.112)	-1.140 (-1.040)	-1.189 (-1.052)	-1.065 (-0.915)	-1.297 (-1.123)	-1.078 (-0.965)	-1.180 (-1.004)	-1.691 (-1.322)
<i>GOV_INDEX</i>	+	0.068 (1.116)								
<i>GOV_INDEX_P2014</i>	+	-0.057 (-0.694)								
<i>POST2014</i>	?	0.819*** (2.425)	0.640*** (3.527)	0.600*** (3.084)	0.861*** (3.436)	0.566*** (3.770)	-0.024 (-0.083)	0.422** (2.445)	0.512 (1.497)	0.056 (0.096)
<i>IND_DIR</i>	+		-0.743 (-1.377)							-1.214 (-1.282)
<i>IND_DIR_P2014</i>	+		0.086 (0.233)							-0.122 (-0.222)
<i>IND_CHAIR</i>	+			-0.264 (-1.158)						0.004 (0.010)
<i>IND_CHAIR_P2014</i>	+			0.104 (0.389)						0.404 (1.108)
<i>FEMALE_DIR</i>	+				0.558 (0.730)					1.290 (1.420)
<i>FEMALE_DIR_P2014</i>	+				-0.856 (-1.135)					-1.735* (-1.763)
<i>BUSY_DIR</i>	-					-0.028 (-0.218)				0.035 (0.223)
<i>BUSY_DIR_P2014</i>	-					0.185 (0.543)				0.102 (0.267)
<i>FINANCIAL</i>	+						0.058 (0.241)			0.132 (0.442)
<i>FINANCIAL_P2014</i>	+						0.721** (2.312)			0.789** (2.145)
<i>EXPERIENCE</i>	+							0.273 (0.957)		0.210 (0.706)
<i>EXPERIENCE_P2014</i>	+							0.206 (0.718)		0.331 (1.036)
<i>TENURE</i>	-								0.001 (0.012)	0.016 (0.262)
<i>TENURE_P2014</i>	-								0.023 (0.429)	-0.026 (-0.445)
<i>BSIZE</i>	+	0.011 (0.106)	0.033 (0.325)	0.023 (0.225)	0.011 (0.112)	0.013 (0.121)	0.029 (0.290)	0.015 (0.152)	0.022 (0.226)	0.024 (0.225)
<i>RETAIL</i>	-	-3.680*** (-3.067)	-3.045*** (-2.580)	-3.398*** (-2.955)	-3.557*** (-3.101)	-3.593*** (-3.115)	-3.605*** (-3.130)	-3.642*** (-3.158)	-3.542*** (-2.880)	-2.644** (-2.022)
<i>Ln_TA</i>	+	0.294** (2.410)	0.283** (2.443)	0.290** (2.475)	0.289** (2.352)	0.295** (2.483)	0.299** (2.510)	0.293** (2.440)	0.295** (2.416)	0.272** (2.320)
<i>Ln_INV_OPTIONS</i>	+	0.119* (1.690)	0.145** (2.020)	0.135* (1.928)	0.124* (1.742)	0.121* (1.719)	0.117* (1.653)	0.117* (1.681)	0.126* (1.790)	0.135* (1.811)
<i>PRS_AGE</i>	-	-1.337 (-1.195)	-1.199 (-1.155)	-1.258 (-1.174)	-1.341 (-1.203)	-1.282 (-1.175)	-1.247 (-1.113)	-1.317 (-1.187)	-1.328 (-1.185)	-1.122 (-1.080)
Observations		928	928	928	928	928	928	928	928	928
R-squared		0.245	0.251	0.248	0.246	0.245	0.247	0.246	0.244	0.262
Trustee FE		Yes	Yes							

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *POST2014* is an indicator variable set to 1 if year ≥ 2015, 0 otherwise; *GOV\_INDEX\_P2014* is an interaction between *GOV\_INDEX* and *POST2014*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_P2014* is an interaction between *IND\_DIR* and *POST2014*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *IND\_CHAIR\_P2014* is an interaction between *IND\_CHAIR* and *POST2014*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\_P2014* is an interaction between *FEMALE\_DIR* and *POST2014*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\_P2014* is an interaction between *BUSY\_DIR* and *POST2014*; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *FINANCIAL\_P2014* is an interaction between *FINANCIAL* and *POST2014*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *EXPERIENCE\_P2014* is an interaction between *EXPERIENCE* and *POST2014*; *TENURE* is the average director tenure; *TENURE\_P2014* is an interaction between *TENURE* and *POST2014*; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.3A: Superannuation fund performance (*EXCESS\_ROR*) and governance variables**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROR*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		-2.526** (-2.449)	-2.276** (-2.227)	-2.281** (-2.241)	-2.583** (-2.498)	-2.269** (-2.184)	-2.599** (-2.506)	-2.124** (-2.128)	-2.117* (-1.857)	-2.683** (-2.182)
<i>GOV_INDEX</i>	+	0.163** (2.363)								
<i>IND_DIR</i>	+		0.124 (0.237)							-0.789 (-0.863)
<i>IND_CHAIR</i>	+			0.137 (0.533)						0.055 (0.117)
<i>FEMALE_DIR</i>	+				1.145 (1.585)					1.112 (1.172)
<i>BUSY_DIR</i>	-					-0.042 (-0.345)				0.037 (0.263)
<i>FINANCIAL</i>	+						0.425* (1.943)			0.327 (1.098)
<i>EXPERIENCE</i>	+							0.518** (2.097)		0.442 (1.634)
<i>TENURE</i>	-								-0.019 (-0.298)	-0.007 (-0.106)
<i>BFSIZE</i>	-	0.037 (0.362)	0.064 (0.599)	0.064 (0.611)	0.048 (0.442)	0.061 (0.562)	0.051 (0.488)	0.051 (0.498)	0.063 (0.602)	0.041 (0.387)
<i>RETAIL</i>	-	-4.401*** (-3.265)	-4.153*** (-3.105)	-4.190*** (-3.221)	-3.977*** (-3.105)	-4.046*** (-3.168)	-4.042*** (-3.123)	-4.166*** (-3.146)	-4.183*** (-3.144)	-3.531*** (-2.480)
<i>Ln_TA</i>	+	0.422*** (3.850)	0.421*** (3.891)	0.422*** (3.898)	0.432*** (3.932)	0.423*** (3.891)	0.422*** (3.900)	0.407*** (3.776)	0.424*** (3.906)	0.409*** (3.791)
<i>Ln_INV_OPTIONS</i>	+	0.230*** (2.996)	0.247*** (3.185)	0.245*** (3.214)	0.228*** (3.000)	0.244*** (3.183)	0.234*** (3.022)	0.236*** (3.093)	0.246*** (3.226)	0.226*** (2.897)
<i>PRS_AGE</i>	-	-1.052 (-1.261)	-0.957 (-1.156)	-0.961 (-1.155)	-0.964 (-1.146)	-0.942 (-1.135)	-0.985 (-1.185)	-1.069 (-1.285)	-0.927 (-1.110)	-1.044 (-1.252)
Observations		925	925	925	925	925	925	925	925	925
R-squared		0.276	0.273	0.273	0.275	0.273	0.275	0.277	0.273	0.280
Trustee FE		Yes								

The OLS regression is estimated using the full sample of 925 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.3B: Superannuation fund performance (*EXCESS\_ROR*) and governance variables for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROR* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
<i>Constant</i>		-1.043 (-0.754)	-1.001 (-0.739)	-0.924 (-0.675)	-1.080 (-0.771)	-1.006 (-0.695)	-0.995 (-0.713)	-0.966 (-0.696)	-0.243 (-0.143)	-0.619 (-0.353)
<i>GOV_INDEX</i>	+	0.129 (1.040)								
<i>IND_DIR</i>	+		-0.526 (-0.646)							-1.802 (-1.236)
<i>IND_CHAIR</i>	+			0.030 (0.085)						0.303 (0.448)
<i>FEMALE_DIR</i>	+				1.134 (1.061)					1.763 (1.161)
<i>BUSY_DIR</i>	-					0.113 (0.331)				0.052 (0.139)
<i>FINANCIAL</i>	+						0.065 (0.174)			0.107 (0.265)
<i>EXPERIENCE</i>	+							-0.151 (-0.251)		-0.215 (-0.343)
<i>TENURE</i>	-								-0.059 (-0.604)	-0.069 (-0.716)
<i>BSIZE</i>	-	-0.188 (-1.427)	-0.152 (-1.122)	-0.160 (-1.187)	-0.193 (-1.400)	-0.150 (-1.048)	-0.160 (-1.177)	-0.157 (-1.145)	-0.182 (-1.382)	-0.219 (-1.517)
<i>RETAIL</i>	-	-6.411** (-2.453)	-5.795** (-2.229)	-6.226** (-2.405)	-6.049** (-2.319)	-6.251** (-2.429)	-6.181** (-2.386)	-6.139** (-2.397)	-6.597** (-2.470)	-5.350* (-1.914)
<i>Ln_TA</i>	+	0.487*** (3.303)	0.484*** (3.405)	0.486*** (3.364)	0.494*** (3.342)	0.484*** (3.372)	0.489*** (3.353)	0.490*** (3.362)	0.486*** (3.326)	0.479*** (3.363)
<i>Ln_INV_OPTIONS</i>	+	0.266*** (2.745)	0.297*** (3.047)	0.281*** (2.950)	0.260*** (2.768)	0.292*** (2.978)	0.276*** (2.873)	0.281*** (2.978)	0.284*** (3.010)	0.313*** (3.167)
<i>PRS_AGE</i>	-	-1.674 (-1.332)	-1.577 (-1.311)	-1.624 (-1.314)	-1.634 (-1.282)	-1.597 (-1.300)	-1.627 (-1.305)	-1.611 (-1.299)	-1.618 (-1.297)	-1.497 (-1.267)
Observations		636	636	636	636	636	636	636	636	636
R-squared		0.275	0.277	0.275	0.275	0.276	0.275	0.275	0.275	0.283
Trustee FE		Yes	Yes							

The OLS regression is estimated using the sub-sample of 636 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.3C: Superannuation fund performance (*EXCESS\_ROR*) and governance variables for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_ROR* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-1.133 (-0.476)	-1.094 (-0.385)	-1.780 (-0.651)	-1.206 (-0.521)	1.448 (0.597)	-1.922 (-0.760)	-0.727 (-0.323)	-1.090 (-0.379)	3.402 (0.789)
<i>GOV_INDEX</i>	+	-0.088 (-0.492)								
<i>IND_DIR</i>	+		0.616 (0.312)							3.105 (1.161)
<i>IND_CHAIR</i>	+			-0.817 (-0.634)						-5.522** (-2.190)
<i>FEMALE_DIR</i>	+				-1.231 (-0.613)					0.238 (0.096)
<i>BUSY_DIR</i>	-					2.677** (2.547)				4.139*** (3.083)
<i>FINANCIAL</i>	+						0.491 (1.277)			-0.945 (-1.074)
<i>EXPERIENCE</i>	+							0.712* (1.708)		0.429 (1.019)
<i>TENURE</i>	-								-0.026 (-0.142)	-0.036 (-0.159)
<i>BFSIZE</i>	-	0.112 (0.307)	0.065 (0.147)	0.172 (0.400)	0.141 (0.370)	-0.385 (-0.991)	0.117 (0.318)	-0.058 (-0.160)	0.107 (0.293)	-0.547 (-1.247)
<i>RETAIL</i>	-	-	-2.085	-0.660	-	-	-	-	-1.727	0.214
		1.373** (-2.087)	(-1.080)	(-0.408)	1.554*** (-3.491)	2.322*** (-4.460)	1.538*** (-3.432)	1.688*** (-3.597)	(-1.338)	(0.068)
<i>Ln_TA</i>	+	0.204** (2.095)	0.196** (2.002)	0.201** (2.064)	0.204** (2.083)	0.217** (2.165)	0.199** (2.049)	0.199** (2.004)	0.198** (2.018)	0.225** (2.062)
<i>Ln_INV_OPTIONS</i>	+	0.219** (2.559)	0.226*** (2.613)	0.217** (2.528)	0.217** (2.521)	0.208** (2.336)	0.222*** (2.605)	0.212** (2.391)	0.223*** (2.605)	0.177* (1.827)
<i>PRS_AGE</i>	-	-1.208 (-1.523)	-1.282 (-1.608)	-1.205 (-1.561)	-1.195 (-1.523)	-1.147 (-1.360)	-1.247 (-1.571)	-1.237 (-1.529)	-1.247 (-1.570)	-1.005 (-1.178)
Observations		289	289	289	289	289	289	289	289	289
R-squared		0.504	0.503	0.504	0.504	0.521	0.503	0.513	0.503	0.544
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_ROR* is the dependent variable and is the difference between ROR and the median ROR of superannuation funds for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.4A: Superannuation fund performance (*EXCESS\_ROA*) and governance index**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of Australian superannuation funds.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-1.898* (-1.770)	-1.870* (-1.720)	-1.877* (-1.742)	-1.922* (-1.784)
<i>GOV_INDEX</i>	+	0.135** (2.301)			
<i>GOV_INDEX1</i>	+		0.064 (0.955)		
<i>GOV_INDEX2</i>	+			0.093 (1.613)	
<i>GOV_INDEX3</i>	+				0.111 (1.631)
<i>BSIZE</i>	+	0.033 (0.335)	0.048 (0.498)	0.040 (0.415)	0.041 (0.426)
<i>RETAIL</i>	-	-3.893*** (-3.474)	-3.704*** (-3.414)	-3.795*** (-3.472)	-3.779*** (-3.416)
<i>Ln_TA</i>	+	0.341*** (2.927)	0.344*** (2.968)	0.344*** (2.959)	0.342*** (2.941)
<i>Ln_INV_OPTIONS</i>	+	0.149** (2.096)	0.165** (2.323)	0.157** (2.209)	0.160** (2.246)
<i>PRS_AGE</i>	-	-0.850 (-0.798)	-0.761 (-0.723)	-0.795 (-0.749)	-0.811 (-0.767)
Observations		928	928	928	928
R-squared		0.234	0.232	0.233	0.233
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA*(\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.4B: Superannuation fund performance (*EXCESS\_ROA*) and governance index for the period 2010–2014**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of Australian superannuation funds for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-0.075 (-0.052)	-0.104 (-0.071)	-0.075 (-0.052)	-0.104 (-0.071)
<i>GOV_INDEX</i>	+	0.049 (0.504)			
<i>GOV_INDEX1</i>	+		0.052 (0.496)		
<i>GOV_INDEX2</i>	+			0.049 (0.504)	
<i>GOV_INDEX3</i>	+				0.052 (0.496)
<i>BSIZE</i>	+	-0.153 (-1.182)	-0.151 (-1.174)	-0.153 (-1.182)	-0.151 (-1.174)
<i>RETAIL</i>	-	-5.719*** (-2.759)	-5.673*** (-2.738)	-5.719*** (-2.759)	-5.673*** (-2.738)
<i>Ln_TA</i>	+	0.321** (2.209)	0.321** (2.214)	0.321** (2.209)	0.321** (2.214)
<i>Ln_INV_OPTIONS</i>	+	0.223** (2.489)	0.224** (2.522)	0.223** (2.489)	0.224** (2.522)
<i>PRS_AGE</i>	-	-1.506 (-0.951)	-1.500 (-0.946)	-1.506 (-0.951)	-1.500 (-0.946)
Observations		639	639	639	639
R-squared		0.276	0.276	0.276	0.276
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 639 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA*(\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4.4C: Superannuation fund performance (*EXCESS\_ROA*) and governance index for the period 2015–2016**

This table provides evidence on the association between the governance practices and *EXCESS\_ROA* of Australian superannuation funds for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.020 (0.009)	0.383 (0.167)	0.662 (0.282)	-0.087 (-0.039)
<i>GOV_INDEX</i>	+	-0.048 (-0.290)			
<i>GOV_INDEX1</i>	+		-0.176 (-1.098)		
<i>GOV_INDEX2</i>	+			-0.254 (-1.605)	
<i>GOV_INDEX3</i>	+				-0.009 (-0.055)
<i>BFSIZE</i>	+	0.107 (0.317)	0.113 (0.343)	0.110 (0.335)	0.105 (0.310)
<i>RETAIL</i>	-	-0.838 (-1.079)	-0.758 (-1.191)	-0.556 (-0.849)	-0.920 (-1.272)
<i>Ln_TA</i>	+	0.052 (0.459)	0.059 (0.523)	0.060 (0.537)	0.050 (0.439)
<i>Ln_INV_OPTIONS</i>	+	0.117 (1.195)	0.112 (1.153)	0.110 (1.137)	0.119 (1.206)
<i>PRS_AGE</i>	-	-1.569 (-1.500)	-1.538 (-1.474)	-1.517 (-1.459)	-1.585 (-1.511)
Observations		289	289	289	289
R-squared		0.379	0.382	0.385	0.378
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $>$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $>$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $>$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE*  $>$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A2.1 Alternate measure of fees for retail superannuation fund

**Table A2.1.1A: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *retail* funds**

This table provides evidence on the association between the governance practices of retail superannuation funds and *OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		0.898*** (2.730)	0.891*** (2.701)	0.941*** (2.863)	0.916*** (2.799)	0.768** (2.338)	0.903*** (2.753)	0.909*** (2.781)	0.911*** (2.773)	0.757** (2.269)
<i>GOV_INDEX</i>	–	0.004 (0.334)								
<i>IND_DIR</i>	–		0.034 (0.457)							0.110 (0.945)
<i>IND_CHAIR</i>	–			–0.039 (–0.914)						–0.094 (–1.386)
<i>FEMALE_DIR</i>	–				–0.040 (–0.399)					–0.129 (–1.066)
<i>BUSY_DIR</i>	+					0.059*** (3.134)				0.068*** (3.260)
<i>FINANCIAL</i>	–						0.010 (0.276)			0.051 (1.289)
<i>EXPERIENCE</i>	–							0.089** (2.311)		0.073* (1.893)
<i>TENURE</i>	+								–0.000 (–0.008)	–0.007 (–0.651)
<i>BFSIZE</i>	+	–0.022 (–1.432)	–0.022 (–1.441)	–0.021 (–1.390)	–0.021 (–1.374)	–0.015 (–0.953)	–0.022 (–1.410)	–0.023 (–1.492)	–0.022 (–1.402)	–0.015 (–0.983)
<i>Ln_TA</i>	–	–0.023 (–1.027)	–0.023 (–1.012)	–0.024 (–1.065)	–0.024 (–1.053)	–0.015 (–0.674)	–0.023 (–1.029)	–0.025 (–1.104)	–0.023 (–1.031)	–0.017 (–0.763)
<i>Ln_INV_OPTIONS</i>	+	–0.055*** (–3.932)	–0.055*** (–3.937)	–0.054*** (–3.854)	–0.054*** (–3.848)	–0.054*** (–3.925)	–0.055*** (–3.926)	–0.055*** (–3.953)	–0.054*** (–3.909)	–0.052*** (–3.788)
<i>PRS_AGE</i>	?	0.120 (0.848)	0.117 (0.821)	0.124 (0.872)	0.121 (0.851)	0.095 (0.671)	0.123 (0.866)	0.134 (0.945)	0.121 (0.852)	0.106 (0.754)
Observations		640	640	640	640	640	640	640	640	640
Year FE		Yes								
Trustee FE		Yes								
Chi-square		197.9	198	198.9	198	210.5	197.8	204	197.8	222.2
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		–206.2	–206.2	–205.8	–206.2	–201.4	–206.2	–203.6	–206.3	–196.6

The tobit regression is estimated using the pooled sample of 640 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.1B: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of retail superannuation funds and *OP\_EXP\_RATIO* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		0.464 (1.202)	0.496 (1.281)	0.470 (1.217)	0.385 (0.993)	0.325 (0.849)	0.437 (1.126)	0.434 (1.126)	0.314 (0.809)	0.278 (0.694)
<i>GOV_INDEX</i>	–	–0.023* (–1.674)								
<i>IND_DIR</i>	–		–0.241** (–2.462)							–0.138 (–0.877)
<i>IND_CHAIR</i>	–			–0.106** (–2.062)						0.001 (0.007)
<i>FEMALE_DIR</i>	–				–0.200* (–1.683)					–0.115 (–0.808)
<i>BUSY_DIR</i>	+					0.069** (2.342)				0.056* (1.730)
<i>FINANCIAL</i>	–						–0.002 (–0.051)			0.034 (0.786)
<i>EXPERIENCE</i>	–							0.011 (0.179)		0.010 (0.167)
<i>TENURE</i>	+								0.024* (1.927)	0.007 (0.491)
<i>BSIZE</i>	+	–0.005 (–0.245)	–0.008 (–0.408)	–0.009 (–0.455)	–0.002 (–0.112)	–0.003 (–0.176)	–0.010 (–0.534)	–0.011 (–0.549)	–0.000 (–0.004)	0.004 (0.207)
<i>Ln_TA</i>	–	0.001 (0.034)	0.006 (0.218)	0.002 (0.071)	0.001 (0.036)	0.001 (0.033)	–0.001 (–0.043)	–0.001 (–0.043)	0.003 (0.090)	0.008 (0.289)
<i>Ln_INV_OPTIONS</i>	+	–0.060*** (–3.475)	–0.059*** (–3.442)	–0.058*** (–3.377)	–0.059*** (–3.433)	–0.057*** (–3.314)	–0.060*** (–3.470)	–0.060*** (–3.471)	–0.062*** (–3.569)	–0.058*** (–3.337)
<i>PRS_AGE</i>	?	0.425** (2.546)	0.444*** (2.662)	0.425** (2.547)	0.425** (2.542)	0.416** (2.503)	0.428** (2.550)	0.429** (2.561)	0.417** (2.504)	0.431*** (2.585)
Observations		434	434	434	434	434	434	434	434	434
Year FE		Yes								
Trustee FE		Yes								
Chi-square		151.3	154.9	153.1	150.9	156.5	148	148	153.1	162
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		–139.3	–137.7	–138.5	–139.2	–137.9	–140.6	–140.6	–138.8	–135.3

The tobit regression is estimated using the sub-sample of 434 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.1C: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of retail superannuation funds and *OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		2.165*** (5.874)	2.043*** (5.701)	2.183*** (5.963)	2.194*** (6.113)	2.156*** (5.850)	2.182*** (5.817)	2.278*** (6.339)	2.146*** (5.911)	2.504*** (6.351)
<i>GOV_INDEX</i>	–	0.004 (0.224)								
<i>IND_DIR</i>	–		0.409*** (3.292)							0.954*** (5.587)
<i>IND_CHAIR</i>	–			0.000 (0.002)						–0.741*** (–3.435)
<i>FEMALE_DIR</i>	–				–0.150 (–0.795)					–0.292 (–1.545)
<i>BUSY_DIR</i>	+					–0.031 (–0.337)				0.018 (0.175)
<i>FINANCIAL</i>	–						0.001 (0.005)			–0.076 (–0.877)
<i>EXPERIENCE</i>	–							0.093** (2.211)		0.139*** (3.546)
<i>TENURE</i>	+								0.012 (0.726)	0.020 (1.155)
<i>BFSIZE</i>	+	–0.015 (–0.619)	–0.046* (–1.841)	–0.015 (–0.551)	–0.010 (–0.403)	–0.008 (–0.246)	–0.015 (–0.621)	–0.036 (–1.419)	–0.016 (–0.669)	–0.041 (–1.389)
<i>Ln_TA</i>	–	–0.156*** (–5.745)	–0.160*** (–5.998)	–0.155*** (–5.743)	–0.153*** (–5.667)	–0.156*** (–5.753)	–0.155*** (–5.745)	–0.157*** (–5.816)	–0.156*** (–5.758)	–0.163*** (–6.271)
<i>Ln_INV_OPTIONS</i>	+	0.036* (1.735)	0.044** (2.178)	0.035* (1.694)	0.032 (1.528)	0.035* (1.735)	0.035* (1.720)	0.032 (1.597)	0.037* (1.805)	0.023 (1.213)
<i>PRS_AGE</i>	?	–1.367*** (–5.683)	–1.441*** (–6.089)	–1.362*** (–5.680)	–1.348*** (–5.613)	–1.370*** (–5.688)	–1.362*** (–5.686)	–1.347*** (–5.688)	–1.374*** (–5.721)	–1.458*** (–6.395)
Observations		206	206	206	206	206	206	206	206	206
Year FE		Yes								
Trustee FE		Yes								
Chi-square		162.6	178.2	162.7	163.8	162.5	162.7	169.3	163.3	229.9
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		–29.12	–24.02	–29.15	–28.83	–29.09	–29.15	–26.77	–28.88	–9.752

The tobit regression is estimated using the sub-sample of 206 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.2A: Superannuation fund fees  
(*EXCESS\_OP\_EXP\_RATIO\_MEMACC*) and governance variables of *retail*  
funds**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO\_MEMACC*.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		174.288 (0.507)	215.734 (0.619)	213.568 (0.618)	138.248 (0.399)	-59.994 (-0.170)	147.791 (0.427)	158.444 (0.451)	132.350 (0.379)	87.974 (0.247)
<i>GOV_INDEX</i>	-	-26.187** (-2.405)								
<i>IND_DIR</i>	-		-							-99.626
			199.018*** (-2.813)							
<i>IND_CHAIR</i>	-			-						(-0.854)
				143.202*** (-3.362)						-91.356
<i>FEMALE_DIR</i>	-				-179.508* (-1.794)					(-1.290)
										-38.910
<i>BUSY_DIR</i>	+					61.344*** (3.252)				(-0.312)
										63.888***
<i>FINANCIAL</i>	-						-78.269** (-2.200)			(3.112)
										-8.870
<i>EXPERIENCE</i>	-							35.761 (1.061)		(-0.218)
										54.232
<i>TENURE</i>	+								-0.230 (-0.023)	(1.568)
										-8.626
<i>BSIZE</i>	+	17.075 (1.069)	17.931 (1.132)	15.766 (1.003)	15.596 (0.978)	21.477 (1.351)	14.282 (0.903)	10.226 (0.646)	11.814 (0.745)	(-0.874)
<i>Ln_TA</i>	-	-29.284 (-1.249)	-30.907 (-1.312)	-31.520 (-1.344)	-32.314 (-1.370)	-18.521 (-0.776)	-28.535 (-1.210)	-33.105 (-1.388)	-31.079 (-1.311)	25.127
<i>Ln_INV_OPTIONS</i>	+	-68.260*** (-4.947)	-69.698*** (-5.084)	-68.306*** (-4.998)	-69.858*** (-5.027)	-72.165*** (-5.322)	-70.605*** (-5.139)	-78.108*** (-5.699)	-75.430*** (-5.531)	(1.559)
<i>PRS_AGE</i>	?	927.840*** (6.402)	940.074*** (6.444)	929.224*** (6.440)	901.906*** (6.223)	877.798*** (6.105)	898.785*** (6.219)	858.547*** (5.913)	875.847*** (6.020)	(-0.875)
										-65.762***
										(-4.749)
										947.451***
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.376	0.375	0.377	0.369	0.362	0.367	0.350	0.356	0.386
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_OP\_EXP\_RATIO\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.2B: Superannuation fund fees  
(EXCESS\_OP\_EXP\_RATIO\_MEMACC) and governance variables of retail  
funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of retail superannuation funds and EXCESS\_OP\_EXP\_RATIO\_MEMACC for the period 2010–2014.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		-344.562 (-0.829)	-335.330 (-0.811)	-343.481 (-0.828)	-409.951 (-0.982)	-580.079 (-1.388)	-328.103 (-0.785)	-369.692 (-0.888)	-383.471 (-0.910)	-439.280 (-1.014)
GOV_INDEX	-	-28.951** (-2.063)								
IND_DIR	-		-311.966*** (-3.350)							-262.645* (-1.675)
IND_CHAIR	-			-143.593*** (-2.727)						-26.065 (-0.292)
FEMALE_DIR	-				-137.966 (-1.122)					81.998 (0.540)
BUSY_DIR	+					100.205*** (3.299)				75.031** (2.186)
FINANCIAL	-						-45.701 (-1.046)			24.754 (0.531)
EXPERIENCE	-							19.078 (0.293)		15.337 (0.236)
TENURE	+								2.918 (0.226)	-11.785 (-0.879)
BSIZE	+	27.197 (1.270)	26.229 (1.255)	23.420 (1.117)	25.162 (1.146)	30.818 (1.460)	18.895 (0.894)	17.671 (0.830)	19.489 (0.900)	26.068 (1.162)
Ln_TA	-	3.784 (0.127)	13.332 (0.446)	6.335 (0.212)	1.604 (0.054)	8.165 (0.275)	-0.989 (-0.033)	-0.650 (-0.022)	0.066 (0.002)	16.799 (0.557)
Ln_INV_OPTIONS	+	-80.147*** (-4.533)	-74.849*** (-4.238)	-77.340*** (-4.371)	-80.817*** (-4.536)	-76.188*** (-4.327)	-81.373*** (-4.579)	-83.256*** (-4.705)	-83.915*** (-4.719)	-70.819*** (-3.944)
PRS_AGE	?	1,377.171*** (7.816)	1,433.646*** (8.141)	1,388.455*** (7.901)	1,372.735*** (7.761)	1,376.942*** (7.879)	1,362.556*** (7.715)	1,361.626*** (7.700)	1,357.197*** (7.633)	1,447.638*** (8.109)
Observations		434	434	434	434	434	434	434	434	434
R-squared		0.433	0.443	0.436	0.431	0.437	0.429	0.427	0.425	0.449
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 434 fund observations. EXCESS\_OP\_EXP\_RATIO\_MEMACC is calculated as total administration and operating expenses divided by total number of member accounts. GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; FEMALE\_DIR is the percentage of female directors on the board; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; FINANCIAL is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; TENURE is the average director tenure; BSIZE is the total number of directors on the board. Ln\_TA is the natural logarithm of TA(\$million); Ln\_INV\_OPTIONS is the natural logarithm of INV\_OPTIONS; PRS\_AGE is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.2C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO\_MEMACC*) and governance variables of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO\_MEMACC* for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		1,259.792*** (3.041)	1,243.875*** (3.001)	1,338.113*** (3.199)	1,275.996*** (3.100)	1,319.128*** (3.192)	1,216.958*** (2.928)	1,352.841*** (3.283)	1,241.536*** (3.011)	1,510.816*** (3.404)
GOV_INDEX	–	2.678 (0.247)								
IND_DIR	–		47.600 (0.563)							176.874 (1.428)
IND_CHAIR	–			-56.359 (-0.697)						-281.166* (-1.902)
FEMALE_DIR	–				-16.157 (-0.133)					35.821 (0.251)
BUSY_DIR	+					53.097 (0.917)				82.717 (1.101)
FINANCIAL	–						56.727 (0.927)			9.153 (0.140)
EXPERIENCE	–							36.129* (1.702)		22.679 (0.900)
TENURE	+								7.517 (0.705)	10.542 (0.829)
BSIZE	+	31.845** (2.057)	28.404* (1.705)	36.971** (2.176)	32.448** (2.033)	19.244 (0.928)	32.736** (2.122)	21.059 (1.286)	31.303** (2.020)	15.783 (0.709)
Ln_TA	–	-159.906*** (-5.551)	-159.170*** (-5.524)	-161.099*** (-5.589)	-159.640*** (-5.532)	-158.716*** (-5.519)	-159.714*** (-5.556)	-161.708*** (-5.649)	-159.526*** (-5.547)	-161.617*** (-5.591)
Ln_INV_OPTIONS	+	55.065*** (3.381)	55.986*** (3.417)	50.606*** (3.035)	54.108*** (3.221)	53.545*** (3.295)	54.230*** (3.352)	48.422*** (2.990)	56.963*** (3.452)	39.584** (2.314)
PRS_AGE	?	-698.335*** (-3.181)	-700.264*** (-3.203)	-710.696*** (-3.262)	-693.407*** (-3.165)	-674.530*** (-3.077)	-704.436*** (-3.230)	-697.057*** (-3.220)	-703.109*** (-3.210)	-744.181*** (-3.399)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.441	0.443	0.430	0.440	0.442	0.439	0.428	0.444	0.405
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_OP\_EXP\_RATIO\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.3: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds with interactions**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		0.190 (0.535)	0.196 (0.542)	0.238 (0.660)	0.203 (0.564)	0.086 (0.247)	0.227 (0.643)	0.254 (0.724)	0.202 (0.561)	0.096 (0.269)
GOV_INDEX	-	-0.006 (-0.508)								
GOV_INDEX_P2014	-	0.028* (1.915)								
POST2014	?	-0.115* (-1.701)	-0.031 (-0.636)	-0.030 (-0.639)	-0.050 (-1.086)	0.031 (0.875)	0.025 (0.331)	-0.068* (-1.767)	0.067 (1.039)	0.027 (0.186)
IND_DIR	-		-0.013 (-0.171)							0.085 (0.669)
IND_DIR_P2014	-		0.066 (0.871)							0.136 (0.926)
IND_CHAIR	-			-0.065 (-1.449)						-0.086 (-1.170)
IND_CHAIR_P2014	-			0.058 (1.032)						-0.041 (-0.315)
FEMALE_DIR	-				-0.148 (-1.345)					-0.148 (-1.104)
FEMALE_DIR_P2014	-				0.186 (1.587)					-0.054 (-0.261)
BUSY_DIR	+					0.058*** (2.913)				0.055** (2.271)
BUSY_DIR_P2014	+					-0.015 (-0.326)				0.002 (0.038)
FINANCIAL	-						0.006 (0.166)			0.061 (1.405)
FINANCIAL_P2014	-						-0.025 (-0.311)			-0.066 (-0.632)
EXPERIENCE	-							0.030 (0.627)		0.043 (0.829)
EXPERIENCE_P2014	-							0.104* (1.775)		0.067 (1.026)
TENURE	+								-0.001 (-0.120)	-0.008 (-0.783)
TENURE_P2014	+								-0.013 (-1.048)	-0.007 (-0.389)
BSIZE	+	-0.022 (-1.385)	-0.023 (-1.467)	-0.023 (-1.483)	-0.020 (-1.260)	-0.015 (-0.961)	-0.024 (-1.535)	-0.026* (-1.677)	-0.024 (-1.549)	-0.019 (-1.088)
Ln_TA	-	-0.013 (-0.559)	-0.015 (-0.613)	-0.015 (-0.623)	-0.014 (-0.590)	-0.011 (-0.476)	-0.018 (-0.756)	-0.019 (-0.779)	-0.015 (-0.612)	-0.011 (-0.454)
Ln_INV_OPTIONS	+	-0.055*** (-3.938)	-0.055*** (-3.921)	-0.053*** (-3.795)	-0.054*** (-3.838)	-0.050*** (-3.660)	-0.054*** (-3.908)	-0.057*** (-4.135)	-0.057*** (-4.089)	-0.050*** (-3.544)
PRS_AGE	?	0.083 (0.561)	0.096 (0.644)	0.106 (0.714)	0.102 (0.692)	0.072 (0.496)	0.087 (0.590)	0.083 (0.568)	0.096 (0.649)	0.097 (0.649)
Observations		640	640	640	640	640	640	640	640	640
R-squared		0.390	0.386	0.389	0.387	0.402	0.391	0.392	0.387	0.400
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *POST2014* is an indicator variable set to 1 if year ≥ 2015, 0 otherwise; *GOV\_INDEX\_P2014* is an interaction between *GOV\_INDEX* and *POST2014*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_P2014* is an interaction between *IND\_DIR* and *POST2014*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *IND\_CHAIR\_P2014* is an interaction between *IND\_CHAIR* and *POST2014*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\_P2014* is an interaction between *FEMALE\_DIR* and *POST2014*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\_P2014* is an interaction between *BUSY\_DIR* and *POST2014*; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *FINANCIAL\_P2014* is an interaction between *FINANCIAL* and *POST2014*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *EXPERIENCE\_P2014* is an interaction between *EXPERIENCE* and *POST2014*; *TENURE* is the average director tenure; *TENURE\_P2014* is an interaction between *TENURE* and *POST2014*; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.4A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *retail* funds**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.347 (0.885)	0.343 (0.875)	0.347 (0.887)	0.336 (0.859)
<i>GOV_INDEX</i>	-	0.005 (0.367)			
<i>GOV_INDEX1</i>	-		0.003 (0.190)		
<i>GOV_INDEX2</i>	-			0.001 (0.105)	
<i>GOV_INDEX3</i>	-				0.007 (0.467)
<i>BSIZE</i>	+	-0.029 (-1.406)	-0.029 (-1.372)	-0.028 (-1.374)	-0.029 (-1.401)
<i>Ln_TA</i>	-	0.049 (0.745)	0.050 (0.772)	0.050 (0.760)	0.050 (0.771)
<i>Ln_INV_OPTIONS</i>	+	-0.076*** (-2.913)	-0.075*** (-2.873)	-0.075*** (-2.874)	-0.076*** (-2.906)
<i>PRS_AGE</i>	?	0.015 (0.049)	0.020 (0.067)	0.023 (0.076)	0.010 (0.034)
Observations		640	640	640	640
R-squared		0.113	0.112	0.112	0.113
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 640 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.4B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *retail* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-0.347 (-1.226)	-0.323 (-1.135)	-0.347 (-1.226)	-0.323 (-1.135)
<i>GOV_INDEX</i>	–	-0.025** (-2.029)			
<i>GOV_INDEX1</i>	–		-0.029* (-1.861)		
<i>GOV_INDEX2</i>	–			-0.025** (-2.029)	
<i>GOV_INDEX3</i>	–				-0.029* (-1.861)
<i>BSIZE</i>	+	-0.012 (-0.483)	-0.013 (-0.510)	-0.012 (-0.483)	-0.013 (-0.510)
<i>Ln_TA</i>	–	0.143** (2.569)	0.143** (2.529)	0.143** (2.569)	0.143** (2.529)
<i>Ln_INV_OPTIONS</i>	+	-0.087*** (-2.832)	-0.088*** (-2.842)	-0.087*** (-2.832)	-0.088*** (-2.842)
<i>PRS_AGE</i>	?	0.381 (1.502)	0.371 (1.474)	0.381 (1.502)	0.371 (1.474)
Observations		434	434	434	434
R-squared		0.175	0.0113	0.0133	0.177
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 434 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1.4C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *retail* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of retail superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		2.649*** (5.448)	2.705*** (5.381)	2.743*** (5.309)	2.647*** (5.489)
<i>GOV_INDEX</i>	–	0.017 (1.163)			
<i>GOV_INDEX1</i>	–		0.004 (0.325)		
<i>GOV_INDEX2</i>	–			-0.005 (-0.687)	
<i>GOV_INDEX3</i>	–				0.019 (1.006)
<i>B_SIZE</i>	+	-0.014 (-0.444)	-0.013 (-0.423)	-0.013 (-0.422)	-0.014 (-0.448)
<i>Ln_TA</i>	–	-0.218*** (-2.680)	-0.221*** (-2.687)	-0.222*** (-2.701)	-0.216** (-2.622)
<i>Ln_INV_OPTIONS</i>	+	0.041** (1.995)	0.040* (1.957)	0.039* (1.899)	0.040* (1.893)
<i>PRS_AGE</i>	?	-2.435*** (-4.401)	-2.384*** (-4.399)	-2.369*** (-4.437)	-2.453*** (-4.330)
Observations		206	206	206	206
R-squared		0.404	0.0708	0.398	0.0667
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *B\_SIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A2.2 Alternate measure of fees for industry superannuation funds

**Table A2.2.1A: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *industry* funds**

This table provides evidence on the association between the governance practices of industry superannuation funds and *OP\_EXP\_RATIO*.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		2.784*** (6.287)	2.584*** (6.114)	2.215*** (5.439)	2.738*** (6.134)	2.802*** (6.270)	2.805*** (6.304)	2.756*** (6.209)	2.535*** (5.571)	2.247*** (5.370)
GOV_INDEX	-	-0.010 (-1.337)								
IND_DIR	-		-0.661*** (-5.650)							-0.335*** (-2.661)
IND_CHAIR	-			-0.231*** (-8.042)						-0.195*** (-5.653)
FEMALE_DIR	-				0.051 (0.705)					-0.021 (-0.293)
BUSY_DIR	+					0.023 (0.578)				0.008 (0.219)
FINANCIAL	-						0.025 (0.896)			0.012 (0.459)
EXPERIENCE	-							-0.015 (-0.915)		0.003 (0.169)
TENURE	+								0.008** (2.106)	0.000 (0.039)
BSIZE	+	-0.014* (-1.769)	-0.015** (-1.984)	-0.017** (-2.381)	-0.016** (-1.997)	-0.015* (-1.925)	-0.015* (-1.923)	-0.016* (-1.959)	-0.014* (-1.712)	-0.016** (-2.269)
Ln_TA	-	-0.292*** (-5.485)	-0.257*** (-5.031)	-0.221*** (-4.509)	-0.288*** (-5.355)	-0.296*** (-5.525)	-0.300*** (-5.571)	-0.289*** (-5.407)	-0.270*** (-5.001)	-0.221*** (-4.384)
Ln_INV_OPTIONS	+	0.063*** (2.808)	0.057*** (2.661)	0.057*** (2.799)	0.057** (2.513)	0.060*** (2.664)	0.061*** (2.714)	0.061*** (2.726)	0.064*** (2.881)	0.057*** (2.767)
PRS_AGE	?	0.397 (1.554)	0.250 (1.025)	0.280 (1.208)	0.417 (1.634)	0.416 (1.631)	0.435* (1.702)	0.410 (1.605)	0.359 (1.409)	0.222 (0.957)
Observations		288	288	288	288	288	288	288	288	288
Year FE		Yes								
Trustee FE		Yes								
Chi-square		5040	5594	6197	5017	5014	5022	5023	5089	6381
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		305.5	319.8	333.8	304.9	304.8	305	305.1	306.8	337.8

The tobit regression is estimated using the pooled sample of 288 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.1B: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of industry superannuation funds and *OP\_EXP\_RATIO* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		2.956*** (5.597)	3.002*** (5.970)	2.180*** (4.539)	2.839*** (5.291)	2.959*** (5.587)	3.002*** (5.685)	2.915*** (5.518)	2.941*** (5.366)	2.622*** (5.204)
<i>GOV_INDEX</i>	–	–0.005 (–0.560)								
<i>IND_DIR</i>	–		–0.719*** (–4.628)							–0.283* (–1.704)
<i>IND_CHAIR</i>	–			–0.235*** (–7.448)						–0.261*** (–6.841)
<i>FEMALE_DIR</i>	–				0.109 (1.200)					–0.067 (–0.737)
<i>BUSY_DIR</i>	+					–0.003 (–0.079)				–0.051 (–1.353)
<i>FINANCIAL</i>	–						0.034 (1.107)			–0.006 (–0.209)
<i>EXPERIENCE</i>	–							–0.022 (–1.149)		–0.013 (–0.765)
<i>TENURE</i>	+								0.001 (0.145)	–0.016*** (–3.192)
<i>BFSIZE</i>	+	–0.015* (–1.768)	–0.018** (–2.255)	–0.017** (–2.373)	–0.017** (–2.090)	–0.016* (–1.896)	–0.016** (–1.965)	–0.016* (–1.937)	–0.015* (–1.842)	–0.022*** (–3.079)
<i>Ln_TA</i>	–	–0.299*** (–4.644)	–0.290*** (–4.731)	–0.205*** (–3.502)	–0.285*** (–4.336)	–0.301*** (–4.660)	–0.311*** (–4.793)	–0.293*** (–4.521)	–0.299*** (–4.546)	–0.237*** (–3.922)
<i>Ln_INV_OPTIONS</i>	+	0.028 (0.958)	0.019 (0.677)	0.017 (0.680)	0.028 (0.970)	0.029 (0.989)	0.032 (1.108)	0.028 (0.981)	0.028 (0.980)	0.018 (0.726)
<i>PRS_AGE</i>	?	0.261 (0.906)	0.201 (0.731)	0.232 (0.907)	0.216 (0.745)	0.258 (0.894)	0.282 (0.979)	0.244 (0.847)	0.258 (0.894)	0.220 (0.879)
Observations		205	205	205	205	205	205	205	205	205
Year FE		Yes								
Trustee FE		Yes								
Chi-square		5865	6489	7496	5898	5856	5892	5895	5857	8092
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		254.7	264.7	279.1	255.3	254.6	255.2	255.2	254.6	286.7

The tobit regression is estimated using the sub-sample of 205 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.1C: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of industry superannuation funds and *OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff. (t-stats)								
<i>Constant</i>		2.162** (2.191)	2.153** (2.199)	2.148** (2.180)	2.126** (2.203)	2.004** (2.061)	2.190** (2.212)	2.113** (2.132)	1.933* (1.948)	1.922** (1.986)
<i>GOV_INDEX</i>	-	0.001 (0.226)								
<i>IND_DIR</i>	-		-0.108 (-1.019)							-0.201 (-1.605)
<i>IND_CHAIR</i>	-			0.188 (1.245)						0.201 (1.387)
<i>FEMALE_DIR</i>	-				0.150* (1.857)					0.208** (2.256)
<i>BUSY_DIR</i>	+					-0.081* (-1.682)				-0.051 (-1.007)
<i>FINANCIAL</i>	-						-0.016 (-0.396)			0.002 (0.048)
<i>EXPERIENCE</i>	-							0.003 (0.314)		0.003 (0.280)
<i>TENURE</i>	+								0.006 (1.215)	0.002 (0.458)
<i>BSIZE</i>	+	-0.003 (-0.299)	0.002 (0.171)	-0.002 (-0.272)	-0.006 (-0.640)	-0.002 (-0.206)	-0.003 (-0.355)	-0.003 (-0.298)	-0.002 (-0.228)	0.001 (0.115)
<i>Ln_TA</i>	-	-0.236** (-2.225)	-0.234** (-2.228)	-0.234** (-2.213)	-0.233** (-2.247)	-0.217** (-2.078)	-0.235** (-2.227)	-0.230** (-2.165)	-0.218** (-2.061)	-0.212** (-2.079)
<i>Ln_INV_OPTIONS</i>	+	0.105*** (2.634)	0.094** (2.346)	0.104*** (2.627)	0.118*** (2.996)	0.093** (2.359)	0.105*** (2.653)	0.101** (2.528)	0.118*** (2.889)	0.103** (2.439)
<i>PRS_AGE</i>	?	-0.009 (-0.016)	-0.000 (-0.000)	-0.007 (-0.012)	-0.168 (-0.309)	0.052 (0.097)	-0.035 (-0.063)	0.015 (0.027)	-0.059 (-0.109)	-0.180 (-0.333)
Observations		83	83	83	83	83	83	83	83	83
Year FE		Yes								
Trustee FE		Yes								
Chi-square		8595	8698	8590	8950	8885	8606	8600	8744	9622
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		178.9	179.4	178.9	180.6	180.3	178.9	178.9	179.6	183.5

The tobit regression is estimated using the sub-sample of 83 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.2A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO\_MEMACC*) and governance variables of industry funds**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO\_MEMACC*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		255.434*** (3.025)	258.155*** (3.001)	236.368*** (2.841)	260.392*** (3.030)	268.219*** (3.309)	245.075*** (2.819)	267.278*** (3.400)	252.557*** (2.837)	241.838** (2.595)
<i>GOV_INDEX</i>	-	-0.950 (-0.382)								
<i>IND_DIR</i>	-		-10.349 (-0.225)							25.309 (0.631)
<i>IND_CHAIR</i>	-			-16.943 (-1.433)						-27.094** (-2.507)
<i>FEMALE_DIR</i>	-				-4.723 (-0.197)					-6.923 (-0.333)
<i>BUSY_DIR</i>	+					-31.120*** (-3.474)				-36.281*** (-3.841)
<i>FINANCIAL</i>	-						-13.666** (-2.055)			-16.364** (-2.482)
<i>EXPERIENCE</i>	-							1.276 (0.258)		3.224 (0.659)
<i>TENURE</i>	+								0.709 (0.494)	-1.085 (-0.856)
<i>BSIZE</i>	+	-1.269 (-0.379)	-1.328 (-0.397)	-1.436 (-0.487)	-1.284 (-0.374)	-0.977 (-0.284)	-1.321 (-0.394)	-1.275 (-0.379)	-1.073 (-0.313)	-1.283 (-0.420)
<i>Ln_TA</i>	-	-52.571*** (-4.395)	-52.890*** (-4.271)	-49.059*** (-3.948)	-53.473*** (-4.553)	-53.903*** (-4.736)	-49.761*** (-4.036)	-54.323*** (-4.891)	-53.141*** (-4.518)	-46.114*** (-3.470)
<i>Ln_INV_OPTIONS</i>	+	16.846** (2.253)	16.417** (2.221)	16.144** (2.188)	16.837** (2.205)	16.497** (2.271)	16.227** (2.254)	16.343** (2.200)	16.714** (2.251)	15.698** (2.279)
<i>PRS_AGE</i>	?	451.114*** (4.227)	449.102*** (4.151)	439.632*** (4.057)	452.964*** (4.351)	445.994*** (4.251)	445.687*** (4.129)	450.789*** (4.249)	443.964*** (4.059)	438.201*** (3.958)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.194	0.128	0.144	0.193	0.114	0.202	0.125	0.195	0.141
Trustee FE		Yes								
Prob.		0.000831	0.000624	0.000493	0.000437	1.73e-05	1.27e-05	0.000644	0.000775	3.19e-07

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_OP\_EXP\_RATIO\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.2B: Superannuation fund fees  
(EXCESS\_OP\_EXP\_RATIO\_MEMACC) and governance variables of industry  
funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of industry superannuation funds and EXCESS\_OP\_EXP\_RATIO\_MEMACC for the period 2010–2014.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
Constant		430.785*** (3.493)	446.254*** (3.768)	451.073*** (3.607)	456.966*** (3.784)	461.868*** (3.871)	446.180*** (3.556)	431.442*** (3.497)	472.391*** (3.823)	391.109*** (2.849)
GOV_INDEX	-	-4.544* (-1.720)								
IND_DIR	-		-88.255 (-1.586)							-94.559** (-2.068)
IND_CHAIR	-			-7.937 (-0.659)						-16.411 (-1.542)
FEMALE_DIR	-				-41.746* (-1.772)					-44.855** (-2.386)
BUSY_DIR	+					-29.672*** (-2.892)				-28.106** (-2.274)
FINANCIAL	-						-11.236 (-1.117)			-20.662** (-2.459)
EXPERIENCE	-							-8.531 (-1.357)		-7.071 (-1.242)
TENURE	+								-0.804 (-0.503)	-4.264*** (-3.017)
BSIZE	+	-0.600 (-0.158)	-1.606 (-0.461)	-1.185 (-0.332)	-0.868 (-0.230)	-0.943 (-0.239)	-1.066 (-0.283)	-1.387 (-0.372)	-1.560 (-0.378)	-3.098 (-0.798)
Ln_TA	-	-71.847*** (-3.688)	-72.694*** (-3.800)	-74.709*** (-3.754)	-76.490*** (-3.957)	-76.286*** (-3.999)	-73.061*** (-3.582)	-72.081*** (-3.724)	-76.911*** (-4.104)	-56.017** (-2.583)
Ln_INV_OPTIONS	+	6.345 (0.713)	5.414 (0.626)	5.944 (0.674)	7.924 (0.907)	7.117 (0.810)	5.378 (0.594)	6.634 (0.753)	6.588 (0.746)	6.378 (0.739)
PRS_AGE	?	449.639** (2.527)	438.006** (2.381)	440.262** (2.393)	465.387** (2.521)	439.602** (2.390)	435.700** (2.332)	438.687** (2.474)	443.488** (2.445)	454.172** (2.339)
Observations		205	205	205	205	205	205	205	205	205
R-squared		0.0572	0.282	0.0512	0.279	0.292	0.0482	0.278	0.0501	0.0823
Trustee FE		Yes	Yes							
Prob.		9.89e-07	1.23e-05	1.01e-05	8.90e-06	4.72e-08	8.12e-06	2.67e-06	5.83e-05	0

The OLS regression is estimated using the sub-sample of 205 fund observations. EXCESS\_OP\_EXP\_RATIO\_MEMACC is calculated as total administration and operating expenses divided by total number of member accounts. GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; FEMALE\_DIR is the percentage of female directors on the board; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; FINANCIAL is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; TENURE is the average director tenure; BSIZE is the total number of directors on the board. Ln\_TA is the natural logarithm of TA(\$million); Ln\_INV\_OPTIONS is the natural logarithm of INV\_OPTIONS; PRS\_AGE is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.2C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO\_MEMACC*) and governance variables of industry funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO\_MEMACC* for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)							
<i>Constant</i>		-389.804** (-2.067)	-481.764** (-2.358)	-521.923 (-1.468)	-475.050** (-2.454)	-435.006** (-2.287)	-482.266** (-2.444)	-437.019* (-2.017)	-540.707*** (-2.913)	-334.249 (-0.765)
<i>GOV_INDEX</i>	-	3.417 (0.913)								
<i>IND_DIR</i>	-		-1.218 (-0.070)							-4.032 (-0.040)
<i>IND_CHAIR</i>	-			-39.692 (-0.201)						-452.444 (-1.423)
<i>FEMALE_DIR</i>	-				40.629 (0.639)					32.147 (0.241)
<i>BUSY_DIR</i>	+					-41.096 (-1.210)				-39.011 (-0.669)
<i>FINANCIAL</i>	-						-4.033* (-1.685)			3.067 (0.395)
<i>EXPERIENCE</i>	-							3.727 (0.934)		2.581 (0.438)
<i>TENURE</i>	+								1.689 (0.646)	1.104 (0.238)
<i>BSIZE</i>	+	0.194 (0.095)	0.867 (0.408)	0.822 (0.340)	-0.045 (-0.020)	1.120 (0.745)	0.626 (0.357)	0.568 (0.319)	0.943 (0.641)	0.621 (0.196)
<i>Ln_TA</i>	-	-0.352 (-0.014)	11.481 (0.460)	11.387 (0.322)	10.715 (0.432)	8.742 (0.339)	12.176 (0.491)	7.314 (0.285)	16.265 (0.683)	8.426 (0.211)
<i>Ln_INV_OPTIONS</i>	+	28.949*** (3.563)	24.869*** (2.794)	24.987** (2.253)	29.067*** (2.804)	21.131* (1.976)	25.122*** (3.274)	23.690*** (3.073)	29.312** (2.576)	25.990 (1.116)
<i>PRS_AGE</i>	?	1,047.728*** (4.441)	1,090.284*** (4.154)	1,089.638*** (2.957)	1,039.696*** (4.315)	1,052.392*** (4.513)	1,089.600*** (4.261)	1,064.172*** (4.002)	1,073.641*** (4.057)	988.841** (2.545)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.422	0.475	0.992	0.368	0.391	0.382	0.480	0.480	0.993
Trustee FE		Yes	Yes							

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_OP\_EXP\_RATIO\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.3: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *industry* funds with interactions**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		1.750*** (3.292)	1.554*** (3.603)	1.424*** (4.078)	1.795*** (3.169)	1.704*** (3.222)	1.817*** (3.060)	1.738*** (3.282)	1.680*** (3.123)	1.252*** (3.944)
<i>GOV_INDEX</i>	-	-0.006 (-0.537)								
<i>GOV_INDEX_P2014</i>	-	-0.005 (-0.536)								
<i>POST2014</i>	?	0.051 (1.236)	0.043* (1.688)	0.044** (2.090)	0.047* (1.858)	0.070*** (2.735)	0.021 (0.703)	0.025 (0.897)	-0.021 (-0.505)	-0.014 (-0.231)
<i>IND_DIR</i>	-		-0.631 (-1.473)							-0.274 (-1.205)
<i>IND_DIR_P2014</i>	-		-0.050 (-0.404)							-0.063 (-0.450)
<i>IND_CHAIR</i>	-			-0.222* (-1.995)						-0.203** (-2.249)
<i>IND_CHAIR_P2014</i>	-			-0.034 (-1.225)						-0.011 (-0.356)
<i>FEMALE_DIR</i>	-				0.101 (0.980)					0.123 (1.054)
<i>FEMALE_DIR_P2014</i>	-				-0.075 (-0.554)					-0.152 (-1.351)
<i>BUSY_DIR</i>	+					0.040 (0.326)				0.013 (0.173)
<i>BUSY_DIR_P2014</i>	+					-0.216 (-1.623)				-0.172* (-1.683)
<i>FINANCIAL</i>	-						0.018 (0.480)			-0.021 (-0.674)
<i>FINANCIAL_P2014</i>	-						0.012 (0.408)			0.083*** (3.553)
<i>EXPERIENCE</i>	-							-0.018 (-0.985)		-0.003 (-0.237)
<i>EXPERIENCE_P2014</i>	-							0.014 (0.616)		0.012 (0.540)
<i>TENURE</i>	+								0.006 (1.100)	-0.002 (-0.279)
<i>TENURE_P2014</i>	+								0.008 (1.673)	0.005 (0.907)
<i>BFSIZE</i>	+	-0.017 (-1.127)	-0.018 (-1.229)	-0.019 (-1.659)	-0.018 (-1.153)	-0.019 (-1.241)	-0.018 (-1.129)	-0.018 (-1.159)	-0.015 (-1.005)	-0.019 (-1.440)
<i>Ln_TA</i>	-	-0.244*** (-3.222)	-0.206*** (-3.866)	-0.185*** (-3.841)	-0.250*** (-3.067)	-0.228*** (-3.117)	-0.255*** (-2.936)	-0.242*** (-3.143)	-0.242*** (-3.056)	-0.151*** (-4.038)
<i>Ln_INV_OPTIONS</i>	+	0.089** (2.141)	0.081** (2.296)	0.080** (2.624)	0.082* (1.792)	0.075** (2.138)	0.085** (2.060)	0.086** (2.104)	0.090** (2.231)	0.069** (2.136)
<i>PRS_AGE</i>	?	0.470 (1.080)	0.333 (0.969)	0.312 (1.023)	0.440 (1.056)	0.254 (0.780)	0.495 (1.132)	0.488 (1.098)	0.380 (0.873)	0.085 (0.311)
Observations		288	288	288	288	288	288	288	288	288
R-squared		0.221	0.291	0.180	0.221	0.237	0.219	0.220	0.211	0.416
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *POST2014* is an indicator variable set to 1 if year  $\geq$  2015, 0 otherwise; *GOV\_INDEX\_P2014* is an interaction between *GOV\_INDEX* and *POST2014*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_P2014* is an interaction between *IND\_DIR* and *POST2014*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *IND\_DIR\_P2014* is an interaction between *IND\_CHAIR* and *POST2014*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\_P2014* is an interaction between *FEMALE\_DIR* and *POST2014*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\_P2014* is an interaction between *BUSY\_DIR* and *POST2014*; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *FINANCIAL\_P2014* is an interaction between *FINANCIAL* and *POST2014*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *EXPERIENCE\_P2014* is an interaction between *EXPERIENCE* and *POST2014*; *TENURE* is the average director tenure; *TENURE\_P2014* is an interaction between *TENURE* and *POST2014*; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.4A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *industry* funds**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		1.510*** (2.820)	1.495*** (2.774)	1.497*** (2.784)	1.490*** (2.784)
<i>GOV_INDEX</i>	–	-0.006 (-0.565)			
<i>GOV_INDEX1</i>	–		-0.016 (-1.356)		
<i>GOV_INDEX2</i>	–			-0.010 (-0.883)	
<i>GOV_INDEX3</i>	–				-0.012 (-1.061)
<i>BSIZE</i>	+	-0.018 (-1.116)	-0.017 (-1.133)	-0.017 (-1.111)	-0.017 (-1.131)
<i>Ln_TA</i>	–	-0.217*** (-2.738)	-0.213** (-2.681)	-0.214*** (-2.719)	-0.214*** (-2.678)
<i>Ln_INV_OPTIONS</i>	+	0.094** (2.307)	0.096** (2.459)	0.095** (2.341)	0.096** (2.422)
<i>PRS_AGE</i>	?	0.591 (1.464)	0.597 (1.471)	0.583 (1.462)	0.604 (1.471)
Observations		288	288	288	288
R-squared		0.210	0.195	0.197	0.195
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 288 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.4B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *industry* funds for the period 2010–2014**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2010–2014.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		1.733*** (3.186)	1.698*** (3.146)	1.733*** (3.186)	1.698*** (3.146)
<i>GOV_INDEX</i>	–	-0.001 (-0.073)			
<i>GOV_INDEX1</i>	–		-0.007 (-0.685)		
<i>GOV_INDEX2</i>	–			-0.001 (-0.073)	
<i>GOV_INDEX3</i>	–				-0.007 (-0.685)
<i>BSIZE</i>	+	-0.017 (-0.982)	-0.017 (-0.973)	-0.017 (-0.982)	-0.017 (-0.973)
<i>Ln_TA</i>	–	-0.238*** (-3.158)	-0.232*** (-3.106)	-0.238*** (-3.158)	-0.232*** (-3.106)
<i>Ln_INV_OPTIONS</i>	+	0.087** (2.145)	0.086** (2.136)	0.087** (2.145)	0.086** (2.136)
<i>PRS_AGE</i>	?	0.315 (0.843)	0.333 (0.872)	0.315 (0.843)	0.333 (0.872)
Observations	928	205	205	205	205
R-squared	0.077	0.225	0.228	0.225	0.200
Trustee FE	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 205 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2.4C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index of *industry* funds for the period 2015–2016**

This table provides evidence on the association between the governance practices of industry superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.765 (1.127)	0.679 (1.041)	0.622 (0.989)	0.762 (1.113)
<i>GOV_INDEX</i>	–	0.003 (0.318)			
<i>GOV_INDEX1</i>	–		-0.004 (-0.473)		
<i>GOV_INDEX2</i>	–			-0.006 (-0.589)	
<i>GOV_INDEX3</i>	–				0.004 (0.534)
<i>BSIZE</i>	+	-0.003 (-0.481)	-0.002 (-0.286)	-0.002 (-0.310)	-0.003 (-0.574)
<i>Ln_TA</i>	–	-0.143 (-1.489)	-0.132 (-1.468)	-0.121 (-1.383)	-0.140 (-1.455)
<i>Ln_INV_OPTIONS</i>	+	0.092*** (2.872)	0.090*** (2.891)	0.085*** (2.967)	0.089*** (2.842)
<i>PRS_AGE</i>	?	0.564 (1.190)	0.608 (1.344)	0.582 (1.232)	0.524 (1.062)
Observations		83	83	83	83
R-squared		0.090	0.092	0.197	0.241
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A2.3 Alternate measure of fees for both retail and industry superannuation fund fees

**Table A2.3.1A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.340 (0.967)	0.336 (0.951)	0.313 (0.921)	0.333 (0.960)	0.160 (0.470)	0.344 (0.982)	0.415 (1.140)	0.338 (0.981)	0.281 (0.795)
<i>GOV_INDEX</i>	-	0.001 (0.106)								
<i>IND_DIR</i>	-		-0.003 (-0.023)							0.193 (1.540)
<i>IND_CHAIR</i>	-			-0.082 (-1.358)						-0.169** (-2.535)
<i>FEMALE_DIR</i>	-				-0.037 (-0.407)					-0.064 (-0.650)
<i>BUSY_DIR</i>	+					0.047* (1.806)				0.051* (1.846)
<i>FINANCIAL</i>	-						0.007 (0.170)			0.043 (1.096)
<i>EXPERIENCE</i>	-							0.039 (1.400)		0.031 (1.207)
<i>TENURE</i>	+								-0.000 (-0.026)	-0.004 (-0.453)
<i>BSIZE</i>	+	-0.025 (-1.630)	-0.025 (-1.579)	-0.023 (-1.547)	-0.024 (-1.563)	-0.021 (-1.377)	-0.025 (-1.608)	-0.025 (-1.619)	-0.025 (-1.621)	-0.023 (-1.521)
<i>RETAIL</i>	+	0.161 (1.329)	0.165 (1.304)	0.164 (1.404)	0.167 (1.432)	0.162 (1.396)	0.158 (1.299)	0.137 (1.173)	0.164 (1.459)	0.035 (0.256)
<i>Ln_TA</i>	-	0.010 (0.177)	0.011 (0.190)	0.014 (0.252)	0.011 (0.195)	0.029 (0.557)	0.010 (0.173)	0.001 (0.016)	0.011 (0.190)	0.025 (0.470)
<i>Ln_INV_OPTIONS</i>	+	-0.066** (-2.599)	-0.065*** (-2.651)	-0.061** (-2.452)	-0.064** (-2.556)	-0.063** (-2.578)	-0.066*** (-2.611)	-0.067*** (-2.698)	-0.065** (-2.605)	-0.062** (-2.592)
<i>PRS_AGE</i>	?	0.070 (0.247)	0.074 (0.257)	0.110 (0.387)	0.082 (0.289)	0.041 (0.153)	0.072 (0.252)	0.066 (0.231)	0.073 (0.259)	0.036 (0.133)
Observations		928	928	928	928	928	928	928	928	928
R-squared		0.103	0.103	0.110	0.0359	0.0433	0.103	0.106	0.103	0.132
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.1B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-0.213 (-0.899)	-0.315 (-1.300)	-0.301 (-1.296)	-0.210 (-0.857)	-0.241 (-0.993)	-0.174 (-0.717)	-0.209 (-0.878)	-0.284 (-1.063)	-0.363 (-1.369)
<i>GOV_INDEX</i>	-	-0.022* (-1.938)								
<i>IND_DIR</i>	-		-0.220** (-2.099)							-0.031 (-0.201)
<i>IND_CHAIR</i>	-			-0.139*** (-3.046)						-0.113 (-1.486)
<i>FEMALE_DIR</i>	-				-0.187* (-1.930)					-0.049 (-0.449)
<i>BUSY_DIR</i>	+					0.045 (1.373)				0.024 (0.716)
<i>FINANCIAL</i>	-						-0.013 (-0.385)			0.028 (0.809)
<i>EXPERIENCE</i>	-							-0.029 (-1.048)		-0.018 (-0.719)
<i>TENURE</i>	+								0.008 (0.690)	-0.000 (-0.024)
<i>BFSIZE</i>	+	-0.011 (-0.615)	-0.013 (-0.720)	-0.013 (-0.769)	-0.010 (-0.530)	-0.013 (-0.688)	-0.016 (-0.857)	-0.016 (-0.862)	-0.013 (-0.688)	-0.010 (-0.537)
<i>RETAIL</i>	+	0.048 (0.289)	0.162 (0.924)	0.125 (0.773)	-0.010 (-0.060)	0.000 (0.001)	0.028 (0.164)	0.032 (0.186)	0.084 (0.430)	0.103 (0.516)
<i>Ln_TA</i>	-	0.003 (0.097)	0.009 (0.267)	0.009 (0.250)	0.002 (0.047)	0.000 (0.008)	-0.003 (-0.096)	-0.000 (-0.003)	-0.002 (-0.049)	0.013 (0.362)
<i>Ln_INV_OPTIONS</i>	+	-0.058** (-1.973)	-0.054* (-1.889)	-0.055* (-1.909)	-0.057* (-1.954)	-0.057* (-1.932)	-0.061** (-2.055)	-0.062** (-2.090)	-0.063** (-2.151)	-0.053* (-1.835)
<i>PRS_AGE</i>	?	0.416** (2.206)	0.457** (2.467)	0.433** (2.356)	0.421** (2.202)	0.402** (2.166)	0.399** (2.072)	0.404** (2.112)	0.388** (2.070)	0.442** (2.466)
Observations		639	639	639	639	639	639	639	639	639
R-squared		0.485	0.483	0.485	0.482	0.493	0.486	0.483	0.485	0.485
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 639 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.1C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		2.515*** (4.622)	2.402*** (3.928)	2.634*** (4.657)	2.579*** (4.452)	2.541*** (4.434)	2.533*** (4.454)	2.763*** (5.280)	2.501*** (4.395)	2.688*** (5.043)
<i>GOV_INDEX</i>	–	0.017 (1.441)								
<i>IND_DIR</i>	–		0.366 (0.965)							0.777 (1.645)
<i>IND_CHAIR</i>	–			-0.101 (-1.169)						-0.561** (-2.051)
<i>FEMALE_DIR</i>	–				-0.066 (-0.401)					-0.234 (-1.016)
<i>BUSY_DIR</i>	+					-0.045 (-0.961)				-0.066 (-0.902)
<i>FINANCIAL</i>	–						0.034 (1.036)			-0.020 (-0.352)
<i>EXPERIENCE</i>	–							0.075* (1.907)		0.073** (2.304)
<i>TENURE</i>	+								0.008 (0.714)	0.012 (1.615)
<i>BSIZE</i>	+	-0.009 (-0.413)	-0.031 (-0.774)	-0.001 (-0.042)	-0.006 (-0.318)	-0.000 (-0.021)	-0.007 (-0.324)	-0.026 (-0.910)	-0.008 (-0.351)	-0.019 (-0.735)
<i>Ln_TA</i>	–	-0.226*** (-2.825)	-0.203** (-2.276)	-0.234*** (-2.876)	-0.228*** (-2.793)	-0.227*** (-2.775)	-0.228*** (-2.807)	-0.246*** (-3.374)	-0.225*** (-2.728)	-0.214*** (-2.783)
<i>Ln_INV_OPTIONS</i>	+	0.043** (2.102)	0.053* (1.663)	0.035** (2.000)	0.039* (1.803)	0.042** (2.212)	0.041** (2.027)	0.031 (1.617)	0.045** (1.999)	0.016 (0.755)
<i>PRS_AGE</i>	?	-2.234*** (-4.237)	-2.285*** (-4.052)	-2.151*** (-4.307)	-2.153*** (-4.247)	-2.200*** (-4.311)	-2.175*** (-4.246)	-2.088*** (-4.643)	-2.193*** (-4.149)	-2.293*** (-5.174)
Observations		289	289	289	289	289	289	289	289	289
R-squared		0.0990	0.418	0.370	0.367	0.0925	0.367	0.107	0.0967	0.0696
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.2A: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		0.766** (1.974)	0.769** (1.981)	0.757* (1.955)	0.770** (1.982)	0.701* (1.821)	0.761* (1.958)	0.775** (1.997)	0.721* (1.833)	0.659* (1.672)
<i>GOV_INDEX</i>	-	0.001 (0.136)								
<i>IND_DIR</i>	-		0.007 (0.112)							0.157* (1.775)
<i>IND_CHAIR</i>	-			-0.075** (-2.233)						-0.148*** (-3.057)
<i>FEMALE_DIR</i>	-				-0.008 (-0.102)					-0.041 (-0.459)
<i>BUSY_DIR</i>	+					0.053*** (3.426)				0.057*** (3.471)
<i>FINANCIAL</i>	-						0.008 (0.263)			0.049 (1.579)
<i>EXPERIENCE</i>	-							0.050* (1.910)		0.039 (1.491)
<i>TENURE</i>	+								0.004 (0.677)	0.001 (0.103)
<i>BSIZE</i>	+	-0.022** (-2.073)	-0.022** (-2.070)	-0.021** (-1.980)	-0.022** (-2.048)	-0.017 (-1.614)	-0.022** (-2.077)	-0.022** (-2.084)	-0.021** (-1.964)	-0.018 (-1.636)
<i>RETAIL</i>	+	0.191 (0.445)	0.187 (0.435)	0.264 (0.616)	0.192 (0.449)	0.165 (0.390)	0.194 (0.452)	0.188 (0.440)	0.221 (0.516)	0.178 (0.415)
<i>Ln_TA</i>	-	-0.031* (-1.659)	-0.031* (-1.650)	-0.033* (-1.751)	-0.031* (-1.665)	-0.026 (-1.416)	-0.031* (-1.656)	-0.032* (-1.738)	-0.031* (-1.646)	-0.027 (-1.440)
<i>Ln_INV_OPTIONS</i>	+	-0.049*** (-4.265)	-0.049*** (-4.260)	-0.047*** (-4.114)	-0.049*** (-4.218)	-0.047*** (-4.135)	-0.049*** (-4.273)	-0.049*** (-4.278)	-0.048*** (-4.235)	-0.046*** (-4.029)
<i>PRS_AGE</i>	?	0.129 (1.082)	0.128 (1.073)	0.134 (1.133)	0.129 (1.083)	0.110 (0.933)	0.130 (1.094)	0.138 (1.161)	0.126 (1.060)	0.114 (0.968)
Observations		928	928	928	928	928	928	928	928	928
Year FE		Yes								
Trustee FE		Yes								
Chi-square		350.9	350.9	357.4	350.9	368	350.9	355.2	351.8	386.3
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		-145.1	-145.1	-142.6	-145.1	-139.3	-145.1	-143.3	-144.9	-131.9

The tobit regression is estimated using the full sample of 928 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.2B: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *OP\_EXP\_RATIO* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		0.484 (1.122)	0.422 (0.979)	0.429 (0.994)	0.486 (1.125)	0.442 (1.038)	0.483 (1.117)	0.477 (1.106)	0.270 (0.610)	0.275 (0.621)
<i>GOV_INDEX</i>	–	–0.020* (–1.926)								
<i>IND_DIR</i>	–		–0.208*** (–2.696)							–0.029 (–0.254)
<i>IND_CHAIR</i>	–			–0.125*** (–3.186)						–0.091 (–1.563)
<i>FEMALE_DIR</i>	–				–0.128 (–1.380)					–0.005 (–0.049)
<i>BUSY_DIR</i>	+					0.057** (2.371)				0.039 (1.519)
<i>FINANCIAL</i>	–						–0.003 (–0.089)			0.030 (0.901)
<i>EXPERIENCE</i>	–							–0.010 (–0.278)		–0.006 (–0.154)
<i>TENURE</i>	+								0.017** (2.060)	0.008 (0.879)
<i>BFSIZE</i>	+	–0.011 (–0.862)	–0.013 (–1.005)	–0.013 (–1.032)	–0.012 (–0.890)	–0.012 (–0.895)	–0.016 (–1.223)	–0.016 (–1.215)	–0.009 (–0.669)	–0.008 (–0.553)
<i>RETAIL</i>	+	0.071 (0.150)	0.189 (0.396)	0.147 (0.309)	0.023 (0.049)	0.017 (0.036)	0.044 (0.092)	0.046 (0.097)	0.159 (0.333)	0.174 (0.364)
<i>Ln_TA</i>	–	–0.007 (–0.308)	–0.006 (–0.257)	–0.006 (–0.258)	–0.009 (–0.370)	–0.009 (–0.376)	–0.009 (–0.382)	–0.008 (–0.361)	–0.005 (–0.207)	–0.003 (–0.132)
<i>Ln_INV_OPTIONS</i>	+	–0.055*** (–3.879)	–0.052*** (–3.701)	–0.053*** (–3.720)	–0.054*** (–3.810)	–0.052*** (–3.634)	–0.055*** (–3.885)	–0.055*** (–3.897)	–0.057*** (–4.011)	–0.052*** (–3.626)
<i>PRS_AGE</i>	?	0.416*** (3.001)	0.436*** (3.144)	0.419*** (3.035)	0.418*** (3.005)	0.409*** (2.962)	0.417*** (2.996)	0.417*** (3.001)	0.410*** (2.961)	0.419*** (3.029)
Observations		639	639	639	639	639	639	639	639	639
Year FE		Yes								
Trustee FE		Yes								
Chi-square		274.7	279.3	282.7	272	281.2	270.3	270.2	276.1	290.5
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		–90.73	–88.96	–87.55	–91.63	–89.76	–92.57	–92.54	–90.46	–85.42

The tobit regression is estimated using the sub-sample of 639 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.2C: Superannuation fund fees (*OP\_EXP\_RATIO*) and governance variables for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		1.803*** (4.692)	1.985*** (5.176)	1.807*** (4.679)	1.817*** (4.747)	1.776*** (4.586)	1.817*** (4.624)	1.856*** (4.844)	1.725*** (4.305)	1.910*** (4.585)
<i>GOV_INDEX</i>	–	0.003 (0.239)								
<i>IND_DIR</i>	–		0.365*** (3.527)							0.773*** (5.526)
<i>IND_CHAIR</i>	–			–0.007 (–0.067)						–0.516*** (–3.128)
<i>FEMALE_DIR</i>	–				–0.094 (–0.650)					–0.243* (–1.678)
<i>BUSY_DIR</i>	+					–0.043 (–0.642)				–0.048 (–0.645)
<i>FINANCIAL</i>	–						–0.006 (–0.078)			–0.027 (–0.387)
<i>EXPERIENCE</i>	–							0.054* (1.957)		0.070*** (2.681)
<i>TENURE</i>	+								0.008 (0.732)	0.011 (0.983)
<i>BFSIZE</i>	+	–0.011 (–0.640)	–0.034* (–1.875)	–0.011 (–0.558)	–0.009 (–0.479)	–0.004 (–0.196)	–0.011 (–0.642)	–0.022 (–1.202)	–0.011 (–0.620)	–0.022 (–1.069)
<i>RETAIL</i>	+	0.333 (0.872)	0.016 (0.041)	0.348 (0.871)	0.341 (0.896)	0.353 (0.923)	0.339 (0.891)	0.335 (0.878)	0.394 (1.015)	0.324 (0.770)
<i>Ln_TA</i>	–	–0.155*** (–6.774)	–0.159*** (–7.047)	–0.155*** (–6.767)	–0.154*** (–6.698)	–0.156*** (–6.800)	–0.155*** (–6.775)	–0.155*** (–6.801)	–0.155*** (–6.787)	–0.159*** (–7.126)
<i>Ln_INV_OPTIONS</i>	+	0.036** (2.099)	0.044*** (2.614)	0.036** (2.032)	0.034* (1.911)	0.036** (2.105)	0.036** (2.085)	0.034** (1.970)	0.038** (2.165)	0.029* (1.747)
<i>PRS_AGE</i>	?	–1.346*** (–6.658)	–1.410*** (–7.067)	–1.342*** (–6.646)	–1.331*** (–6.582)	–1.355*** (–6.683)	–1.342*** (–6.660)	–1.328*** (–6.627)	–1.351*** (–6.691)	–1.415*** (–7.191)
Observations		289	289	289	289	289	289	289	289	289
Year FE		Yes								
Trustee FE		Yes								
Chi-square		276.7	294.1	276.8	277.8	276.7	276.8	281.9	277.5	332.9
Prob.		0	0	0	0	0	0	0	0	0
Log likelihood		6.662	12.58	6.636	6.845	6.839	6.636	8.519	6.901	24.66

The tobit regression is estimated using the sub-sample of 289 fund observations. *OP\_EXP\_RATIO* is total administration and operating expenses divided by total assets. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.3A: Superannuation fund fees (*EXCESS\_OP\_EXP\_MEMACC*) and governance variables**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_MEMACC*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-19.281 (-0.077)	-61.752 (-0.241)	-59.624 (-0.237)	1.509 (0.006)	-126.084 (-0.473)	9.351 (0.038)	28.737 (0.110)	-7.472 (-0.030)	-90.429 (-0.334)
<i>GOV_INDEX</i>	-	-17.385* (-1.876)								
<i>IND_DIR</i>	-		-169.596** (-2.165)							-83.611 (-0.611)
<i>IND_CHAIR</i>	-			-113.387*** (-3.251)						-78.070 (-1.131)
<i>FEMALE_DIR</i>	-				-109.797* (-1.809)					-20.573 (-0.257)
<i>BUSY_DIR</i>	+					56.376* (1.924)				55.727* (1.934)
<i>FINANCIAL</i>	-						-62.449 (-1.573)			-12.982 (-0.390)
<i>EXPERIENCE</i>	-							31.529 (1.231)		42.314* (1.847)
<i>TENURE</i>	+								0.088 (0.012)	-4.592 (-0.605)
<i>BSIZE</i>	+	12.288 (1.150)	13.170 (1.200)	11.641 (1.115)	11.345 (1.068)	15.003 (1.428)	10.825 (0.988)	8.761 (0.835)	9.457 (0.913)	17.095 (1.533)
<i>RETAIL</i>	+	206.191 (1.038)	315.115 (1.469)	284.016 (1.409)	172.096 (0.845)	140.483 (0.723)	168.850 (0.849)	193.112 (0.899)	187.465 (0.866)	241.155 (1.115)
<i>Ln_TA</i>	-	-24.128 (-0.720)	-26.978 (-0.812)	-25.290 (-0.760)	-27.477 (-0.826)	-15.146 (-0.448)	-23.589 (-0.706)	-31.762 (-0.920)	-27.601 (-0.828)	-18.186 (-0.519)
<i>Ln_INV_OPTIONS</i>	+	-79.084** (-2.486)	-79.182** (-2.529)	-78.640** (-2.469)	-80.255** (-2.466)	-81.002*** (-2.628)	-80.520** (-2.540)	-86.339*** (-2.663)	-84.213*** (-2.583)	-75.592** (-2.558)
<i>PRS_AGE</i>	?	815.588** (2.254)	831.558** (2.298)	819.607** (2.286)	796.889** (2.228)	767.693** (2.265)	792.530** (2.197)	755.094** (2.090)	772.614** (2.169)	826.518** (2.339)
Observations		928	928	928	928	928	928	928	928	928
R-squared		0.416	0.417	0.418	0.411	0.406	0.410	0.396	0.401	0.424
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_OP\_EXP\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.3B: Superannuation fund fees (*EXCESS\_OP\_EXP\_MEMACC*) and governance variables for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_MEMACC* for the period 2010–2014.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		-394.250 (-1.436)	-519.298* (-1.838)	-459.212* (-1.654)	-376.271 (-1.367)	-478.359* (-1.736)	-333.896 (-1.275)	-366.366 (-1.348)	-400.205 (-1.551)	-522.129** (-2.115)
<i>GOV_INDEX</i>	–	-24.349** (-2.162)								
<i>IND_DIR</i>	–		-280.817*** (-2.879)							-208.205 (-1.207)
<i>IND_CHAIR</i>	–			-120.500*** (-3.424)						-28.828 (-0.418)
<i>FEMALE_DIR</i>	–				-104.398 (-1.228)					61.586 (0.667)
<i>BUSY_DIR</i>	+					86.242*** (2.752)				60.721** (2.096)
<i>FINANCIAL</i>	–						-41.876 (-1.011)			4.819 (0.124)
<i>EXPERIENCE</i>	–							-2.172 (-0.096)		-5.030 (-0.236)
<i>TENURE</i>	+								2.952 (0.319)	-5.125 (-0.603)
<i>BSIZE</i>	+	19.471 (1.556)	17.865 (1.354)	16.464 (1.282)	17.200 (1.393)	20.310 (1.571)	14.331 (1.112)	13.857 (1.104)	15.024 (1.239)	17.957 (1.562)
<i>RETAIL</i>	+	100.671 (0.650)	252.239 (1.524)	164.081 (1.065)	57.570 (0.363)	21.962 (0.149)	74.251 (0.464)	79.273 (0.486)	99.615 (0.533)	165.074 (0.897)
<i>Ln_TA</i>	–	8.940 (0.246)	16.483 (0.455)	11.315 (0.310)	3.874 (0.107)	9.801 (0.276)	2.236 (0.062)	1.655 (0.046)	1.867 (0.052)	19.360 (0.548)
<i>Ln_INV_OPTIONS</i>	+	-92.626** (-2.330)	-86.999** (-2.299)	-90.276** (-2.327)	-93.042** (-2.294)	-88.180** (-2.304)	-93.947** (-2.356)	-95.456** (-2.357)	-95.950** (-2.380)	-83.708** (-2.265)
<i>PRS_AGE</i>	?	1,282.308*** (3.052)	1,331.144*** (3.255)	1,289.463*** (3.104)	1,277.743*** (3.038)	1,273.705*** (3.224)	1,266.946*** (3.003)	1,265.936*** (3.049)	1,260.602*** (3.047)	1,326.846*** (3.398)
Observations		639	639	639	639	639	639	639	639	639
R-squared		0.477	0.487	0.480	0.476	0.482	0.474	0.472	0.471	0.491
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 639 fund observations. *EXCESS\_OP\_EXP\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA*(\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.3C: Superannuation fund fees (*EXCESS\_OP\_EXP\_MEMACC*) and governance variables for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_MEMACC* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		1,088.144* (1.712)	1,112.189* (1.717)	1,093.032* (1.708)	1,094.472* (1.699)	1,136.469* (1.750)	1,041.632 (1.629)	1,163.452* (1.845)	1,038.654 (1.590)	1,121.762* (1.789)
<i>GOV_INDEX</i>	–	5.451 (0.783)								
<i>IND_DIR</i>	–		53.984 (0.530)							148.917 (1.410)
<i>IND_CHAIR</i>	–			–43.396 (–0.571)						–223.832** (–2.043)
<i>FEMALE_DIR</i>	–				14.239 (0.151)					14.935 (0.158)
<i>BUSY_DIR</i>	+					50.069 (0.925)				67.283 (1.242)
<i>FINANCIAL</i>	–						52.108 (0.720)			14.332 (0.214)
<i>EXPERIENCE</i>	–							33.988* (1.868)		25.434 (1.600)
<i>TENURE</i>	+								5.047 (0.829)	6.103 (1.265)
<i>BSIZE</i>	+	22.437 (1.527)	19.475 (1.166)	25.723 (1.608)	22.459 (1.576)	14.351 (0.936)	23.977 (1.598)	14.510 (1.060)	23.066 (1.541)	10.990 (0.747)
<i>RETAIL</i>	+	246.845 (1.095)	205.620 (0.791)	314.096 (1.181)	257.204 (1.125)	244.425 (1.068)	260.181 (1.132)	271.975 (1.156)	288.478 (1.266)	424.808 (1.467)
<i>Ln_TA</i>	–	–160.073** (–2.014)	–158.746** (–1.976)	–160.388** (–2.018)	–159.680** (–1.993)	–158.917** (–2.002)	–159.538** (–2.010)	–162.634** (–2.113)	–159.132** (–1.992)	–162.104** (–2.085)
<i>Ln_INV_OPTIONS</i>	+	47.436 (1.273)	48.471 (1.291)	43.720 (1.194)	47.491 (1.226)	46.366 (1.237)	46.463 (1.265)	40.999 (1.181)	48.753 (1.282)	33.985 (0.966)
<i>PRS_AGE</i>	?	–732.457 (–1.090)	–725.255 (–1.082)	–725.394 (–1.095)	–717.622 (–1.065)	–694.218 (–1.046)	–725.846 (–1.090)	–728.819 (–1.154)	–723.275 (–1.079)	–753.903 (–1.207)
Observations		289	289	289	289	289	289	289	289	289
R-squared		0.479	0.482	0.473	0.481	0.482	0.478	0.467	0.483	0.452
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_OP\_EXP\_MEMACC* is calculated as total administration and operating expenses divided by total number of member accounts. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.4A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO*.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.340 (0.967)	0.336 (0.975)	0.332 (0.953)	0.338 (0.975)
<i>GOV_INDEX</i>	–	0.001 (0.106)			
<i>GOV_INDEX1</i>	–		-0.003 (-0.219)		
<i>GOV_INDEX2</i>	–			-0.002 (-0.172)	
<i>GOV_INDEX3</i>	–				0.001 (0.083)
<i>BSIZE</i>	+	-0.025 (-1.630)	-0.025 (-1.591)	-0.025 (-1.601)	-0.025 (-1.618)
<i>RETAIL</i>	+	0.161 (1.329)	0.167 (1.388)	0.168 (1.383)	0.162 (1.344)
<i>Ln_TA</i>	–	0.010 (0.177)	0.011 (0.197)	0.011 (0.201)	0.010 (0.185)
<i>Ln_INV_OPTIONS</i>	+	-0.066** (-2.599)	-0.065** (-2.570)	-0.065** (-2.570)	-0.065** (-2.590)
<i>PRS_AGE</i>	?	0.070 (0.247)	0.078 (0.274)	0.076 (0.268)	0.071 (0.249)
Observations		928	928	928	928
R-squared		0.103	0.0375	0.103	0.103
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the full sample of 928 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.4B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index for the period 2010–2014**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2010–2014.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-0.395 (-1.367)	-0.373 (-1.286)	-0.395 (-1.367)	-0.373 (-1.286)
<i>GOV_INDEX</i>	–	-0.024** (-2.242)			
<i>GOV_INDEX1</i>	–		-0.027** (-2.160)		
<i>GOV_INDEX2</i>	–			-0.024** (-2.242)	
<i>GOV_INDEX3</i>	–				-0.027** (-2.160)
<i>BSIZE</i>	+	-0.012 (-0.673)	-0.013 (-0.721)	-0.012 (-0.673)	-0.013 (-0.721)
<i>RETAIL</i>	+	0.520*** (10.759)	0.514*** (10.541)	0.520*** (10.759)	0.514*** (10.541)
<i>Ln_TA</i>	–	0.067 (1.313)	0.067 (1.302)	0.067 (1.313)	0.067 (1.302)
<i>Ln_INV_OPTIONS</i>	+	-0.077*** (-2.615)	-0.078*** (-2.636)	-0.077*** (-2.615)	-0.078*** (-2.636)
<i>PRS_AGE</i>	?	0.448* (1.964)	0.441* (1.936)	0.448* (1.964)	0.441* (1.936)
Observations		639	639	639	639
R-squared		0.159	0.161	0.0302	0.0311
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 639 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3.4C: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance index for the period 2015–2016**

This table provides evidence on the association between the governance practices of Australian superannuation funds and *EXCESS\_OP\_EXP\_RATIO* for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		2.515*** (4.622)	2.557*** (4.523)	2.587*** (4.516)	2.509*** (4.639)
<i>GOV_INDEX</i>	–	0.017 (1.441)			
<i>GOV_INDEX1</i>	–		0.003 (0.298)		
<i>GOV_INDEX2</i>	–			-0.005 (-0.833)	
<i>GOV_INDEX3</i>	–				0.019 (1.234)
<i>BSIZE</i>	+	-0.009 (-0.413)	-0.008 (-0.361)	-0.008 (-0.354)	-0.010 (-0.443)
<i>Ln_TA</i>	–	-0.226*** (-2.825)	-0.228*** (-2.788)	-0.229*** (-2.794)	-0.222*** (-2.752)
<i>Ln_INV_OPTIONS</i>	+	0.043** (2.102)	0.042** (2.044)	0.041** (1.985)	0.042** (2.001)
<i>PRS_AGE</i>	?	-2.234*** (-4.237)	-2.173*** (-4.171)	-2.161*** (-4.198)	-2.264*** (-4.168)
Observations		289	289	289	289
R-squared		0.375	0.366	0.367	0.0950
Trustee FE		Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 289 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX2* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX3* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater to the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.



## Appendix A3 Superannuation fund performance with asset allocation

**Table A3.1A: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds for the period 2010–2013**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds including the percentage of asset allocations for the period 2010–2013.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		118.158 (0.373)	155.999 (0.500)	138.992 (0.446)	157.657 (0.493)	134.438 (0.438)	138.021 (0.440)	119.823 (0.380)	145.427 (0.475)	178.714 (0.565)
<i>GOV_INDEX</i>	+	0.223 (1.393)								
<i>IND_DIR</i>	+		-1.947 (-1.475)							-3.257 (-1.348)
<i>IND_CHAIR</i>	+			-0.363 (-0.879)						-0.023 (-0.019)
<i>FEMALE_DIR</i>	+				1.275 (0.999)					2.788 (1.607)
<i>BUSY_DIR</i>	-					0.770 (1.269)				0.579 (0.961)
<i>FINANCIAL</i>	+						0.004 (0.007)			0.028 (0.049)
<i>EXPERIENCE</i>	+							0.657 (0.832)		0.755 (0.892)
<i>TENURE</i>	-								0.100 (0.546)	0.079 (0.440)
<i>BFSIZE</i>	-	-0.362* (-1.740)	-0.246 (-1.164)	-0.278 (-1.322)	-0.365* (-1.710)	-0.257 (-1.198)	-0.287 (-1.363)	-0.324 (-1.484)	-0.238 (-1.049)	-0.365 (-1.481)
<i>Ln_TA</i>	+	0.282 (1.480)	0.262 (1.535)	0.266 (1.474)	0.278 (1.469)	0.271 (1.532)	0.270 (1.453)	0.268 (1.447)	0.272 (1.502)	0.273 (1.621)
<i>Ln_INV_OPTIONS</i>	+	0.273* (1.707)	0.248* (1.721)	0.263* (1.690)	0.259 (1.608)	0.271* (1.780)	0.266* (1.662)	0.267* (1.696)	0.258 (1.638)	0.217 (1.464)
<i>PRS_AGE</i>	-	-0.623 (-0.417)	-0.399 (-0.321)	-0.563 (-0.398)	-0.602 (-0.398)	-0.466 (-0.345)	-0.599 (-0.405)	-0.623 (-0.426)	-0.577 (-0.416)	-0.160 (-0.125)
<i>%CASH</i>		-125.414 (-0.396)	-161.154 (-0.517)	-145.168 (-0.466)	-163.893 (-0.512)	-141.783 (-0.462)	-144.497 (-0.460)	-126.768 (-0.402)	-152.539 (-0.499)	-184.083 (-0.583)
<i>%AUST_FIXED_INC</i>		-124.100 (-0.392)	-159.808 (-0.512)	-143.802 (-0.461)	-162.656 (-0.508)	-140.677 (-0.458)	-143.152 (-0.456)	-125.436 (-0.398)	-151.263 (-0.495)	-183.203 (-0.581)
<i>%INT_FIXED_INC</i>		-132.345 (-0.419)	-166.665 (-0.536)	-151.211 (-0.486)	-170.530 (-0.534)	-147.359 (-0.481)	-150.931 (-0.482)	-133.385 (-0.424)	-158.440 (-0.519)	-189.477 (-0.601)
<i>%AUST_EQUITY</i>		-122.805 (-0.388)	-158.124 (-0.507)	-142.305 (-0.457)	-161.206 (-0.504)	-138.787 (-0.452)	-141.732 (-0.452)	-124.014 (-0.393)	-149.648 (-0.490)	-180.997 (-0.574)
<i>%INT_EQUITY</i>		-123.778 (-0.390)	-159.629 (-0.511)	-143.782 (-0.460)	-162.481 (-0.507)	-140.809 (-0.458)	-142.971 (-0.455)	-125.102 (-0.396)	-151.339 (-0.494)	-182.739 (-0.578)
<i>%LISTED_PROPERTY</i>		-127.914 (-0.405)	-162.933 (-0.523)	-147.345 (-0.473)	-165.956 (-0.520)	-141.906 (-0.463)	-147.019 (-0.469)	-129.387 (-0.411)	-154.096 (-0.504)	-183.407 (-0.582)
<i>%UNLISTED_PROPERTY</i>		-128.015 (-0.404)	-163.755 (-0.525)	-147.587 (-0.473)	-166.273 (-0.520)	-143.538 (-0.467)	-147.152 (-0.469)	-129.144 (-0.409)	-154.703 (-0.506)	-185.144 (-0.586)
<i>%OTHER</i>		-126.868 (-0.401)	-161.881 (-0.519)	-146.281 (-0.469)	-165.479 (-0.517)	-142.882 (-0.466)	-145.883 (-0.465)	-128.021 (-0.406)	-153.811 (-0.504)	-185.252 (-0.588)
<i>%DEFAULT_INV</i>		-0.309 (-0.437)	-0.324 (-0.487)	-0.341 (-0.491)	-0.355 (-0.502)	-0.246 (-0.357)	-0.352 (-0.504)	-0.306 (-0.435)	-0.312 (-0.456)	-0.227 (-0.340)
Observations		328	328	328	328	328	328	328	328	328
R-squared		0.263	0.270	0.263	0.262	0.271	0.260	0.263	0.264	0.289
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 328 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with

superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA(\$million)*; *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%AUST\_FIXED\_INC* is the percentage of investments in Australian fixed income; *%INT\_FIXED\_INC* is the percentage of investments in international fixed income; *%AUST\_EQUITY* is the percentage of investments in Australian equity; *%INT\_EQUITY* is the percentage of investments in international equity; *%LISTED\_PROPERTY* is the percentage of investments in listed property; *%UNLISTED\_PROPERTY* is the percentage of investments in unlisted property; *%OTHER* is the percentage of investments in other investments; *%DEFAULT\_INV* is the percentage of assets in default investment options. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.1B: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds for the period 2015-2016**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds including the percentage of asset allocations for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		-6.438 (-0.307)	-6.867 (-0.330)	-8.421 (-0.407)	-7.862 (-0.372)	-3.877 (-0.184)	-7.925 (-0.378)	-10.970 (-0.525)	-7.613 (-0.366)	-6.495 (-0.310)
GOV_INDEX	+	-0.016 (-0.082)								
IND_DIR	+		-0.290 (-0.138)							3.286 (1.401)
IND_CHAIR	+			-2.181** (-2.009)						-5.155** (-2.153)
FEMALE_DIR	+				-3.223 (-1.519)					-1.790 (-0.739)
BUSY_DIR	-					2.352** (2.293)				3.813*** (2.875)
FINANCIAL	+						0.828** (2.139)			-1.014 (-1.053)
EXPERIENCE	+							1.241*** (2.831)		0.964** (2.025)
TENURE	-								-0.187 (-0.901)	-0.155 (-0.564)
BFSIZE	-	0.400 (1.334)	0.422 (1.037)	0.635* (1.763)	0.507* (1.680)	-0.188 (-0.509)	0.411 (1.370)	0.070 (0.232)	0.432 (1.431)	-0.439 (-1.018)
Ln_TA	+	0.129 (1.211)	0.130 (1.213)	0.138 (1.304)	0.145 (1.360)	0.143 (1.318)	0.128 (1.201)	0.126 (1.171)	0.122 (1.153)	0.156 (1.427)
Ln_INV_OPTIONS	+	-0.038 (-0.364)	-0.040 (-0.380)	-0.062 (-0.609)	-0.060 (-0.585)	-0.056 (-0.540)	-0.040 (-0.382)	-0.081 (-0.813)	-0.044 (-0.434)	-0.149 (-1.530)
PRS_AGE	-	-1.088 (-1.025)	-1.080 (-1.022)	-0.970 (-0.940)	-0.930 (-0.887)	-1.001 (-0.928)	-1.100 (-1.032)	-1.054 (-1.006)	-1.092 (-1.043)	-0.691 (-0.666)
%CASH		4.586 (0.217)	5.041 (0.240)	7.398 (0.352)	6.205 (0.290)	4.510 (0.212)	5.105 (0.241)	10.148 (0.475)	6.253 (0.296)	12.261 (0.580)
%FIXED_INC		-0.405 (-0.019)	0.052 (0.003)	2.430 (0.118)	1.228 (0.058)	-0.377 (-0.018)	0.111 (0.005)	5.080 (0.242)	1.194 (0.058)	7.343 (0.354)
%EQUITY		4.278 (0.205)	4.745 (0.230)	7.172 (0.347)	5.919 (0.281)	4.338 (0.207)	4.837 (0.232)	10.337 (0.492)	6.022 (0.290)	12.689 (0.611)
%PROPERTY		2.556 (0.120)	2.979 (0.141)	5.373 (0.253)	4.295 (0.199)	2.429 (0.113)	3.146 (0.147)	7.014 (0.327)	3.793 (0.178)	9.126 (0.430)
%INFRASTRUCTURE		20.260 (0.933)	20.730 (0.964)	23.394 (1.083)	22.966 (1.042)	20.904 (0.957)	20.506 (0.944)	25.711 (1.166)	22.402 (1.035)	30.599 (1.389)
%COMMODITIES		-3.809 (-0.156)	-3.084 (-0.125)	1.921 (0.078)	-1.843 (-0.074)	-3.616 (-0.145)	-2.815 (-0.115)	7.786 (0.307)	-0.321 (-0.013)	14.406 (0.553)
%OTHER		11.570 (0.539)	12.025 (0.566)	15.010 (0.705)	13.480 (0.621)	11.120 (0.518)	12.123 (0.564)	17.899 (0.837)	13.842 (0.650)	21.364 (1.020)
%INHOUSE_INV		0.040 (0.045)	0.052 (0.057)	0.135 (0.151)	0.114 (0.127)	0.104 (0.116)	0.053 (0.059)	0.078 (0.087)	0.058 (0.064)	0.293 (0.334)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.340	0.341	0.350	0.349	0.360	0.342	0.379	0.345	0.430
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities; *%OTHER* is the percentage of investments in other investments; *%INHOUSE\_INV* is the percentage of in-house investments. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.2A: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds for the period 2010–2013**

This table provides evidence on the association between the governance practices and performance of industry superannuation funds including the percentage of asset allocations for the period 2010–2013.

<i>VARIABLES</i>	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		-50.642 (-0.137)	-73.852 (-0.204)	-78.772 (-0.206)	-61.285 (-0.171)	-67.733 (-0.184)	8.215 (0.024)	-95.535 (-0.272)	-46.933 (-0.131)	-45.185 (-0.147)
<i>GOV_INDEX</i>	+	-0.181 (-0.622)								
<i>IND_DIR</i>	+		7.655 (1.216)							8.246 (1.526)
<i>IND_CHAIR</i>	+			0.762 (0.903)						-0.171 (-0.173)
<i>FEMALE_DIR</i>	+				-2.943 (-1.028)					-2.184 (-0.728)
<i>BUSY_DIR</i>	-					-0.451 (-0.411)				0.137 (0.122)
<i>FINANCIAL</i>	+						-1.128 (-1.200)			-0.941 (-1.137)
<i>EXPERIENCE</i>	+							-0.684 (-0.794)		-0.812 (-0.870)
<i>TENURE</i>	-								0.058 (0.478)	-0.017 (-0.135)
<i>BSIZE</i>	-	-0.098 (-0.311)	-0.052 (-0.172)	-0.114 (-0.376)	-0.104 (-0.348)	-0.119 (-0.375)	-0.114 (-0.336)	-0.141 (-0.424)	-0.100 (-0.330)	-0.059 (-0.188)
<i>Ln_TA</i>	+	1.818 (1.166)	1.173 (0.858)	1.494 (1.020)	1.808 (1.253)	1.779 (1.132)	1.954 (1.171)	1.963 (1.170)	1.648 (1.124)	1.816 (1.035)
<i>Ln_INV_OPTIONS</i>	+	-0.325 (-0.368)	0.196 (0.245)	-0.117 (-0.141)	-0.115 (-0.134)	-0.130 (-0.151)	-0.193 (-0.228)	-0.418 (-0.462)	-0.258 (-0.289)	-0.032 (-0.036)
<i>PRS_AGE</i>	-	8.174 (1.132)	8.364 (1.277)	7.118 (0.952)	8.839 (1.235)	7.520 (1.020)	7.925 (1.137)	7.513 (1.004)	8.120 (1.198)	9.478 (1.453)
<i>%CASH</i>		19.699 (0.053)	47.115 (0.129)	50.777 (0.132)	29.696 (0.083)	36.697 (0.099)	-38.944 (-0.113)	64.158 (0.182)	18.032 (0.050)	15.051 (0.048)
<i>%AUST_FIXED_INC</i>		28.172 (0.075)	53.389 (0.146)	58.640 (0.152)	38.109 (0.105)	44.849 (0.120)	-31.677 (-0.092)	72.927 (0.206)	25.852 (0.072)	21.915 (0.070)
<i>%INT_FIXED_INC</i>		33.435 (0.090)	59.369 (0.162)	63.203 (0.164)	42.438 (0.117)	49.474 (0.133)	-27.557 (-0.080)	78.802 (0.223)	30.662 (0.085)	28.815 (0.092)
<i>%AUST_EQUITY</i>		37.221 (0.101)	63.619 (0.175)	68.610 (0.179)	47.359 (0.132)	55.193 (0.150)	-22.915 (-0.067)	81.464 (0.232)	36.219 (0.101)	28.538 (0.092)
<i>%INT_EQUITY</i>		25.367 (0.068)	51.853 (0.142)	56.647 (0.147)	33.955 (0.095)	41.706 (0.113)	-35.030 (-0.102)	70.090 (0.199)	22.879 (0.064)	19.138 (0.061)
<i>%LISTED_PROPERTY</i>		26.215 (0.070)	54.405 (0.149)	57.920 (0.150)	36.116 (0.100)	43.717 (0.118)	-33.263 (-0.097)	70.379 (0.199)	23.926 (0.066)	20.594 (0.066)
<i>%UNLISTED_PROPERTY</i>		32.943 (0.089)	62.007 (0.170)	63.204 (0.165)	42.300 (0.118)	50.396 (0.136)	-25.333 (-0.074)	77.253 (0.220)	31.590 (0.088)	29.090 (0.093)
<i>%OTHER</i>		24.203 (0.065)	51.128 (0.139)	55.645 (0.144)	33.350 (0.092)	41.039 (0.110)	-36.007 (-0.104)	69.068 (0.195)	22.066 (0.061)	18.068 (0.058)
<i>%DEFAULT_INV</i>		4.478 (0.904)	5.047 (1.025)	5.200 (1.060)	5.390 (1.138)	4.963 (0.975)	4.846 (0.933)	4.177 (0.823)	4.560 (0.917)	5.045 (0.968)
Observations		164	164	164	164	164	164	164	164	164
R-squared		0.436	0.452	0.436	0.441	0.434	0.444	0.444	0.434	0.482
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 164 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%AUST\_FIXED\_INC* is the percentage of investments in Australian fixed income; *%INT\_FIXED\_INC* is the percentage of investments in international fixed income; *%AUST\_EQUITY* is the percentage of investments in Australian equity; *%INT\_EQUITY* is the percentage of investments in international equity; *%LISTED\_PROPERTY* is the percentage of investments in listed property; *%UNLISTED\_PROPERTY* is the percentage of investments in unlisted property; *%OTHER* is the percentage of investments in other investments; *%DEFAULT\_INV* is the percentage of assets in default investment options. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.2B: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *industry* funds for the period 2015-2016**

This table provides evidence on the association between the governance practices and performance of industry superannuation funds including the percentage of asset allocations for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)					
Constant		0.995 (0.016)	12.489 (0.186)	14.743 (0.224)	14.659 (0.218)	13.209 (0.205)	17.987 (0.267)	-2.069 (-0.027)	15.121 (0.227)	-10.027 (-0.120)
GOV_INDEX	+	-0.489 (-1.360)								
IND_DIR	+		2.439 (0.622)							5.146 (0.619)
IND_CHAIR	+			-5.450 (-0.198)						4.576** (2.307)
FEMALE_DIR	+				0.416 (0.105)					-0.608 (-0.108)
BUSY_DIR	-					1.229 (0.404)				0.882 (0.231)
FINANCIAL	+						-1.405* (-1.697)			-1.680* (-1.936)
EXPERIENCE	+							-0.606 (-0.614)		-0.820 (-0.673)
TENURE	-								-0.047 (-0.161)	0.019 (0.053)
BSIZE	-	-0.829 (-1.635)	-0.955* (-1.776)	-0.866* (-1.738)	-0.874* (-1.685)	-0.875* (-1.838)	-0.944** (-1.993)	-0.850 (-1.599)	-0.867* (-1.696)	-1.118** (-2.470)
Ln_TA	+	0.985 (0.156)	-0.940 (-0.138)	-0.752 (-0.113)	-0.722 (-0.106)	-0.588 (-0.090)	-0.390 (-0.057)	-0.340 (-0.049)	-0.945 (-0.140)	-0.007 (-0.001)
Ln_INV_OPTIONS	+	0.676 (0.497)	1.443 (0.857)	1.180 (0.805)	1.212 (0.789)	1.282 (0.868)	1.192 (0.786)	1.596 (0.921)	1.082 (0.660)	2.378 (0.922)
PRS_AGE	-	36.249 (1.638)	33.620 (1.298)	34.218 (1.317)	33.835 (1.262)	35.256 (1.351)	33.965 (1.301)	34.199 (1.350)	34.965 (1.330)	33.638 (1.286)
%CASH	-	-37.227 (-1.274)	-25.487 (-0.820)	-29.898 (-0.984)	-30.021 (-0.978)	-31.479 (-1.046)	-34.844 (-1.079)	-23.903 (-0.745)	-27.594 (-0.839)	-20.252 (-0.512)
%FIXED_INC	-	-17.438 (-0.606)	-13.645 (-0.443)	-17.839 (-0.597)	-17.744 (-0.583)	-19.536 (-0.646)	-21.492 (-0.700)	-7.413 (-0.215)	-16.444 (-0.525)	-1.146 (-0.025)
%EQUITY	+	-3.983 (-0.128)	-0.740 (-0.022)	-4.817 (-0.151)	-5.117 (-0.160)	-5.010 (-0.160)	-9.467 (-0.285)	7.677 (0.189)	-2.891 (-0.081)	14.682 (0.287)
%PROPERTY	+	-6.622 (-0.213)	-7.528 (-0.210)	-9.910 (-0.270)	-10.888 (-0.294)	-9.999 (-0.284)	-14.529 (-0.378)	3.260 (0.081)	-8.014 (-0.203)	8.040 (0.163)
%INFRASTRUCTURE	+	13.825 (0.355)	12.707 (0.318)	7.669 (0.201)	7.220 (0.189)	6.891 (0.183)	2.009 (0.051)	34.426 (0.545)	10.319 (0.236)	46.813 (0.570)
%OTHER	+	-8.251 (-0.287)	-6.059 (-0.198)	-10.080 (-0.341)	-10.406 (-0.351)	-10.660 (-0.368)	-14.674 (-0.474)	4.282 (0.107)	-8.163 (-0.245)	11.659 (0.224)
%INHOUSE_INV	-	-6.461** (-1.982)	-7.431** (-2.319)	-7.194** (-2.295)	-7.166** (-2.292)	-6.980** (-2.251)	-7.171** (-2.159)	-6.507* (-1.657)	-7.373** (-2.498)	-6.554* (-1.771)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.767	0.742	0.740	0.740	0.743	0.746	0.751	0.740	0.771
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities; *%OTHER* is the percentage of investments in other investments; *%INHOUSE\_INV* is the percentage of in-house investments. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A4 Superannuation fund fees with asset allocation

**Table A4.1A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds with asset allocation for the period 2010–2013**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds including the percentage of asset allocations for the period 2010–2013.

VARIABLES	Pred. sign	(1) Coeff. (t-stats)	(2) Coeff. (t-stats)	(3) Coeff. (t-stats)	(4) Coeff. (t-stats)	(5) Coeff. (t-stats)	(6) Coeff. (t-stats)	(7) Coeff. (t-stats)	(8) Coeff. (t-stats)	(9) Coeff. (t-stats)
<i>Constant</i>		-6.387 (-0.262)	-6.595 (-0.271)	-7.782 (-0.325)	-10.480 (-0.447)	-8.123 (-0.357)	-7.287 (-0.306)	-8.515 (-0.363)	-7.591 (-0.318)	-10.545 (-0.471)
<i>GOV_INDEX</i>	-	-0.013 (-1.180)								
<i>IND_DIR</i>	-		-0.162 (-1.635)							-0.050 (-0.324)
<i>IND_CHAIR</i>	-			-0.084** (-2.482)						-0.044 (-0.709)
<i>FEMALE_DIR</i>	-				-0.154 (-1.478)					-0.084 (-0.633)
<i>BUSY_DIR</i>	+					0.034 (0.859)				0.026 (0.627)
<i>FINANCIAL</i>	-						-0.023 (-0.704)			-0.003 (-0.087)
<i>EXPERIENCE</i>	-							0.026 (0.650)		0.035 (0.892)
<i>TENURE</i>	+								-0.004 (-0.253)	-0.007 (-0.510)
<i>BSIZE</i>	+	-0.007 (-0.284)	-0.008 (-0.318)	-0.009 (-0.372)	-0.002 (-0.085)	-0.011 (-0.426)	-0.011 (-0.448)	-0.013 (-0.513)	-0.013 (-0.482)	-0.008 (-0.274)
<i>Ln_TA</i>	-	-0.022 (-0.493)	-0.016 (-0.375)	-0.020 (-0.450)	-0.018 (-0.396)	-0.021 (-0.491)	-0.024 (-0.556)	-0.021 (-0.494)	-0.023 (-0.543)	-0.019 (-0.433)
<i>Ln_INV_OPTIONS</i>	+	-0.025 (-0.537)	-0.029 (-0.595)	-0.027 (-0.559)	-0.025 (-0.517)	-0.022 (-0.477)	-0.023 (-0.493)	-0.025 (-0.529)	-0.023 (-0.495)	-0.022 (-0.456)
<i>PRS_AGE</i>	?	0.373** (2.153)	0.418** (2.320)	0.389** (2.265)	0.388** (2.236)	0.366** (2.095)	0.365** (2.089)	0.374** (2.145)	0.378** (2.180)	0.409** (2.196)
<i>%CASH</i>		6.239 (0.256)	6.463 (0.265)	6.639 (0.319)	10.216 (0.435)	7.891 (0.346)	7.141 (0.300)	8.302 (0.354)	7.429 (0.312)	10.353 (0.462)
<i>%AUST_FIXED_INC</i>		6.359 (0.261)	6.587 (0.271)	7.764 (0.324)	10.344 (0.441)	8.002 (0.351)	7.260 (0.305)	8.416 (0.358)	7.549 (0.317)	10.481 (0.468)
<i>%INT_FIXED_INC</i>		6.842 (0.283)	7.063 (0.291)	8.280 (0.348)	10.796 (0.462)	8.492 (0.375)	7.695 (0.325)	8.853 (0.379)	7.991 (0.337)	10.957 (0.492)
<i>%AUST_EQUITY</i>		6.408 (0.264)	6.621 (0.273)	7.817 (0.328)	10.381 (0.444)	8.056 (0.355)	7.286 (0.307)	8.438 (0.361)	7.558 (0.318)	10.526 (0.472)
<i>%INT_EQUITY</i>		6.074 (0.250)	6.374 (0.262)	7.464 (0.313)	10.058 (0.429)	7.744 (0.341)	7.016 (0.295)	8.178 (0.349)	7.309 (0.307)	10.243 (0.457)
<i>%LISTED_PROPERTY</i>		5.565 (0.226)	5.826 (0.237)	7.011 (0.290)	9.493 (0.401)	7.327 (0.319)	6.461 (0.269)	7.656 (0.323)	6.741 (0.280)	9.636 (0.427)
<i>%UNLISTED_PROPERTY</i>		6.390 (0.261)	6.633 (0.271)	7.879 (0.328)	10.326 (0.438)	8.122 (0.355)	7.280 (0.304)	8.490 (0.360)	7.596 (0.317)	10.538 (0.469)
<i>%OTHER</i>		6.570 (0.270)	6.795 (0.279)	8.003 (0.334)	10.566 (0.450)	8.197 (0.359)	7.481 (0.314)	8.630 (0.368)	7.768 (0.326)	10.723 (0.478)
<i>%DEFAULT_INV</i>		-0.093 (-0.809)	-0.096 (-0.822)	-0.093 (-0.811)	-0.083 (-0.720)	-0.094 (-0.819)	-0.092 (-0.790)	-0.084 (-0.714)	-0.089 (-0.766)	-0.090 (-0.757)
Observations		328	328	328	328	328	328	328	328	328
R-squared		0.497	0.493	0.497	0.493	0.498	0.499	0.495	0.498	0.498
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 328 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%AUST\_FIXED\_INC* is the percentage of investments in Australian fixed income; *%INT\_FIXED\_INC* is the percentage of investments in international fixed income; *%AUST\_EQUITY* is the percentage of investments in Australian equity; *%INT\_EQUITY* is the percentage of investments in international equity; *%LISTED\_PROPERTY* is the percentage of investments in listed property; *%UNLISTED\_PROPERTY* is the percentage of investments in unlisted property; *%OTHER* is the percentage of investments in other investments; *%DEFAULT\_INV* is the percentage of assets in default investment options. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.1B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds with asset allocation for the period 2015–2016**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds including the percentage of asset allocations for the period 2015–2016.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		1.681 (1.194)	1.619 (1.077)	1.868 (1.420)	1.928 (1.469)	1.901 (1.456)	1.837 (1.430)	1.453 (0.901)	1.950 (1.470)	1.196 (0.644)
GOV_INDEX	-	0.013 (0.781)								
IND_DIR	-		0.471 (1.223)							0.809* (1.793)
IND_CHAIR	-			0.053 (0.377)						-0.453* (-1.708)
FEMALE_DIR	-				-0.173 (-0.881)					-0.356 (-1.422)
BUSY_DIR	+					0.010 (0.149)				-0.070 (-0.688)
FINANCIAL	-						0.034 (0.887)			-0.059 (-0.669)
EXPERIENCE	-							0.081 (1.265)		0.094* (1.688)
TENURE	+								0.020 (0.952)	0.013 (1.225)
BFSIZE	+	-0.031 (-1.051)	-0.070 (-1.304)	-0.036 (-0.898)	-0.025 (-1.019)	-0.033 (-0.861)	-0.030 (-1.036)	-0.052 (-1.194)	-0.032 (-1.063)	-0.051 (-1.184)
Ln_TA	-	-0.196** (-1.983)	-0.131 (-1.604)	-0.189** (-2.022)	-0.193** (-2.003)	-0.193** (-1.993)	-0.195** (-2.000)	-0.222** (-2.144)	-0.196* (-1.950)	-0.150* (-1.891)
Ln_INV_OPTIONS	+	0.052* (1.914)	0.058** (2.049)	0.053* (1.712)	0.042** (2.205)	0.049** (2.029)	0.050** (2.023)	0.038** (2.080)	0.059* (1.831)	0.011 (0.546)
PRS_AGE	?	-1.594*** (-3.684)	-1.540*** (-3.961)	-1.502*** (-4.060)	-1.482*** (-4.203)	-1.509*** (-4.102)	-1.530*** (-4.043)	-1.477*** (-3.715)	-1.558*** (-3.899)	-1.667*** (-4.047)
%CASH		0.415 (0.316)	0.123 (0.084)	0.199 (0.164)	0.203 (0.165)	0.221 (0.184)	0.247 (0.209)	0.860 (0.532)	-0.025 (-0.020)	0.963 (0.496)
%FIXED_INC		-0.377 (-0.311)	-0.652 (-0.459)	-0.564 (-0.485)	-0.496 (-0.430)	-0.519 (-0.458)	-0.512 (-0.456)	0.174 (0.113)	-0.634 (-0.545)	0.442 (0.239)
%EQUITY		0.747 (0.478)	0.240 (0.163)	0.482 (0.365)	0.506 (0.376)	0.506 (0.382)	0.563 (0.423)	1.339 (0.688)	0.404 (0.308)	1.113 (0.568)
%PROPERTY		1.396 (0.835)	1.159 (0.706)	1.173 (0.793)	1.123 (0.776)	1.179 (0.805)	1.262 (0.852)	1.603 (0.875)	1.128 (0.765)	1.522 (0.805)
%INFRASTRUCTURE		6.507 (1.488)	6.119* (1.720)	6.402 (1.464)	6.315 (1.554)	6.235 (1.528)	6.243 (1.539)	6.053 (1.565)	6.053 (1.567)	4.555 (1.560)
%COMMODITIES		-9.733*** (-3.225)	-11.861*** (-2.715)	-10.616*** (-2.745)	-10.498*** (-3.024)	-10.266*** (-2.924)	-10.157*** (-3.165)	-8.619*** (-3.262)	-10.985*** (-3.054)	-8.063* (-1.957)
%OTHER		-0.812 (-0.588)	-1.090 (-0.676)	-1.083 (-0.777)	-1.028 (-0.743)	-1.012 (-0.744)	-0.974 (-0.740)	-0.303 (-0.183)	-1.374 (-0.943)	0.226 (0.114)
%INHOUSE_INV		0.089 (1.318)	0.067 (1.052)	0.090 (1.346)	0.094 (1.367)	0.092 (1.347)	0.094 (1.370)	0.119 (1.351)	0.110 (1.548)	0.073 (0.942)
Observations		206	206	206	206	206	206	206	206	206
R-squared		0.488	0.0158	0.485	0.490	0.0506	0.485	0.516	0.0541	0.0254
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the sub-sample of 206 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities; *%OTHER* is the percentage of investments in other investments; *%INHOUSE\_INV* is the percentage of in-house investments. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.2A: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *industry* funds with asset allocation for the period 2010–2013**

This table provides evidence on the association between the governance practices and fees of industry superannuation funds including the percentage of asset allocations for the period 2010–2013.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
Constant		2.688 (0.363)	3.021 (0.403)	6.003 (0.727)	2.303 (0.306)	2.442 (0.328)	0.661 (0.080)	1.052 (0.136)	1.536 (0.185)	-0.392 (-0.040)
GOV_INDEX	-	-0.003 (-0.304)								
IND_DIR	-		-0.492** (-2.243)							-0.131 (-0.845)
IND_CHAIR	-			-0.197*** (-3.995)						-0.235*** (-3.640)
FEMALE_DIR	-				0.083 (0.443)					-0.008 (-0.045)
BUSY_DIR	+					-0.007 (-0.099)				-0.072* (-2.015)
FINANCIAL	-						0.027 (0.578)			0.005 (0.143)
EXPERIENCE	-							-0.034* (-1.986)		-0.029* (-1.793)
TENURE	+								-0.003 (-0.385)	-0.017** (-2.431)
BFSIZE	+	0.012 (1.059)	0.007 (0.627)	0.010 (1.041)	0.011 (0.970)	0.012 (0.978)	0.012 (0.954)	0.011 (0.930)	0.011 (0.928)	0.001 (0.130)
Ln_TA	-	-0.364*** (-5.268)	-0.334*** (-5.187)	-0.318*** (-5.557)	-0.370*** (-5.292)	-0.365*** (-4.738)	-0.373*** (-5.226)	-0.352*** (-5.056)	-0.365*** (-5.346)	-0.264*** (-5.384)
Ln_INV_OPTIONS	+	-0.016 (-0.379)	-0.038 (-1.016)	-0.029 (-0.888)	-0.016 (-0.390)	-0.013 (-0.341)	-0.013 (-0.323)	-0.026 (-0.615)	-0.010 (-0.222)	-0.016 (-0.512)
PRS_AGE	?	0.341 (1.007)	0.284 (0.862)	0.459 (1.572)	0.298 (0.855)	0.332 (0.919)	0.326 (0.928)	0.329 (0.947)	0.307 (0.911)	0.301 (0.982)
%CASH		-0.325 (-0.044)	-0.775 (-0.104)	-3.784 (-0.462)	0.100 (0.013)	-0.090 (-0.012)	1.715 (0.207)	1.263 (0.165)	0.841 (0.101)	2.350 (0.242)
%AUST_FIXED_INC		-0.491 (-0.067)	-0.840 (-0.112)	-3.931 (-0.477)	-0.086 (-0.011)	-0.260 (-0.035)	1.559 (0.188)	1.130 (0.147)	0.675 (0.081)	2.348 (0.241)
%INT_FIXED_INC		-0.046 (-0.006)	-0.491 (-0.066)	-3.480 (-0.423)	0.358 (0.048)	0.176 (0.024)	2.006 (0.241)	1.627 (0.211)	1.102 (0.132)	2.776 (0.284)
%AUST_EQUITY		-0.090 (-0.012)	-0.436 (-0.058)	-3.496 (-0.426)	0.352 (0.047)	0.160 (0.022)	2.005 (0.242)	1.471 (0.192)	1.075 (0.130)	2.676 (0.276)
%INT_EQUITY		0.234 (0.031)	-0.203 (-0.027)	-3.441 (-0.414)	0.674 (0.089)	0.460 (0.061)	2.293 (0.274)	1.857 (0.239)	1.403 (0.167)	2.754 (0.279)
%LISTED_PROPERTY		-0.101 (-0.014)	-0.578 (-0.077)	-3.643 (-0.442)	0.339 (0.045)	0.141 (0.019)	1.970 (0.237)	1.463 (0.189)	1.115 (0.133)	2.752 (0.281)
%UNLISTED_PROPERTY		0.054 (0.007)	-0.479 (-0.064)	-3.114 (-0.381)	0.509 (0.067)	0.296 (0.040)	2.096 (0.252)	1.625 (0.210)	1.223 (0.146)	3.050 (0.313)
%OTHER		0.232 (0.031)	-0.201 (-0.027)	-3.373 (-0.408)	0.673 (0.089)	0.465 (0.062)	2.302 (0.276)	1.847 (0.239)	1.410 (0.169)	2.855 (0.292)
%DEFAULT_INV		-0.031 (-0.133)	-0.055 (-0.242)	-0.172 (-0.974)	-0.050 (-0.210)	-0.024 (-0.095)	-0.034 (-0.141)	-0.052 (-0.229)	-0.025 (-0.104)	-0.149 (-0.936)
Observations		164	164	164	164	164	164	164	164	164
R-squared		0.457	0.164	0.122	0.164	0.161	0.162	0.162	0.458	0.129
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 164 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BFSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%AUST\_FIXED\_INC* is the percentage of investments in Australian fixed income; *%INT\_FIXED\_INC* is the percentage of investments in international fixed income; *%AUST\_EQUITY* is the percentage of investments in Australian equity; *%INT\_EQUITY* is the percentage of investments in international equity; *%LISTED\_PROPERTY* is the percentage of investments in listed property; *%UNLISTED\_PROPERTY* is the percentage of investments in unlisted property; *%OTHER* is the percentage of investments in other investments; *%DEFAULT\_INV* is the percentage of assets in default investment options. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.2B: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *industry* funds with asset allocation for the period 2015–2016**

This table provides evidence on the association between the governance practices and fees of industry superannuation funds including the percentage of asset allocations for the period 2015–2016.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>	+	-0.161 (-0.074)	0.015 (0.006)	-0.035 (-0.014)	-0.303 (-0.145)	-0.168 (-0.085)	-0.060 (-0.024)	0.149 (0.049)	-0.434 (-0.415)	0.500 (0.156)
<i>GOV_INDEX</i>	-	0.005 (0.385)								
<i>IND_DIR</i>	-		-0.081 (-0.258)							-0.259 (-0.796)
<i>IND_CHAIR</i>	-			-0.284 (-0.267)						-0.447 (-1.211)
<i>FEMALE_DIR</i>	-				0.205 (0.656)					0.301 (0.922)
<i>BUSY_DIR</i>	+					-0.105 (-1.268)				-0.069 (-1.007)
<i>FINANCIAL</i>	-						0.011 (0.449)			0.018 (0.442)
<i>EXPERIENCE</i>	-							0.008 (0.221)		0.010 (0.353)
<i>TENURE</i>	+								0.007 (0.620)	0.005 (0.404)
<i>BSIZE</i>	+	0.001 (0.079)	0.004 (0.252)	0.001 (0.124)	-0.003 (-0.209)	0.002 (0.153)	0.002 (0.166)	0.001 (0.102)	0.001 (0.150)	0.006 (0.264)
<i>Ln_TA</i>	-	-0.194 (-0.963)	-0.169 (-0.857)	-0.175 (-0.926)	-0.161 (-0.885)	-0.189 (-0.952)	-0.178 (-0.917)	-0.181 (-0.920)	-0.145 (-0.829)	-0.135 (-0.687)
<i>Ln_INV_OPTIONS</i>	+	0.100** (2.065)	0.086 (1.410)	0.094** (2.058)	0.110* (1.826)	0.086* (1.651)	0.094** (2.034)	0.089* (1.768)	0.110* (1.951)	0.087 (1.100)
<i>PRS_AGE</i>	?	0.361 (0.412)	0.403 (0.461)	0.383 (0.455)	0.194 (0.179)	0.295 (0.346)	0.385 (0.451)	0.384 (0.446)	0.265 (0.308)	0.038 (0.035)
<i>%CASH</i>		1.331 (0.777)	1.106 (0.540)	1.252 (0.700)	1.191 (0.734)	1.386 (0.784)	1.290 (0.684)	1.173 (0.632)	0.887 (0.500)	0.507 (0.281)
<i>%FIXED_INC</i>		1.300 (0.649)	1.165 (0.536)	1.304 (0.666)	1.351 (0.735)	1.449 (0.737)	1.333 (0.653)	1.168 (0.547)	1.084 (0.583)	0.747 (0.378)
<i>%EQUITY</i>		1.179 (0.664)	1.053 (0.594)	1.188 (0.686)	1.040 (0.586)	1.204 (0.717)	1.224 (0.671)	1.024 (0.486)	0.883 (0.509)	0.195 (0.095)
<i>%PROPERTY</i>		1.359 (0.760)	1.316 (0.706)	1.395 (0.760)	0.911 (0.570)	1.402 (0.825)	1.431 (0.746)	1.223 (0.677)	1.095 (0.637)	0.077 (0.062)
<i>%INFRASTRUCTURE</i>		1.294 (0.656)	1.193 (0.568)	1.360 (0.733)	1.138 (0.699)	1.426 (0.776)	1.404 (0.716)	1.010 (0.381)	0.941 (0.505)	-0.115 (-0.049)
<i>%COMMODITIES</i>										
<i>%OTHER</i>		1.219 (0.726)	1.106 (0.631)	1.239 (0.761)	1.078 (0.697)	1.288 (0.807)	1.275 (0.741)	1.051 (0.529)	0.936 (0.588)	0.224 (0.122)
<i>%INHOUSE_INV</i>		0.117 (0.869)	0.132 (0.881)	0.125 (0.953)	0.139 (1.146)	0.106 (0.840)	0.124 (0.937)	0.116 (0.777)	0.153 (1.130)	0.165 (1.047)
Observations		83	83	83	83	83	83	83	83	83
R-squared		0.991	0.991	0.991	0.992	0.992	0.991	0.991	0.991	0.993
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 83 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50; *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities; *%OTHER* is the percentage of investments in other investments; *%INHOUSE\_INV* is the percentage of in-house investments. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A5 Trustee level

**Table A5.1: Superannuation fund performance (*EXCESS\_ROA*) and governance variables of *retail* funds**

This table provides evidence on the association between the governance practices and performance of retail superannuation funds at the trustee-level.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		-4.240 (-0.954)	-4.227 (-0.961)	-4.411 (-0.992)	-4.235 (-0.926)	-3.500 (-0.718)	-4.307 (-0.969)	-3.717 (-0.848)	-4.224 (-0.969)	-1.881 (-0.387)
<i>GOV_INDEX</i>	+	0.078 (1.159)								
<i>IND_DIR</i>	+		0.506 (0.781)							0.690 (0.613)
<i>IND_CHAIR</i>	+			0.020 (0.113)						-0.371 (-0.654)
<i>FEMALE_DIR</i>	+				0.469 (0.560)					0.556 (0.472)
<i>BUSY_DIR</i>	-					-0.183 (-0.641)				-0.258 (-0.989)
<i>FINANCIAL</i>	+						0.175 (0.582)			0.033 (0.089)
<i>EXPERIENCE</i>	+							0.467 (1.153)		0.470 (1.164)
<i>TENURE</i>	-								0.119 (1.254)	0.129 (1.209)
<i>BSIZE</i>	-	0.119 (0.934)	0.128 (0.965)	0.125 (0.959)	0.124 (0.949)	0.093 (0.692)	0.118 (0.897)	0.108 (0.849)	0.115 (0.893)	0.049 (0.362)
<i>Ln_TA</i>	+	0.341 (0.782)	0.327 (0.765)	0.369 (0.846)	0.354 (0.793)	0.307 (0.669)	0.360 (0.829)	0.320 (0.743)	0.329 (0.763)	0.143 (0.314)
<i>Ln_INV_OPTIONS</i>	+	0.045 (0.309)	0.054 (0.368)	0.058 (0.386)	0.047 (0.327)	0.065 (0.440)	0.048 (0.324)	0.050 (0.340)	0.067 (0.466)	0.057 (0.417)
<i>PRS_AGE</i>	-	-1.158 (-0.510)	-1.090 (-0.480)	-0.713 (-0.335)	-0.858 (-0.393)	-0.824 (-0.377)	-0.945 (-0.413)	-1.528 (-0.635)	-1.051 (-0.452)	-2.510 (-0.919)
Observations		264	264	264	264	264	264	264	264	264
R-squared		0.284	0.285	0.282	0.283	0.285	0.283	0.290	0.289	0.304
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 264 trustee observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA* (\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A5.2: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and governance variables of *retail* funds**

This table provides evidence on the association between the governance practices and fees of retail superannuation funds at the trustee-level.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		0.014 (0.027)	0.071 (0.139)	-0.033 (-0.062)	-0.022 (-0.042)	-0.523 (-0.936)	-0.006 (-0.011)	0.233 (0.452)	-0.047 (-0.089)	0.039 (0.072)
<i>GOV_INDEX</i>	-	0.043** (2.537)								
<i>IND_DIR</i>	-		0.409*** (3.831)							0.415*** (2.740)
<i>IND_CHAIR</i>	-			0.107* (1.722)						-0.077 (-0.891)
<i>FEMALE_DIR</i>	-				0.160 (1.091)					-0.080 (-0.492)
<i>BUSY_DIR</i>	+					0.087** (2.190)				0.061 (1.572)
<i>FINANCIAL</i>	-						0.123** (2.122)			0.072 (1.219)
<i>EXPERIENCE</i>	-							0.211*** (4.097)		0.165*** (3.176)
<i>TENURE</i>	+								0.023 (1.642)	0.026* (1.908)
<i>BSIZE</i>	+	0.006 (0.332)	0.012 (0.647)	0.011 (0.581)	0.009 (0.478)	0.025 (1.197)	0.005 (0.246)	0.002 (0.120)	0.008 (0.390)	0.011 (0.556)
<i>Ln_TA</i>	-	-0.052 (-1.052)	-0.071 (-1.439)	-0.047 (-0.935)	-0.042 (-0.830)	-0.006 (-0.115)	-0.044 (-0.878)	-0.059 (-1.210)	-0.044 (-0.884)	-0.071 (-1.415)
<i>Ln_INV_OPTIONS</i>	+	0.010 (0.470)	0.013 (0.665)	0.014 (0.671)	0.013 (0.610)	0.014 (0.669)	0.009 (0.453)	0.013 (0.654)	0.019 (0.898)	0.010 (0.488)
<i>PRS_AGE</i>	?	-0.124 (-0.335)	-0.189 (-0.527)	0.021 (0.057)	0.076 (0.210)	0.196 (0.547)	-0.045 (-0.122)	-0.245 (-0.683)	0.062 (0.171)	-0.521 (-1.430)
Observations		264	264	264	264	264	264	264	264	264
R-squared		0.828	0.834	0.825	0.824	0.827	0.827	0.836	0.825	0.849
Trustee FE		Yes								

The OLS regression is estimated using the sub-sample of 264 trustee observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Ln\_TA* is the natural logarithm of *TA*(\$million); *Ln\_INV\_OPTIONS* is the natural logarithm of *INV\_OPTIONS*; *PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A6 Lagged governance variables

**Table A6.1: Superannuation fund performance (*EXCESS\_ROA*) and lagged governance variables of *retail* funds**

This table provides evidence on the association between the performance and lagged governance variables of retail superannuation funds.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)								
<i>Constant</i>		-6.563*** (-4.786)	-5.970*** (-4.510)	-6.100*** (-4.640)	-6.138*** (-4.596)	-5.300*** (-3.795)	-6.673*** (-4.963)	-6.221*** (-4.743)	-5.877*** (-4.389)	-4.880*** (-3.116)
<i>Lag_GOV_INDEX</i>	+	0.193*** (2.752)								
<i>Lag_IND_DIR</i>	+		-0.214 (-0.409)							-1.183 (-1.028)
<i>Lag_IND_CHAIR</i>	+			0.053 (0.215)						-0.252 (-0.515)
<i>Lag_FEMALE_DIR</i>	+				1.184 (1.391)					2.369* (1.904)
<i>Lag_BUSY_DIR</i>	-					-0.502*** (-3.053)				-0.457** (-2.572)
<i>Lag_FINANCIAL</i>	+						0.699** (1.991)			0.435 (1.104)
<i>Lag_EXPERIENCE</i>	+							-0.276 (-0.757)		-0.270 (-0.694)
<i>Lag_TENURE</i>	-								-0.097 (-1.433)	-0.083 (-1.229)
<i>Lag_BSIZE</i>	-	0.177 (1.613)	0.255** (2.222)	0.238** (2.151)	0.199* (1.710)	0.181 (1.592)	0.216** (2.037)	0.255** (2.392)	0.233** (2.100)	0.174 (1.462)
<i>Lag_Ln_TA</i>	+	0.408*** (3.565)	0.393*** (3.538)	0.396*** (3.533)	0.411*** (3.605)	0.377*** (3.319)	0.410*** (3.667)	0.410*** (3.624)	0.409*** (3.578)	0.404*** (3.569)
<i>Lag_Ln_INV_OPTIONS</i>	+	0.067 (0.876)	0.100 (1.266)	0.094 (1.218)	0.071 (0.908)	0.075 (1.020)	0.068 (0.910)	0.093 (1.220)	0.092 (1.196)	0.055 (0.729)
<i>Lag_PRS_AGE</i>	-	-0.034 (-0.045)	-0.043 (-0.057)	-0.057 (-0.074)	-0.002 (-0.002)	-0.217 (-0.287)	-0.033 (-0.044)	0.020 (0.026)	0.057 (0.075)	0.015 (0.020)
Observations		521	521	521	521	521	521	521	521	521
R-squared		0.188	0.183	0.182	0.182	0.211	0.194	0.181	0.182	0.225
Trustee FE		Yes								

The OLS regression is estimated using the pooled sample of 521 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *Lag\_GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *Lag\_IND\_CHAIR* = 1; (iii) *Lag\_FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *Lag\_BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *Lag\_FINANCIAL* = 1; (vi) *Lag\_EXPERIENCE* = 1; and (vii) *Lag\_TENURE* < the 50<sup>th</sup> percentile. *Lag\_IND\_DIR* is the percentage of independent directors on the board; *Lag\_IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *Lag\_FEMALE\_DIR* is the percentage of female directors on the board; *Lag\_BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *Lag\_FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *Lag\_EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *Lag\_TENURE* is the average director tenure; *Lag\_BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Lag\_Ln\_TA* is the natural logarithm of *TA(\$million)*; *Lag\_Ln\_INV\_OPTIONS* is the natural logarithm of *Lag\_INV\_OPTIONS*; *Lag\_PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A6.2: Superannuation fund performance (*EXCESS\_ROA*) and lagged governance variables of *industry* funds**

This table provides evidence on the association between the performance and lagged governance variables of industry superannuation funds.

<i>VARIABLES</i>	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		-9.415** (-2.067)	-10.075** (-2.241)	-10.816** (-2.293)	-8.700** (-2.013)	-9.756** (-2.503)	-10.616*** (-2.578)	-8.856** (-1.996)	-9.425** (-2.170)	-9.426** (-2.206)
<i>Lag_GOV_INDEX</i>	-	0.092 (0.597)								
<i>Lag_IND_DIR</i>	-		-0.430 (-0.116)							-1.559 (-0.744)
<i>Lag_IND_CHAIR</i>	-			-0.403 (-0.778)						0.056 (0.104)
<i>Lag_FEMALE_DIR</i>	-				3.266* (1.901)					2.536 (1.528)
<i>Lag_BUSY_DIR</i>	+					2.116** (2.058)				1.767* (1.823)
<i>Lag_FINANCIAL</i>	-						-0.476 (-0.922)			-0.647 (-1.107)
<i>Lag_EXPERIENCE</i>	-							0.379 (1.130)		0.195 (0.637)
<i>Lag_TENURE</i>	+								-0.059 (-0.800)	-0.018 (-0.206)
<i>Lag_BSIZE</i>	+	0.221 (1.339)	0.226 (1.353)	0.227 (1.316)	0.198 (1.181)	0.212 (1.315)	0.231 (1.463)	0.243 (1.453)	0.206 (1.246)	0.194 (1.225)
<i>Lag_Ln_TA</i>	-	0.717 (1.249)	0.818 (1.460)	0.903 (1.620)	0.752 (1.404)	0.793 (1.604)	0.935* (1.685)	0.623 (1.086)	0.779 (1.407)	0.938 (1.505)
<i>Lag_Ln_INV_OPTIONS</i>	+	0.152 (0.421)	0.185 (0.514)	0.174 (0.486)	-0.086 (-0.225)	0.132 (0.349)	0.163 (0.449)	0.157 (0.457)	0.176 (0.487)	-0.120 (-0.293)
<i>Lag_PRS_AGE</i>	?	2.436 (0.553)	2.486 (0.557)	2.362 (0.533)	1.194 (0.274)	2.865 (0.658)	2.328 (0.516)	2.515 (0.581)	2.921 (0.650)	1.328 (0.300)
Observations		242	242	242	242	242	242	242	242	242
R-squared		0.296	0.295	0.297	0.315	0.332	0.298	0.300	0.297	0.349
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 242 fund observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year. *Lag\_GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *Lag\_IND\_CHAIR* = 1; (iii) *Lag\_FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *Lag\_BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *Lag\_FINANCIAL* = 1; (vi) *Lag\_EXPERIENCE* = 1; and (vii) *Lag\_TENURE* < the 50<sup>th</sup> percentile. *Lag\_IND\_DIR* is the percentage of independent directors on the board; *Lag\_IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *Lag\_FEMALE\_DIR* is the percentage of female directors on the board; *Lag\_BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *Lag\_FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *Lag\_EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *Lag\_TENURE* is the average director tenure; *Lag\_BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Lag\_Ln\_TA* is the natural logarithm of *TA(\$million)*; *Lag\_Ln\_INV\_OPTIONS* is the natural logarithm of *Lag\_INV\_OPTIONS*; *Lag\_PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A7.1: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and lagged governance variables of *retail* funds**

This table provides evidence on the association between the fees and lagged governance variables of retail superannuation funds.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
Constant		0.322 (0.994)	0.275 (0.846)	0.282 (0.865)	0.303 (0.920)	0.030 (0.096)	0.361 (1.085)	0.357 (1.082)	0.342 (1.035)	-0.127 (-0.432)
Lag_GOV_INDEX	-	-0.018 (-1.295)								
Lag_IND_DIR	-		-0.174* (-1.902)							-0.123 (-0.674)
Lag_IND_CHAIR	-			-0.092 (-1.536)						-0.013 (-0.120)
Lag_FEMALE_DIR	-				-0.249* (-1.854)					-0.263* (-1.668)
Lag_BUSY_DIR	+					0.066** (2.395)				0.088*** (2.830)
Lag_FINANCIAL	-						0.030 (0.583)			0.113** (2.111)
Lag_EXPERIENCE	-							0.025 (0.854)		0.014 (0.488)
Lag_TENURE	+								0.002 (0.144)	-0.005 (-0.401)
Lag_BSIZE	+	-0.003 (-0.103)	0.000 (0.005)	-0.003 (-0.120)	0.000 (0.011)	-0.001 (-0.033)	-0.008 (-0.343)	-0.009 (-0.355)	-0.008 (-0.313)	0.014 (0.543)
Lag_Ln_TA	-	0.034 (0.605)	0.035 (0.628)	0.033 (0.583)	0.032 (0.570)	0.062 (1.211)	0.022 (0.389)	0.023 (0.416)	0.025 (0.450)	0.077 (1.550)
Lag_Ln_INV_OPTIONS	+	-0.050* (-1.703)	-0.046 (-1.588)	-0.047 (-1.646)	-0.046 (-1.585)	-0.049* (-1.775)	-0.056** (-1.982)	-0.054* (-1.905)	-0.054* (-1.902)	-0.040 (-1.435)
Lag_PRS_AGE	-	-0.024 (-0.112)	0.026 (0.120)	-0.007 (-0.035)	0.001 (0.003)	-0.090 (-0.462)	-0.037 (-0.169)	-0.042 (-0.190)	-0.043 (-0.198)	0.000 (0.001)
Observations		521	521	521	521	521	521	521	521	521
R-squared		0.094	0.101	0.100	0.102	0.110	0.00391	0.089	0.00401	0.00161
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 521 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *Lag\_GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *Lag\_IND\_CHAIR* = 1; (iii) *Lag\_FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *Lag\_BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *Lag\_FINANCIAL* = 1; (vi) *Lag\_EXPERIENCE* = 1; and (vii) *Lag\_TENURE* < the 50<sup>th</sup> percentile. *Lag\_IND\_DIR* is the percentage of independent directors on the board; *Lag\_IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *Lag\_FEMALE\_DIR* is the percentage of female directors on the board; *Lag\_BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *Lag\_FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *Lag\_EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *Lag\_TENURE* is the average director tenure; *Lag\_BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Lag\_Ln\_TA* is the natural logarithm of *TA(\$million)*; *Lag\_Ln\_INV\_OPTIONS* is the natural logarithm of *Lag\_INV\_OPTIONS*; *Lag\_PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A7.2: Superannuation fund fees (*EXCESS\_OP\_EXP\_RATIO*) and lagged governance variables of *industry* funds**

This table provides evidence on the association between the fees and lagged governance variables of industry superannuation funds.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>VARIABLES</i>	Pred. sign	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)	Coeff. (t-stats)
<i>Constant</i>		0.997** (2.079)	0.882** (2.344)	0.719** (2.348)	1.135** (2.115)	1.102** (2.239)	1.064* (1.930)	1.081** (2.047)	0.930* (1.918)	0.565* (1.873)
<i>Lag_GOV_INDEX</i>	-	-0.021** (-2.200)								
<i>Lag_IND_DIR</i>	-		-0.758** (-2.310)							-0.365** (-2.434)
<i>Lag_IND_CHAIR</i>	-			-0.237** (-2.513)						-0.171* (-2.011)
<i>Lag_FEMALE_DIR</i>	-				0.087 (0.763)					0.004 (0.037)
<i>Lag_BUSY_DIR</i>	+					0.092 (0.773)				0.085 (1.244)
<i>Lag_FINANCIAL</i>	-						-0.034 (-0.995)			-0.037 (-1.286)
<i>Lag_EXPERIENCE</i>	-							-0.010 (-0.467)		-0.005 (-0.278)
<i>Lag_TENURE</i>	+								0.017*** (3.063)	0.007 (0.991)
<i>Lag_BSIZE</i>	+	-0.027* (-1.702)	-0.031** (-2.171)	-0.029** (-2.284)	-0.029* (-1.694)	-0.029 (-1.643)	-0.028 (-1.600)	-0.029 (-1.658)	-0.022 (-1.377)	-0.028* (-1.909)
<i>Lag_Ln_TA</i>	-	-0.118 (-1.621)	-0.091* (-1.760)	-0.071 (-1.634)	-0.137* (-1.753)	-0.136* (-1.850)	-0.126 (-1.532)	-0.132 (-1.637)	-0.132* (-1.769)	-0.053 (-1.297)
<i>Lag_Ln_INV_OPTIONS</i>	+	0.071** (2.146)	0.062** (2.031)	0.056** (2.322)	0.056* (1.800)	0.061** (2.058)	0.061* (1.811)	0.064* (1.957)	0.066** (2.062)	0.055* (1.981)
<i>Lag_PRS_AGE</i>	-	0.218 (0.547)	0.072 (0.211)	0.078 (0.250)	0.154 (0.405)	0.204 (0.517)	0.175 (0.436)	0.192 (0.480)	0.088 (0.246)	0.001 (0.002)
Observations		242	242	242	242	242	242	242	242	242
R-squared		0.265	0.221	0.314	0.140	0.154	0.141	0.137	0.255	0.350
Trustee FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The OLS regression is estimated using the pooled sample of 242 fund observations. *EXCESS\_OP\_EXP\_RATIO* is the difference between the superannuation fund's *OP\_EXP\_RATIO* and the median *OP\_EXP\_RATIO* for each year. *Lag\_GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *Lag\_IND\_CHAIR* = 1; (iii) *Lag\_FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *Lag\_BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *Lag\_FINANCIAL* = 1; (vi) *Lag\_EXPERIENCE* = 1; and (vii) *Lag\_TENURE* < the 50<sup>th</sup> percentile. *Lag\_IND\_DIR* is the percentage of independent directors on the board; *Lag\_IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, zero otherwise; *Lag\_FEMALE\_DIR* is the percentage of female directors on the board; *Lag\_BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *Lag\_FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, zero otherwise; *Lag\_EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, zero otherwise; *Lag\_TENURE* is the average director tenure; *Lag\_BSIZE* is the total number of directors on the board. *RETAIL* is an indicator variable equal to 1 if the superannuation fund is a retail superannuation funds, 0 otherwise; *Lag\_Ln\_TA* is the natural logarithm of *TA(\$million)*; *Lag\_Ln\_INV\_OPTIONS* is the natural logarithm of *Lag\_INV\_OPTIONS*; *Lag\_PRS\_AGE* is the percentage of members who are equal to or greater than the age of 50. All continuous variables are winsorized at the top and bottom 5 percent.

## CHAPTER 3

# Do governance practices strengthen the pay-performance relationship of CIO?

### 3.1 Introduction

The compensation of Chief Investment Officers (CIOs) of Australian superannuation funds has recently attracted significant attention from regulators (APRA, 2018).<sup>119</sup> Of particular concern is whether CIOs pay reflects the performance of the superannuation fund. Despite APRA's concerns, to date, there is no empirical evidence examining the structure and pay-performance link of CIO compensation. Accordingly, the objectives of this chapter are: (i) to provide descriptive evidence on CIOs' compensation levels and structure; (ii) to investigate the pay-performance relationship for CIOs; (iii) to examine whether governance practices influence the pay-performance relationship for CIOs; and (iv) to examine whether CIO compensation structure is associated with investment outsourcing. The analyses are conducted using Australian industry superannuation funds.

The motivations of this chapter are threefold. First, although CIOs play an important role in managing one of the largest superannuation sectors in the world, little is known about their role and pay-performance relationship in Australian superannuation funds.<sup>120</sup> This chapter focuses on the pay-performance relationship of CIOs as they are responsible for all aspects of investment activities.<sup>121</sup> Specifically, the responsibilities and duties of CIOs are to develop and implement

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<sup>119</sup> APRA indicates that “*the core objective of APRA's requirements is that performance-based components of remuneration should encourage behavior that supports the effective risk management and long-term financial soundness of the institution.*” Based on their review, APRA claims that executive remuneration practices of Australian superannuation funds do not meet sound practices. They indicate that there is room for further improvement of remuneration practices to strengthen risk management frameworks and long-term financial soundness.

<sup>120</sup> To the best of my knowledge, the only study that investigates the compensation structure in Australian superannuation funds is Liu and Ooi (2016). They examine the determinants of Australian superannuation fund directors' compensation and investigate whether directors' expertise and duties, and fund characteristics, influence the level of director compensation. They argue that directors' expertise and duties determine their compensation; however, they find limited evidence supporting their argument. Moreover, larger funds reflect firm complexity where directors are required to increase their monitoring activities and responsibility; thus, directors receive higher compensation.

<sup>121</sup> The responsibilities between CEOs and CIOs differ. For example, an excerpt from the 2017 Annual report of Australiansuper states that the CEO is “*responsible for the overall management of the fund and providing advice to the board*”, whereas CIO's responsibilities are “*to invest members' money wisely in a way that generates the best possible returns for them*” (pg. 40 of 2017 Annual report). Moreover, an excerpt from the Unisuper website states that the CEO is “*responsible for developing, leading and implementing corporate strategy and culture... also accountable for the overall services and operational management of UniSuper Management nationally*”, whereas, the CIO is “*responsible for the management of our investment functions*” (see <https://www.unisuper.com.au/about-us/our-people/executive-leadership-team>).

investment policies, investment strategies and asset-allocation. Furthermore, they oversee investment professionals who are responsible for managing and monitoring investment decisions of assets on behalf of members. The investment responsibilities and decisions of the CIO have a direct effect on fund performance.<sup>122</sup> Therefore, in the unique setting of superannuation funds, the investment returns of the superannuation fund reflects a greater link with the actions and efforts of the CIO and provides an ideal setting to test the pay-performance relationship.

Second, executives' pay in Australian superannuation funds has surged in the past five years, which is of concern to regulators (Patten, 2018).<sup>123</sup> Coupled with a surge in their pay, recent reviews conducted by APRA claim that current remuneration practices of executives in Australian superannuation funds do not meet the sound practices set out in the APRA Prudential Standards (APRA, 2018).<sup>124</sup> To date, however, there is little empirical evidence to support APRA's claim and there is scant literature on the pay-performance relationship of Australian superannuation fund executives.

Despite the high pay of many CIOs, Australian superannuation funds often outsource their investing activities to external investment managers.<sup>125</sup> This leads to a different percentage of investment assets being managed by the in-house investment team across funds, with a consequential effect on the level of effort required by the CIO. CIOs can alter their effort and investment responsibilities by outsourcing. On the one hand, superannuation funds with a high

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<sup>122</sup> In contrast, CEOs are responsible for overall operations of the business and not only investment arrangements. Also, the optimal level of compensation is difficult to assess due to unobservable actions of CEOs, such as their effort, cost of their effort and their wealth outside the firm (Frydman and Jenter, 2010). Hence, it is inherently difficult to identify the effects of CEOs' actions on firm performance and whether their pay is justified by performance.

<sup>123</sup> The highest paid senior executives in Australian superannuation funds are CIOs (Hoyle, 2018). In 2018, John Pearce, CIO of UniSuper, and Mark Delaney, CIO of AustralianSuper, received total remuneration of over \$1.4 million. Also, in 2018, Ian Silk, CEO of AustralianSuper, received total compensation of just under \$900,000 which has increased by 51 per cent in the past 5 years (Patten, 2018).

<sup>124</sup> The APRA review suggests that the remuneration practices satisfy only the minimum requirements of APRA's prudential standards and current compensation arrangements are inconsistent with APRA's objective of supporting risk management frameworks and long-term financial soundness. Specifically, performance-based incentives of executives have a low weighting of risk management metrics (an average of 14 percent) and have short deferral periods. Moreover, they find that a large proportion of CIOs' compensation is performance-based compensation which is associated with fund performance.

<sup>125</sup> Australian superannuation funds adhere to the *SIS Act 1993* and *APRA Prudential Standards* to prudently manage and invest the pool of assets in the best interest of the beneficiaries. Based on 2006 APRA survey data, Liu and Arnold (2010) find that all of their sample (83 not-for-profit funds and 32 retail funds) outsource their investment management function. Liu and Ooi (2019) examine the outsourcing activities of 101 Australian superannuation funds for the period between 2015 and 2016 and find that 82 percent of their sample use asset consultants. In addition to different proportions of assets being outsourced, there is variation of investment strategies and options within the Australian superannuation fund industry.

proportion of in-house investment require CIOs to put in more effort and time to perform their investment responsibilities. On the other hand, CIOs can reduce their effort by delegating their investment responsibilities to external investment managers. Therefore, CIOs' effort and responsibilities in managing investments vary depending on their investment outsourcing behaviour.

It is an empirical question as to whether CIOs' effort in managing assets in-house are reflected in their pay. It is crucial for policy-makers, regulators and members of Australian superannuation funds to understand the role of the CIO and the influence of their compensation on the investment choices and outcome of members' retirement benefits. However, to date, there is no empirical evidence on CIOs' investment responsibilities, efforts and their compensation structure. This chapter addresses this gap in the academic literature by providing empirical evidence on the pay practices of CIOs in Australian superannuation funds.

Third, since the main governance mechanism in superannuation funds is the board of directors, it is highly critical that the board operates effectively to reduce agency costs. However, the government has raised concerns about the effectiveness of the internal governance mechanisms in Australian superannuation funds. Consequently, the government commissioned several reviews, including the Cooper Review (2010), the Murray Inquiry (2014), the review conducted by the Productivity Commission (2018), and the review conducted by the Banking Royal Commission (2019).<sup>126</sup> As discussed in Chapter 2, these reviews recommend a number of changes, including a minimum proportion of independent directors on the board of Australian superannuation funds, to improve governance practices.<sup>127</sup> However, many of these recommendations are yet to be

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<sup>126</sup> The Cooper Review (2010) examines the Australian superannuation fund system including governance, efficiency, structure and operation. The Murray Inquiry (2014) examines the efficiency, resilience and fairness of the Australian financial system, including efficiency and competitiveness of Australian superannuation funds. The Productivity Commission inquiry examines the efficiency and competitiveness of Australian superannuation fund system. In stage 1, the inquiry assesses the efficiency and competitive of the system; in the stage 2, the inquiry develops alternative default products for fund members; in the stage 3, the inquiry provides a review of the competitiveness and efficiency of the system. Further to these reviews, recent scandals of Australian banks and superannuation funds charging unwanted fees and fees for no service to members (Australian Securities and Investment Commission (ASIC) estimated \$1billion of fees from member accounts (Collett, 2018)) has led to the Banking Royal Commission. This scandal highlights the failure of effective monitoring and management of the board of directors and suggests that it has occurred due to a lack of stringent regulations and legislation in the Australian finance sector (Collett, 2018; Ziffer, 2018).

<sup>127</sup> APRA regulated financial institutions such as authorised deposit-taking institutions, general insurance and life insurance industries are required to have a majority of independent directors on the board under APRA *Prudential Standard CPS 510 Governance*.

implemented.<sup>128</sup> Despite the ongoing concerns around the governance arrangements in the Australian superannuation fund industry, there is little empirical evidence to support regulators and policy-makers in improving the superannuation fund system. This chapter provides evidence on the operation of the board of directors and their monitoring and advising ability using the pay-performance relationship of the CIO as the setting.

Although there is a large body of literature examining the pay-performance relationship of CEOs in publicly listed firms, the evidence on this relationship is inconsistent.<sup>129</sup> This inconclusive evidence in publicly listed firms may be due to the heterogenous attributes of these firms, such as different business models, operational structures, labour market characteristics, economic characteristics, and governance structure.<sup>130</sup> These differences lead to cross-sectional variations in performance benchmarks, compensation structure and optimal governance structures among publicly listed firms (Brickley and Zimmerman, 2010; Edmans, Gabaix, and Jenter, 2017). This chapter argues that these differences in firm attributes are absent in Australian industry superannuation funds. In contrast to publicly listed firms, industry superannuation funds have homogeneous business models, operational features and board structures. The objective of these funds is to manage and invest assets contributed by members and to maximise retirement benefits (Murray et al., 2014, pg. 95). The board of directors play an important role as industry

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<sup>128</sup> In response to these reviews, two bills (the *Superannuation Legislation Amendment (Trustee Governance) Bill 2015* and the *Superannuation Laws Amendment (Strengthening Trustee Arrangements) Bill 2017*) have been introduced to the Senate to mandate the proportion of independent directors on the board of Australian superannuation funds. However, this legislation, intending to change the board structure of industry superannuation funds, has been highly debated and did not pass the Senate (Coorey and Mather, 2015; Benson, 2017; Mather, 2017b).

<sup>129</sup> Some studies provide insignificant evidence on the association between Australian CEO compensation and performance (Merhebi, Pattenden, Swan, and Zhou, 2006; Heaney, Tawani, and Goodwin, 2010), while others document mixed evidence (Coulton and Taylor, 2002; Chalmers, Koh, and Stapledon, 2006).

<sup>130</sup> Various measures of firm performance and compensation components used in prior studies exacerbate the inconclusive evidence on the pay-performance relationship (Coulton and Taylor, 2002; Boschen, Duru, Gordon, and Smith, 2003; Chalmer, Koh, and Stapledon, 2006). Firm performance has been measured using accounting and market performance, and both of these measures are argued to be an equally important measure of firm performance. Lambert and Larcker (1987) argue that market performance is better than accounting performance when measuring CEO performance as future results are the consequences of current CEO activities. In contrast, Boschen et al. (2003) argue that accounting performance is as important as market performance because accounting performance can provide a signal about the CEO effort and is not affected by the noise in stock price performance. Jensen and Murphy (1990) suggest that using accounting performance is a good measure of the performance of executives. However, it induces managers to manipulate profit in order to increase their compensation for the year. Moreover, prior studies use various components of compensation. Some studies focus on cash-based compensation (Izan, Sidhu and Taylor, 1998), while other studies focus on equity-based compensation (Coulton and Taylor, 2002) and total compensation (Chalmers, Koh and Stapledon, 2006; Schultz, Tian and Twite, 2013). These variations lead to difficulty in providing reliable evidence on the pay-performance relationship. Furthermore, Tosi, Werner, Katz, and Gomez-Mejia, (2000) provide other reasons for the mixed results on the pay-performance relationship. These include different sample methods of data collection and statistical techniques that lead to mixed evidence on the association between firm performance and managerial pay.

superannuation funds rely on internal governance mechanisms (such as the monitoring of the board and managerial incentives) rather than external governance mechanisms (such as the monitoring of blockholders, debtholders, and takeover threats) to mitigate agency costs.<sup>131</sup> The similar performance measures, compensation structure, business models and operational and governance characteristics in industry superannuation funds result in comparable agency problems.

This chapter focuses on Australian industry superannuation funds, excluding retail superannuation funds, for several reasons. First, the evidence in Chapter 2 shows that governance practices between retail and industry superannuation funds are different, and evidence on the effect of governance practices is inconsistent between retail and industry superannuation funds. The board structures of industry superannuation funds are different to retail superannuation funds as industry superannuation funds employ an equal representation model which is required by the legislation (the *SIS Act 1993*). As a result, industry superannuation funds have similar board structures with an equal number of member and employer representatives on the board who oversee and monitor managers of superannuation funds. Second, while CIOs of industry superannuation funds are compensated to perform their responsibilities and duties to satisfy members of superannuation funds, CIOs of retail superannuation funds are compensated to perform their responsibilities and duties to satisfy both members of superannuation funds and shareholders of the parent company. This suggests that CIO compensation of retail superannuation funds may include responsibilities and duties other than superannuation funds within the entity. Third, given the absence of a secondary market, the main form of compensation of industry superannuation fund CIOs includes fixed salary and annual bonus compensation, rather than equity-based compensation.<sup>132</sup> However, as retail superannuation funds are owned by financial institutions, which typically are listed firms, compensation of retail superannuation fund CIOs may include equity-based compensation. Therefore, the homogeneous attributes of Australian industry superannuation funds suggest that the cross-sectional variations in governance characteristics and compensation structure are

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<sup>131</sup> Despite board independence playing an important role in mitigating agency costs, not only is there a lack of board independence in Australian superannuation funds but there is no regulation to have a minimum proportion of independent directors on the board. Therefore, the proportion of independent directors on the board is varied (Liu, 2013).

<sup>132</sup> In their review, APRA (2018) indicates that investment managers' compensation of superannuation funds consists of a large proportion of performance-based pay, which focuses on short-term rather than long-term incentives.

minimal. Hence, Australian industry superannuation funds provide an ideal setting to test the pay-performance relationship.

Using a sample of 147 CIOs for the period from 2014 to 2018<sup>133</sup>, the findings in this chapter show some evidence that CIOs' pay is positively associated with fund performance. While there is no evidence that overall governance practices measured using a governance index influence the pay-performance relationship of CIOs, some individual governance variables such as director tenure and financial qualifications influence the pay-performance relationship. Specifically, longer tenured directors strengthen the association between a cash bonus and fund performance; and fewer directors with financial qualifications strengthens the association between fixed salary and fund performance. Moreover, the results in additional tests using return on assets (*ROA*; an alternate measure of performance) show that independent directors and busy directors strengthen the pay-performance relationship of CIOs. These findings support the Cooper Review (2010) recommendations that propose mandating a minimum proportion of independent directors on the board. Further, the findings document that CIOs receive a lower cash bonus when investments are outsourced, suggesting that outsourcing, which is a proxy for CIOs' efforts and responsibilities, influences their cash bonus. However, investment outsourcing behaviour does not influence the total compensation and fixed salary of CIOs. Overall, the main results are robust to using alternative measures of fund performance and governance practices.

In addition, a number of control variables explain the variation in CIOs' pay. CIOs in larger superannuation funds receive higher pay (total compensation, cash bonus and fixed salary) consistent with larger funds having more resources to compensate executives. Alternatively, larger funds may demand and recruit more skilled CIOs to manage complex superannuation funds (Core, Holthausen, and Larcker, 1999; Gabaix and Landier, 2008). The findings also show that female CIOs and shorter-tenured CIOs receive lower pay.

In additional tests, this Chapter examines the effect of fund performance and governance practices on CIO turnover. The findings provide only limited evidence that fund performance and governance practices influence CIO turnover. However, superannuation funds that generate higher

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<sup>133</sup> In this Chapter, the sample period between 2014 and 2018 is used because Australian superannuation funds are only required to disclose information on director and executive compensation since 1 July 2014 under s29QB of *the SIS Act 1993*. Prior to this date, superannuation funds disclosed executive remuneration voluntarily.

fund performance where one-third of directors on the board are independent are less likely to replace CIOs. Moreover, additional tests investigate the pay-performance relationship of CEOs. The findings show that governance practices do not influence the association between fund performance and total compensation of CEOs. However, the findings provide some evidence that superannuation funds with good governance practices strengthen the association between fund performance and the cash bonus of CEOs.

The findings in this chapter make several contributions. First, the results contribute to the literature on the role of CIOs and the pay-performance relationship of CIOs by exploiting the unique setting of Australian industry superannuation funds. Unlike publicly listed firms, the main governance mechanism of Australian industry superannuation funds is the board of directors. As the investment responsibilities of CIOs are directly linked to fund performance, the relation between CIOs' pay and fund performance is expected to be stronger. The findings in this chapter provide some evidence that CIOs' pay is positively associated with fund performance. However, when controlling for the economic characteristics of the fund, the findings show no evidence of a pay-performance relationship. The findings highlight the need for an improvement in executive compensation arrangements that appropriately align both short and long-term performance objectives for CIOs.

Second, the findings contribute to the literature on governance of Australian superannuation funds by assessing the effectiveness of the proposed governance practices in the Cooper Review (2010) and the Murray Inquiry (2014). The findings in this chapter document that governance practices do not influence the pay-performance relationship of CIOs. This suggests that governance practices recommended by the Cooper Review (2010) and the Murray Inquiry (2014), which are deemed to be appropriate governance practices for Australian superannuation funds, may not be the best approach for all superannuation funds. Due to the complex nature of the governance of superannuation funds, the results in this chapter suggest that the recommended governance practices do not necessarily strengthen the pay-performance relationship. The findings suggest that a 'one size fits-all' governance approach may be inappropriate within the same type of superannuation fund as each industry superannuation fund has different business operations and investment strategies and risks.

Third, the findings in this chapter make a significant contribution by providing evidence pertinent to the concern of a surge in executive compensation and the appropriateness of current remuneration practices in Australian superannuation funds (APRA, 2018). The findings in this chapter show limited evidence that investment outsourcing is negatively associated with CIO pay, suggesting that CIO pay may not reflect their investment responsibilities and effort. Furthermore, despite the limited evidence that CIOs' pay reflect their responsibility and effort, CIOs' pay has increased over the past few years. The findings highlight the concerns of the appropriateness of current remuneration arrangements raised by APRA (2018) (that is, the current remuneration practices do not meet the sound practices set out in the APRA prudential standards).

The remainder of this chapter is structured as follows. Section 3.2 reviews the literature and develops hypotheses on the pay-performance relationship, and the influence of governance on the pay-performance relationship. This section also discusses the association between investment outsourcing behaviour and CIOs' pay. Section 3.3 presents the research design and discusses the sample collection. Section 3.4 presents and discusses descriptive statistics and the main results and is followed in Section 3.5 by a discussion of additional tests. Section 3.6 concludes.

## **3.2 Literature review and theory development**

### **3.2.1 Overview**

Agency problems arise from the separation of ownership and control as self-interested managers maximise their personal benefits (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). To control the behaviour of managers, the board of directors is appointed to advise and monitor managers on behalf of shareholders; appropriate managerial incentives are used in compensation contracts to align the interests of managers with shareholders' value (Jensen and Meckling, 1976; Jensen and Murphy, 1990). As Australian superannuation funds lack many of the external governance mechanisms present in publicly listed firms (i.e. publicly traded securities, blockholders, debt-holders and take-over threats), it is highly critical that these internal governance mechanisms, which rely mainly on the board of directors, operate effectively and managerial incentives are designed appropriately to reduce agency costs.

### 3.2.2 CIO compensation and fund performance

There is an extensive body of literature examining the association between CEO compensation<sup>134</sup> and firm performance for publicly listed firms.<sup>135</sup> An early study by Jensen and Murphy (1990) finds a positive pay-performance relationship; however, the economic significance is small. Specifically, they find that on average, CEOs wealth (including pay, options, stockholdings and dismissal) increases by \$3.25 for every \$1,000 increase in shareholder wealth. In contrast, Hall and Liebman (1998) find a larger pay-performance relationship which is driven by a significant increase in equity-based compensation.<sup>136</sup>

In Australia, while numerous studies document a positive association between CEO pay and firm performance (Chalmers, Koh and Stapledon, 2006; Merhebi et al., 2006; Schultz, Tian and Twite, 2013), other studies provide mixed and inconclusive evidence (Izan, Sidhu and Taylor, 1998, Coulton and Taylor, 2002). In particular, Coulton and Taylor (2002) find that the percentage of stock options as part of a compensation package is negatively associated with ROA and positively associated with share price performance in the previous year. Merhebi et al. (2006) find that the change in shareholder wealth (i.e. stock returns) is positively associated with CEO pay. However, they find an insignificant association between CEO pay and stock price performance, ROA and return on equity (ROE).

In the mutual fund industry, the evidence on the association between investment manager compensation and fund performance is limited (Ma, Tang and Gómez, 2019; Ibert, Kaniel, Van Nieuwerburgh, and Vestman, 2018).<sup>137</sup> For example, Ma, Tang and Gómez (2019) examine the

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<sup>134</sup> There is also a growing body of literature examining CFO compensation (Bedard, Hoitash and Hoitash, 2014; Duong and Evans, 2015; Loyeung and Matolcsy, 2015).

<sup>135</sup> Prior literature examines the association between CEO incentives and firm size, and finds that CEO pay is positively linked to firm size (Mangel and Singh, 1993; Hallock, 1997; Core Holthausen and Larcker, 1999; Cyert, Kang, Kumar, 2002; Fahlenbrach, 2009; Armstrong, Ittner, and Larcker, 2012). It is argued that larger firms are more complex and require more skilled executives. In other words, CEOs in larger firms suggest that they are talented to manage the large scale of organisation and they should be paid more (Frydman and Jenter, 2010). Moreover, using a simple equilibrium model, Gabaix and Landier (2008) show evidence that the increase in US CEO pays from 1980 to 2003 is explained by the increase in firm size.

<sup>136</sup> Hall and Liebman (1998) argue that large firm values in the denominator of CEO wealth results in the low pay-performance sensitivity measure used by Jensen and Murphy (1990). Hence, Hall and Liebman (1998) use four performance measures to examine the association between CEO pay and firm performance. The first two measures use the dollar change in CEO wealth and a percentage change in performance; the third performance measure uses 'the percentage increase in CEO compensation for a 1 percent increase in firm value' (elasticity); the fourth performance measures 'the dollar change in CEO wealth per \$1,000 change in firm market value' (Jensen and Murphy, 1990).

<sup>137</sup> The mutual fund industry provides some resemblance to Australian superannuation funds. In particular, a large sum of assets invested is managed by managers who make investment decisions that affect the performance of the assets under management. In

determinants of portfolio managers' compensation structure in US mutual funds. Their descriptive evidence shows that 79% of funds offer a bonus component of compensation which is linked with the fund's investment performance. They find that portfolio manager compensation is not associated with future fund performance, suggesting that portfolio manager compensation contracts are set optimally in equilibrium to deal with agency conflicts. Ibert et al. (2018) examine the determinants of Swedish mutual fund managers' compensation and the pay-performance relationship. Although the variation in manager pay is small relative to the variation in fund revenue, they find a positive association between managers' pay and revenue (a 1% increase in revenues increases managers pay by 0.15%). Furthermore, they find that managers' pay is positively associated with fund manager experience, age, the possession of a finance education and the presence of larger investment teams. The evidence of a pay-performance relationship is mixed in the mutual fund industry. However, a majority of findings from prior research in publicly listed firms show a positive pay-performance relationship (Jensen and Murphy, 1990; Hall and Liebman, 1998; Chalmers, Koh and Stapledon, 2006; Merhebi et al., 2006; Schultz, Tian and Twite, 2013).

CIOs play an important role in managing the investment activities of Australian superannuation funds and they are compensated to mainly perform investment management responsibilities. Specifically, CIOs are delegated with decision rights of investment management where their efforts, expertise and knowledge influence the investment decision making process. The results of these investment decisions are highly associated with fund performance which is measurable.

As CIOs' investment responsibilities and decisions have a direct effect on fund outcomes, and based in findings for publicly listed firms, their compensation is expected to be linked with fund performance. Accordingly, this thesis hypothesises that:

*H1: CIO pay is positively associated with fund performance.*

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mutual fund industry, portfolio managers are responsible for making day-to-day investment decisions who are selected, compensated and removed at the discretion of investment advisors (Ma, Tang and Gómez, 2019).

### 3.2.3 CIO compensation, board structure and governance

In addition to the literature on the pay-performance relationship, there is a growing body of literature that examines the effect of board characteristics and governance practices on the pay-performance of executives (Core et al., 1999; Bebchuk and Fried, 2003; Frydman and Jenter, 2010). Prior studies provide evidence that good governance practices result in effective monitoring, which aligns the interest of managers and shareholders as well as strengthens the pay-performance relationship (Hallock, 1997; Core et al., 1999; Hartzell and Starks, 2003; Fahlenbrach, 2009; Hwang and Kim, 2009; Armstrong et al., 2012; Schultz et al., 2013). In particular, prior evidence suggests that weak governance practices, including larger boards, less board independence, busy directors, longer CEO tenure and greater CEO influence over the remuneration committee, leads to ineffective monitoring of executives. Moreover, firms with weak corporate governance have a higher level of agency problems, allowing CEOs to extract rents (Core et al., 1999, Bebchuk and Fried, 2003).

As the main governance mechanism for Australian superannuation funds is the board of directors<sup>138</sup>, an appropriately structured board is crucial in monitoring executives and strengthening the pay-performance relationship. The Cooper Review (2010), the Murray Inquiry (2014) and the Productivity Commission inquiry (2018) provided recommendations and preferences on board characteristics to improve governance practices of Australian superannuation funds. Based on their recommendations, superannuation funds employing good governance practices are those funds with: smaller boards, greater board independence, gender diversity, directors who possess financial expertise, less busy directors, and shorter director tenure (as discussed in Chapter 2). It is expected that boards of directors on superannuation funds with better governance practices have a greater capacity and ability to effectively monitor and manage CIOs and their pay-performance relationship. The effective monitoring of the board of directors should also help design an appropriate CIO compensation contract that aligns the actions of CIOs with members' interests.<sup>139</sup> Therefore, this thesis hypothesises that:

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<sup>138</sup> As discussed in Section 2.2.3, directors are responsible for overseeing and managing both the business operations and investments of Australian superannuation funds. Directors also have responsibilities and duties to act in the best interests of members.

<sup>139</sup> This thesis focuses on the effect of board monitoring of CIOs, however, CEOs may also affect the CIOs pay-performance relationship. The effect of CEO monitoring on the pay-performance relationship of CIOs can be investigated in future research.

*H2: Superannuation funds with good governance practices are associated with a stronger pay-performance relationship of CIOs.*

### **3.2.4 CIO compensation and investment outsourcing responsibilities**

Next, this chapter investigates investment outsourcing decisions by Australian superannuation funds to examine whether CIOs effort is reflected in their pay. To the best of my knowledge, there is no study that examines the association between CIO pay and investment outsourcing. While superannuation funds are responsible and accountable for managing funds and performance outcomes, many superannuation funds outsource important investment functions to external service providers (Liu and Arnold, 2010; Liu and Ooi, 2019).<sup>140</sup> Liu and Arnold (2010) indicate that all industry superannuation funds in their sample outsource their investment functions.

Australian superannuation funds outsource their investment function to benefit from economies of scale and to attain external experts who specialise in a particular investment area (Liu and Arnold, 2010). Superannuation funds outsource some or all parts of their investment function, as it is costly to establish in-house teams to manage all parts of their asset portfolio. In particular, smaller funds are more likely to outsource their investment function as they may have insufficient capacity to support and hire employees to manage the investments in-house. Also, some superannuation funds, such as industry superannuation funds, collaborate to achieve economies of scale. However, outsourcing may lead to over-reliance on service providers, which results in a greater agency problem due to another layer of the principal-agent relationship (Liu, 2014). Consequently, this requires competent managers who are capable of managing the relationship with service providers and the risks which arise from the relationship.

In addition to the benefits of outsourcing, CIOs can delegate their investment responsibilities by outsourcing their investment functions to external investment managers. Despite this, CIOs are ultimately responsible for the investment performance and outcome of superannuation funds. Therefore, CIOs pay is predicted to be related to investment performance and outcome. CIOs play a crucial role in making investment outsourcing decisions. The outsourcing of investments is not universal; different superannuation funds have a varying proportion of assets managed in-house.

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<sup>140</sup> Australian superannuation funds outsource activities including administration, investment management, asset consulting, custodian services, insurance, auditing and tax.

This variation leads to a different level of responsibility and required effort of CIOs. CIOs of funds with more in-house investments are expected to apply more time and effort in performing their investment responsibilities. This is in contrast to CIOs who outsource their work to external providers. Therefore, this chapter hypothesises that:

*H3: CIO compensation is negatively associated with the level of investment function outsourcing.*

### 3.3 Research design and sample selection

#### 3.3.1 Regression model

The following regression model is estimated to test the hypotheses derived in Section 3.2.

*CIO Compensation* =

$$\alpha + \beta_1 EXCESS\_ROA + \beta_2 GOV\_INDEX + \beta_3 GOV\_INDEX * EXCESS\_ROA + \beta_4 BSIZE + \beta_5 BSIZE * EXCESS\_ROA + \beta_6 \%OUTSOURCED + \beta_7 FEMALE\_CIO + \beta_8 FINANCE\_Qual\_CIO + \beta_9 TENURE\_CIO + \beta_{10} Ln\_TA_{t-1} + \beta_{11} Ln\_INV\_OPTIONS_{t-1} + \beta_{12} PRS\_AGE_{t-1} + \beta_i Year\ indicators + \varepsilon_i \quad (1)$$

The dependent variable in the regression Model (1) is the compensation paid to the CIO during the year, measured alternatively as *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary*. *Ln\_Totalcomp* is measured as the natural logarithm of total compensation as reported in the fund's remuneration report (the sum of salary, bonus, long-term incentives and other compensation). *Ln\_Cashbonus* is measured as the natural logarithm of the CIO's cash bonus. Given the absence of a secondary market, the incentive compensation of CIOs is comprised purely of cash bonuses rather than equity-based compensation. *Ln\_Salary* is measured as the natural logarithm of the CIO's fixed salary. The dependent variables and all continuous variables are winsorised at the top and bottom 5% to reduce problems related to outliers. This thesis uses an unbalanced panel dataset for the period 2014–2018 of industry superannuation funds. Ordinary Least Squares (OLS) regression analysis is used to estimate Model (1) for the dependent variables *Ln\_Totalcomp* and *Ln\_Salary*. A Tobit regression analysis is used to estimate Model (1) for the dependent variable

*Ln\_Cashbonus*.<sup>141</sup> Year fixed effects are included in the regression model and all the regression models cluster standard errors by fund.

### 3.3.2 Independent variables

#### 3.3.2.1 Fund performance

The independent variable of interest to test *HI* is *EXCESS\_ROA*. *EXCESS\_ROA* is measured as the difference between a superannuation fund's return on assets (ROA) and the median ROA for each year.<sup>142</sup> As there is no secondary market, an accounting-based performance measure is used to measure the superannuation fund performance. A positive coefficient is expected on *EXCESS\_ROA*.<sup>143</sup>

#### 3.3.2.2 Governance practices

The governance index (*GOV\_INDEX*) and board size (*BSIZE*) are used as measures of the governance quality of superannuation funds. As discussed in Chapter 2, the governance index is developed using seven governance variables: *IND\_DIR*, *IND\_CHAIR*, *FEMALE\_DIR*, *BUSY\_DIR*, *FINANCIAL*, *EXPERIENCE*, and *TENURE*. These seven governance variables have been recommended by the Cooper Review (2010) and the Murray Inquiry (2014). *GOV\_INDEX* is measured as the accumulation of these seven governance variables and the possible total score ranges between 0 and 7. Specifically, a score of 1 is given if *IND\_CHAIR* equals 1, *FINANCIAL* equals 1 and *EXPERIENCE* equals 1. The following four continuous governance variables are reconstructed as part of the index. A score of 1 is given if: *IND\_DIR* is greater than or equal to the 33<sup>rd</sup> percentile; *FEMALE\_DIR* is greater than the 50<sup>th</sup> percentile; *BUSY\_DIR* is less than the 50<sup>th</sup> percentile; and *TENURE* is less than the 50<sup>th</sup> percentile. A higher score of *GOV\_INDEX* is consistent with good governance practices. It is hypothesised that better governance is associated with effective monitoring and results in the design of compensation contracts that align the interests of members and managers.

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<sup>141</sup> As a number of superannuation funds do not pay cash bonus, a left censor of zero is present when estimating the Tobit regression.

<sup>142</sup> Due to data limitations, overall fund performance is used in the analysis rather than the performance of in-house investments.

<sup>143</sup> Prior studies suggest that executive pay is positively associated with fund performance (Jensen and Murphy, 1990; Hall and Liebman, 1998; Merhebi et al., 2006; Schultz et al., 2013).

Prior studies find a positive association between larger boards and higher executive compensation, suggesting that directors on larger boards provide less effective monitoring (Schultz et al., 2013). When the board is large, it is easier for executives to capture the board as larger boards are more distracted (Core et al., 1999).<sup>144</sup> *BFSIZE* is measured as the total number of directors on the board of superannuation fund. A positive coefficient is expected on *BFSIZE*.

#### The interaction between governance practices and fund performance

To test whether good governance practices strengthen the pay-performance relationship of CIOs, an interaction between the two governance variables (*GOV\_INDEX* and *BFSIZE*) and *EXCESS\_ROA* are included in the regression Model (1). It is hypothesised that industry superannuation funds with good governance practices provide more effective monitoring, which aligns the interests between managers and members by providing an appropriate level and structure of compensation. The expectation of the interaction terms, *GOV\_INDEX\*EXCESS\_ROA* is positive and *BFSIZE\*EXCESS\_ROA* is negative.

#### **3.3.2.3 Investment outsourcing behaviour**

The variable of interest to test *H3* is the percentage of investments outsourced (*%OUTSOURCED*).<sup>145</sup> This outsourcing variable is a proxy for a CIO's effort in performing their investment responsibilities and duties. A high proportion of outsourced investments suggests that there are fewer investment responsibilities and duties for CIOs to perform. As a result, it is expected that they are paid less than CIOs who manage greater investments in-house. A negative coefficient is expected on *%OUTSOURCED*.

All the variables are defined in Table 1.

< Insert Table 1: Definition of variables >

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<sup>144</sup> Prior studies find that CEO compensation is positively associated with board size (Hallock, 1997; Core et al., 1999; Fahlenbrach, 2009).

<sup>145</sup> Superannuation funds report their percentage of investments directly held under *APRA Reporting Form SRF 530.0 item 2*. In *APRA Reporting Form SRF 530.0*, directly held 'represents investments made by the RSE in its own name'.

### 3.3.3 Control variables

Following prior literature, six control variables are included in Model (1) to control for unique CIO characteristics and the economic characteristics of superannuation funds (e.g. Merhebi et al., 2006; Fahlenbrach, 2009; Armstrong, Ittner, and Larcker, 2012; Liu, 2014; Liu and Ooi, 2019). The first three variables control for CIO characteristics and the following three variables control for the unique economic characteristics of superannuation funds. First, the gender of CIOs (*FEMALE\_CIO*) is included in the regression model to control for differences in pay between males and females (Bertrand and Hallock, 2001). Second, to control for CIO's qualifications, an indicator variable highlighting the finance and investment qualifications (*FINANCE\_Qual\_CIO*) is included. As CIOs are responsible for managing and making investment decisions, superannuation funds have a greater demand for CIOs with finance and investment qualifications. Third, CIO's tenure (*TENURE\_CIO*) is included to control for the length of years she/he has served in a fund. As CIO's tenure increases, they become more familiar with the operation of the fund and potentially have more managerial power to capture the board to receive higher pay. Fourth, the natural logarithm of total assets ( $Ln\_TA_{t-1}$ ) is included to control for fund size; larger funds are more complex and have greater resources to compensate skilled executives to manage these large firms.<sup>146</sup> Fifth, the natural logarithm of the number of investment options ( $Ln\_INV\_OPTIONS_{t-1}$ ) is included as a control. A higher number of investment options indicates more investment responsibilities for CIOs as they need to manage multiple investment options with various investment risks. Last, preservation age ( $PRS\_AGE_{t-1}$ ) is included as a control for the level of investment risks because investment strategies and asset allocations tend to change as members age. When members reach their retirement-phase, their portfolio becomes more conservative in order to manage their investment risks and liquidity issues (Cummings and Ellis, 2015). These changes in investment strategies and asset allocations influence the dynamics of CIOs' investment responsibilities. *PRS\_AGE* is measured as the percentage of members who are aged 50 or over.<sup>147</sup>

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<sup>146</sup> The evidence is consistent with a positive association between CEO compensation and firm size (Mangel and Singh, 1993; Hallock, 1997; Core et al., 1999; Cyert et al., 2002; Fahlenbrach, 2009; Armstrong et al., 2012).

<sup>147</sup> Due to data inconsistency, the age of 50 is used instead of the age of 55.

### 3.3.4 Sample selection

CIOs' compensation and characteristics, and all governance characteristics (except *BUSY\_DIR* obtained from the Connect 4 Boardroom database) are hand collected from annual reports, superannuation fund websites and relevant documents disclosed under s29QB of the *SIS Act 1993*. Financial data is obtained from APRA (2018) *Annual Fund-level Superannuation Statistics back series*.

The initial sample is 203 fund-years for the period 2014–2018. Sixty-two industry superannuation funds are removed from the sample due to missing governance information.<sup>148</sup> The final sample consists of 147 CIO observations from 141 industry superannuation funds for the period 2014–2018.<sup>149</sup> Based on 2018 data, the total asset size of sample funds is \$620.5 billion which covers 98 percent of industry superannuation funds (total asset size of all industry superannuation funds is \$631.4 billion) and 22.8 percent of the total superannuation fund industry (the total asset size of all superannuation funds are \$2,718.4 billion).

The summary of the sample selection process is displayed in Table 2.

< Insert Table 2 >

## 3.4 Results

### 3.4.1 Descriptive statistics

Table 3 Panel A provides descriptive statistics for the variables included in regression Model (1). The mean (median) total compensation of CIOs is \$418,582 (\$352,594).<sup>150</sup> Out of 147 CIO observations, 54 CIO observations (36.7 percent) received a cash bonus. The average cash bonus is \$76,691, with a maximum cash bonus of \$882,924.<sup>151</sup> The mean (median) fixed salary of CIOs

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<sup>148</sup> Some industry superannuation funds do not have CIOs and there is a lack of governance disclosure including CIO compensation. Other funds are no longer operating as they have merged with another superannuation funds.

<sup>149</sup> CIOs include those managers who are the head of investments and are ultimately responsible for investment activities. There are industry superannuation funds with more than one CIO as there are departing and newly appointed CIOs in the same year. CIO tenure is included in the regression to control for their duration of working years in the fund. Furthermore, untabulated results using sample without multiple CIOs show similar results.

<sup>150</sup> The highest paid CIO in the sample is John Pearce (\$1,589,162 in 2018) from Unisuper and Mark Delaney (\$1,472,700 in 2018) from AustralianSuper. Interestingly, they are paid more than the CEO in the same fund in 2018. In 2018, CEOs Kevin O'Sullivan from Unisuper received total compensation of \$860,480 and Ian Silk from AustralianSuper received \$994,822.

<sup>151</sup> In 2018, John Pearce from Unisuper received the highest cash bonus of \$882,924 followed by Mark Delaney receiving \$736,350.

is \$297,010 (\$278,799).<sup>152</sup> In comparison to Australian industry superannuation fund CEO compensation, CIOs of industry superannuation funds receive lower total compensation.<sup>153</sup> The mean (median) total compensation of CEOs of industry superannuation funds is \$461,258 (\$423,759).<sup>154</sup>

Over the period 2014–2018, industry superannuation funds generated an average (median) *ROA* of 7.349 percent (8.065 percent). However, the mean *EXCESS\_ROA* is –0.002 percent. The average *GOV\_INDEX* for industry superannuation funds is 3.721, suggesting that on average, boards have four governance variables which meet good governance practices.<sup>155</sup> Using the median as the cut-off to classify superannuation funds with good governance practices, the mean of *GOV\_INDEX\_med* indicates that 29.9 percent of industry superannuation funds have good governance practices. Interestingly, untabulated summary statistics reveal that those industry superannuation funds with good governance practices (those superannuation funds above the median of *GOV\_INDEX*), on average, generated *ROA* of 7.055 percent, which is lower than the average *ROA* of the full sample.

For individual governance variables, Table 3 Panel A reveals that, on average, 12.2 percent of industry superannuation funds have more than one-third of independent directors on the board (*IND\_DIR\_33%*). This indicates an insufficient proportion of independent directors on the board of industry superannuation funds. However, about 44.9 percent of the sample has an independent chairperson (*IND\_CHAIR*) on the board. The average outside directorships on ASX-listed

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<sup>152</sup> Table A7.1 documents that the mean (median) fixed salary of CEOs is \$365,241 (\$357,966).

<sup>153</sup> In addition to CIO compensation and their pay-performance relationship, the pay-performance relationship of Australian superannuation fund CEOs has been examined using a sample of 179 CEOs for the period between 2014 and 2018. The average (median) CEO total compensation is \$461,258 (\$423,759), CEO cash bonus is \$38,769 (\$0), and CEO salary is \$365,241 (\$357,966). Using the same regression model for CIOs, untabulated results show that there is no evidence that governance practices are associated with fund performance and CEOs total compensation and salary. CEO compensation may also influence the pay-performance relationship of CIOs which could be further investigated in future research.

<sup>154</sup> Schultz et al. (2013) document that the mean (median) Australian listed firm CEOs total compensation is \$739,310 (\$349,420), salary (they classified it as ‘Known’) is \$445,010 (\$289,770), cash bonus \$127,960 (\$0), and for long-term at-risk \$156,090 (\$0) for the sample period 2000–2010. Moreover, CIOs receive lower compensation in comparison to Australian CFO compensation documented in Duong and Evans (2015). Duong and Evans (2015) report that the mean (median) salary, bonus and total cash compensation is \$473,877 (\$371,255), \$281,164 (\$100,000) and \$896,489 (\$540,410), respectively. Bugeja, da Silva Rosa, Duong, and Izan (2012) document Australian CEO compensation following mergers and acquisition for the period 2000–2007. They show that the mean (median) salary and bonus for pre-merger, merger completion and post-merger is \$965,333 (\$560,250), \$1,137,258 (\$663,771) and \$1,383,016 (\$747,000), respectively.

<sup>155</sup> Although the range of *GOV\_INDEX* is between 0 and 7, there is no industry superannuation fund which meets all seven governance criteria.

companies held by directors of industry superannuation fund is 0.185 which is less than one outside directorship.<sup>156</sup> Table 3 also reveals that, on average, 44.4 percent and 22.6 percent of directors on the board of industry superannuation funds have a financial qualification (*FINANCIALI*) and prior superannuation fund experience (*EXPERIENCEI*) respectively. Moreover, 17.7 percent of CIOs are female (*FEMALE\_CIO*) and on average, 59.2 percent of CIOs have finance and investment qualifications (*FINANCE\_Qual\_CIO*). In comparison to the proportion of female directors on the board (*FEMALE\_DIR*), there are a relatively small number of female CIOs. CIO's average tenure (*TENURE\_CIO*) is about 5 years, which is similar to CEO tenure of industry superannuation funds (the average tenure of CEOs of industry superannuation funds is 5.196 years shown in Table A7.1) and Australian CFO tenure (mean of 5.22 years) (Duong and Evans, 2015).

Panel A of Table 3 documents that, on average, industry superannuation funds outsource 53.4 percent of their investments (*%OUTSOURCED*). Interestingly, there are a number of industry superannuation funds that outsource almost all of their investment functions.<sup>157</sup>

Industry superannuation funds have an average of 27.3 percent preservation age members (*PRS\_AGE<sub>t-1</sub>*) which is less than retail superannuation funds of 43.0 percent reported in Chapter 2. The average number of investment options (*INV\_OPTIONS<sub>t-1</sub>*) of 17 is also lower than the average for retail superannuation funds (the average of 233 investment options reported in Chapter 2).

< Insert Table 3 Panel A >

< Insert Table 3 Panel B >

Panel B of Table 3 displays descriptive statistics and mean differences of variables between CIOs with and without cash bonuses. The univariate analysis reveals that CIOs compensation, fund performance, and some governance variables are statistically different between CIOs with and without cash bonuses. Specifically, superannuation funds with CIOs who receive cash bonuses outperform funds without cash bonuses by 0.418 percent based on *EXCESS\_ROA*, and

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<sup>156</sup> This is less than the sample in Panel A of Table 3 in Chapter 2 of this thesis, which includes both industry and retail superannuation funds.

<sup>157</sup> In 2018, Building Union Superannuation Scheme (Queensland), HOSTPLUS Superannuation funds and Rei Super outsourced almost all of their investments.

by 0.905 percent based on *ROA*. Interestingly, superannuation funds with CIOs who receive cash bonuses have more *IND\_DIR*, *BUSY\_DIR*, *EXPERIENCE* than superannuation funds whose CIOs do not receive cash bonuses. Moreover, the mean of the control variables are statistically different between CIOs with and without cash bonuses. In particular, superannuation funds with CIOs who receive cash bonuses have larger *TA* (\$15,384), more *INV\_OPTIONS<sub>t-1</sub>* (6.157) and lower *PRS\_AGE<sub>t-1</sub>* (4.7 percent).

### 3.4.2 Correlation matrix

Table 4 presents a correlation matrix for the variables included in regression Model (1). Spearman correlation coefficients are above the diagonal and Pearson correlation coefficients are below the diagonal. The table reveals that, as expected, the dependent variables—*Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary*—are positively correlated with *EXCESS\_ROA* (Pearson correlation is 0.3074, 0.2220 and 0.3044 respectively; and Spearman correlation is 0.2934, 0.2646 and 0.3203 respectively). The correlation between the dependent variables and *GOV\_INDEX* is insignificant, indicating that the index for governance practices is not correlated with CIOs compensations. However, *BFSIZE* is positively correlated with *Ln\_Totalcomp* (Pearson correlation is 0.1420 and Spearman correlation is 0.1887) and *Ln\_Salary* (Pearson correlation is 0.2061 and Spearman correlation is 0.3081), and negatively correlated with *Ln\_Cashbonus* (Pearson correlation is –0.2219 and Spearman correlation is –0.1904). This indicates that superannuation funds with larger boards are correlated with higher total compensation and salary, and a lower cash bonus.

Table 4 reveals that, as expected, *%OUTSOURCED* is negatively correlated with *Ln\_Totalcomp* (Pearson correlation is –0.2593 and Spearman correlation is –0.3474), *Ln\_Cashbonus* (Pearson correlation is –0.1647 and Spearman correlation is –0.3327) and *Ln\_Salary* (Pearson correlation is –0.1493 and Spearman correlation is –0.2807), suggesting that CIOs receive less pay for outsourcing the investment functions. Superannuation funds which outsource more of their investment functions have smaller total assets (correlation between *%OUTSOURCED* and *Ln\_TA<sub>t-1</sub>*, Pearson correlation is –0.4507 and Spearman correlation is –0.4934) and a fewer number of investment options (correlation between *%OUTSOURCED* and *Ln\_INV\_OPTIONS<sub>t-1</sub>*, Pearson correlation is –0.2829 and Spearman correlation is –0.3389). Although *%OUTSOURCED* is negatively correlated with CIO pay and fund size, the correlation between *%OUTSOURCED* and returns (*EXCESS\_ROA* and *ROA*) of superannuation funds are insignificant.

Table 4 documents that female and shorter tenure CIOs are correlated with lower pay.<sup>158</sup> Moreover, controls for economic characteristics of superannuation funds,  $Ln\_TA_{t-1}$  (Pearson correlation is 0.6533 and Spearman correlation is 0.6554),  $Ln\_INV\_OPTIONS_{t-1}$  (Pearson correlation is 0.2333 and Spearman correlation is 0.2888) and  $PRS\_AGE_{t-1}$  (Pearson correlation is 0.1590 and Spearman correlation is 0.2279), are positively correlated with  $Ln\_Totalcomp$ . This suggests that industry superannuation funds with larger total assets, more investment options, and older members are correlated with higher CIO total compensation.

< Insert Table 4: Correlation coefficient matrix >

### 3.4.3 Main results

Table 5 presents regression results that estimate the association between CIOs compensation, performance ( $EXCESS\_ROA$ )<sup>159</sup>, governance practices ( $GOV\_INDEX$ ) and investment outsourcing ( $\%OUTSOURCED$ ). Standard errors are clustered by funds. Panel A and C present results for  $Ln\_Totalcomp$  and  $Ln\_Salary$  respectively, using an OLS regression model. Panel B presents findings for  $Ln\_Cashbonus$  using a Tobit regression model. In Panel A, column (9), the adjusted R-square of the regression is 56.7 percent. The variance inflation factor (VIF) test indicates that multicollinearity is not an issue.

In each panel, there are nine columns to examine each variable of interest. Specifically, column (1) and (2) present results for the pay-performance relationship with and without controls for economic characteristics and year fixed effects. Column (3), (4) and (5) present results for the influence of governance practices with and without controls for economic characteristics and year fixed effects. Column (6) and (7) present results for investment outsourcing behaviour with and without controls and year fixed effects. Column (8) and (9) present results for the full model with controls for economic characteristics, CIO characteristics and year fixed effects.

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<sup>158</sup>  $FEMALE\_CIO$  is negatively correlated with all dependent variables,  $Ln\_Totalcomp$  (Pearson correlation is  $-0.3318$  and Spearman correlation is  $-0.3407$ ),  $Ln\_Cashbonus$  (Pearson correlation is  $-0.1492$  and Spearman correlation is  $-0.1624$ ) and  $Ln\_Salary$  (Pearson correlation is  $-0.2978$  and Spearman correlation is  $-0.2981$ ).  $TENURE\_CIO$  is positively correlated with  $Ln\_Totalcomp$  (Pearson correlation is  $0.4530$  and Spearman correlation is  $0.4649$ ) and  $Ln\_Salary$  (Pearson correlation is  $0.5088$  and Spearman correlation is  $0.5204$ ).

<sup>159</sup> Excess return on assets ( $EXCESS\_ROA$ ) is used to measure the outperformance of superannuation funds rather than raw performance. The alternate measure of raw performance is examined in Section 3.5.1.

< Insert Table 5 Panel A >

In column (1), Panel A of Table 5, the coefficient on *EXCESS\_ROA* (coef. = 0.189,  $p < 0.05$ ) is positively associated with *Ln\_Totalcomp*, supporting *H1*. The finding is consistent with prior evidence (Chalmers et al., 2006; Merhebi et al., 2006; Schultz et al., 2013) and this pay-performance relationship remains positive and significant (*EXCESS\_ROA*, coef. = 0.118,  $p < 0.10$ ) when the regression includes controls for economic characteristics and year fixed effects. This suggests that a one-unit increase in *EXCESS\_ROA* results in a 12.52 percent ( $\exp(0.118) = 1.1252$ ) increase in CIO total compensation. However, the coefficients on *EXCESS\_ROA* are insignificant in all other models when other key variables of interest, along with controls and year fixed effects, are included.

The coefficients on *GOV\_INDEX* and the interaction term of *GOV\_INDEX\*EXCESS\_ROA* are insignificant in all regression models which is inconsistent with prior evidence (Core et al., 1999; Schultz et al., 2013). The results therefore do not support *H2*. This finding suggests that good governance practices do not provide effective monitoring activities in managing CIOs' pay and the pay-performance relationship. In addition, although the coefficients on *BFSIZE* are significant in some columns, *BFSIZE\*EXCESS\_ROA* is insignificant in all columns. This suggests that although larger board size is associated with higher total compensation of CIOs, board size does not strengthen the pay-performance relationship.

The insignificant coefficient on *%OUTSOURCED* suggests that investment outsourcing does not influence CIOs' pay, not supporting *H3*. Interestingly, the coefficient estimates and signs of coefficients on *%OUTSOURCED* with and without *Ln\_TA<sub>t-1</sub>* from column (6) to (9) is vastly different. As *Ln\_TA<sub>t-1</sub>* is highly correlated with other predictors, there could be a concern of multicollinearity. For example, the correlation matrix in Table 4 shows that *Ln\_TA<sub>t-1</sub>* is correlated with *%OUTSOURCED* (Pearson correlation is  $-0.4507$  and Spearman correlation is  $-0.4934$ ), *BFSIZE* (Pearson correlation is  $0.4179$  and Spearman correlation is  $0.4287$ ), and *Ln\_INV\_OPTIONS<sub>t-1</sub>* (Pearson correlation is  $0.5117$  and Spearman correlation is  $0.5295$ ). Furthermore, *Ln\_TA<sub>t-1</sub>* is significantly correlated with *EXCESS\_ROA*, and many governance variables in Table 4. Therefore, these high correlations between predictors could bias the regression results due to potential multicollinearity problems. An additional test is performed to

re-estimate the regression by excluding  $Ln\_TA_{t-1}$ . The results are shown in Table A1.6A, A1.6B and A1.6C and the results are generally similar to the main findings.

Some of the control variables are significant in column (9), Panel A of Table 5. A negative and significant coefficient on  $FEMALE\_CIO$  (coef. =  $-0.297$ ,  $p < 0.10$ ) indicates that female CIOs receive less total compensation than male CIOs. This could be due to the shorter tenure of female CIOs<sup>160</sup> and female CIOs working in smaller size industry superannuation funds.<sup>161</sup> Furthermore, the coefficient on  $Ln\_TA_{t-1}$  (coef. =  $0.364$ ,  $p < 0.01$ ) is positive and significant at the 0.01 level, indicating that a 1 percent increase in  $Ln\_TA_{t-1}$ , increases total compensation by 0.36 percent ( $1.01^{(0.364)} = 1.0036$ ). The positive and significant association between fund size and compensation supports the findings of other studies (Core et al., 1999; Gabaix and Landier, 2008; Fahlenbrach, 2009; Armstrong et al., 2012). This result suggests that larger funds require more skilled managers and as a result they are compensated more for managing large complex funds.

< Insert Table 5 Panel B >

Panel B of Table 5 shows the results using cash bonus as the dependent variable.<sup>162</sup> In column (1), the coefficient on  $EXCESS\_ROA$  (coef. =  $2.818$ ,  $p < 0.05$ ) is positive and significant. However, the association between  $EXCESS\_ROA$  and  $Ln\_Cashbonus$  is insignificant when other independent variables, controls and year fixed effects are included. Therefore, there is limited evidence of an association between cash bonus and performance.

Moreover, the coefficients on  $GOV\_INDEX$  and  $GOV\_INDEX*EXCESS\_ROA$  are insignificant, which does not support  $H2$ . Interestingly, contrary to predictions, the negative coefficients on  $BFSIZE$  indicate that larger boards of industry superannuation funds pay lower cash bonuses. As larger boards are correlated with more female directors, directors with financial qualifications and

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<sup>160</sup> A negative correlation between  $FEMALE\_CIO$  and  $TENURE\_CIO$  is shown in Table 4 correlation matrix (Pearson correlation is  $-0.3440$  and Spearman correlation is  $-0.3444$ ).

<sup>161</sup> Bertrand and Hallock (2001) show that female executive firm size is smaller and females are paid less for working for a smaller firm. Untabulated summary statistics show that on average, female CIOs work in superannuation funds with smaller total assets than male CIOs; however, a t-test shows no evidence that the mean is statistically different between female and male CIOs.

<sup>162</sup> Although only some CIOs receive a cash bonus, CIO pay is predicted to be related to fund performance as they are ultimately responsible for investment performance and outcomes. As the evidence indicates that 36.7 percent of CIOs receive a cash bonus a regression is estimated using an indicator dependent variable of cash bonus (set equal to 1 if CIOs receive cash bonus, 0 otherwise). Untabulated results are generally similar to the main findings.

directors with prior superannuation fund experience, boards with good governance practices pay lower cash bonus. Another possible explanation could be that as boards become larger more directors are compensated, which then reduces the resources available for CIO cash bonus. Despite this, the coefficients on *BFSIZE\*EXCESS\_ROA* are insignificant, suggesting that superannuation funds with good governance practices do not strengthen the pay-performance relationship.

As expected, the coefficient on *%OUTSOURCED* (coef. =  $-17.714$ ,  $p < 0.10$ ) is negative and significant in column (8), Panel B of Table 5. This suggests that CIOs in superannuation funds that outsource their investment functions receive a lower cash bonus. As CIOs reduce their investment responsibilities and duties by delegating their work to external service providers, they are compensated less for a lower level of responsibility and effort. This evidence, however, on *H3* is limited as the coefficients on *%OUTSOURCED* are insignificant when controlling for the economic characteristics of superannuation funds in column (9). Consistent with predictions, larger industry superannuation funds pay a higher CIO cash bonus ( $Ln\_TA_{t-1}$ , coef. =  $6.367$ ,  $p < 0.01$ , in column (9)).

< Insert Table 5 Panel C >

Panel C of Table 5 presents the regression estimation using *Ln\_Salary* as the dependent variable. In column (2), including controls and year fixed effects, the coefficient on *EXCESS\_ROA* (coef. =  $0.111$ ,  $p < 0.10$ ) is positive and significant, supporting *H1*. The finding suggests that the performance of superannuation funds is positively related to CIO salary. However, the results in column (9) including controls and year fixed effects show an insignificant association between *Ln\_Salary* and *EXCESS\_ROA*.

The results on governance practices of superannuation funds show an insignificant association with CIO salary (*Ln\_Salary*) and no evidence that governance practices influence the pay-performance relationship (*GOV\_INDEX\*EXCESS\_ROA* and *BFSIZE\*EXCESS\_ROA*). The results do not support *H2* that suggests good governance practices strengthen the pay-performance relationship by providing effective monitoring activities. Furthermore, the insignificant coefficient on *%OUTSOURCED* in each model specifications indicate that CIOs' effort in managing investment assets either in-house or outsourced do not explain the salary of CIOs.

In column (9), the coefficients on *TENURE\_CIO* (coef. = 0.038,  $p < 0.05$ ) and *Ln\_TA<sub>t-1</sub>* (coef. = 0.219,  $p < 0.01$ ) are positive and significant. As expected, the findings suggest that longer tenured CIOs receive a higher salary as they have more experience and managerial power (Bebchuk and Fried, 2003; Abernethy, Kuang and Qin, 2015; Van Essen, Otten and Carberry, 2015). The positive and significant coefficient on *Ln\_TA<sub>t-1</sub>* suggests that CIOs receive a higher salary in larger industry superannuation funds. The coefficients on *PRS\_AGE<sub>t-1</sub>* are positive and significant (except in column (9)). This suggests that CIOs are compensated for having more investment responsibilities dealing with the liquidity issues for older members who are planning to draw down their retirement benefits.

Overall, although limited, the evidence on the pay-performance relationship of CIOs is evident in some models. While the performance of industry superannuation funds are associated with higher CIO pay, the pay-performance relationship is not strengthened by effective monitoring activities from good governance practices. This chapter provides some evidence that CIOs who outsource more investments receive a lower CIO cash bonus.

< Insert Table 6 Panel A >

To further investigate the influence of governance practices on the pay-performance relationship, individual governance variables included in the *GOV\_INDEX* are examined separately. Panels A, B and C of Table 6 present the results for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary*, respectively. Panel A of Table 6 shows no evidence that individual components of governance practices strengthen the pay-performance relationship. The findings suggest that these governance variables discussed and recommended by the Cooper Review 2010 and the Murray Inquiry 2014 do not influence the association between *EXCESS\_ROA* and total compensation of CIOs.

< Insert Table 6 Panel B >

Panel B of Table 6 presents the regression results using *Ln\_Cashbonus* as the dependent variable. The positive and significant coefficients on *BUSY\_DIR* (coef. = 13.589,  $p < 0.05$ ) and *EXPERIENCE* (coef. = 6.433,  $p < 0.05$ ) indicate that industry superannuation funds with busier directors and more experienced directors pay more cash bonus. Contrary to predictions, the coefficient on *TENURE\*EXCESS\_ROA* (coef. = 0.836,  $p < 0.10$ ) is positive and significant,

indicating that directors with longer tenure strengthen the association between CIO cash bonus and fund performance. This finding suggests that longer tenured directors have more knowledge and experience and are better monitors.

< Insert Table 6 Panel C >

Panel C of Table 6 presents the regression results using  $\ln\_Salary$  as the dependent variable. The coefficient on  $FINANCIALI*EXCESS\_ROA$  (coef. =  $-0.301$ ,  $p < 0.10$ ) is negative and significant, indicating that boards with more directors who have financial qualifications weakens the pay-performance relationship.<sup>163</sup> A possible explanation is that directors with financial qualifications may focus more on finance and accounting related issues rather than CIO compensation.

Overall, the governance practices of industry superannuation funds have little influence on the pay-performance link of CIOs. Results for the governance variables show that longer tenured directors strengthen the association between CIO cash bonus and fund performance; and directors with financial qualifications weakens the association between CIO salary and fund performance. However, other governance variables are not found to strengthen the pay-performance relationship of CIOs.

### Endogeneity

This study acknowledges the endogenous nature of CIO compensation from the complex arrangement of compensation involving CIOs, the board of directors, remuneration committees and the CIO labour market (Frydman and Jenter, 2010). The endogeneity problem potentially arises from an omitted correlated variable bias due to observable and unobservable characteristics of the fund and CIOs potentially being correlated with CIOs compensation which could possibly bias the results. In addition, another endogeneity problem arises due to reverse causality where CIOs pay influences fund performance. For instance, if CIOs know they have achieved their pay related performance and non-performance targets during the year, they may reduce their effort in managing their investment responsibilities. Prior studies have used instrumental variables to mitigate endogeneity problems (Lareker and Rusticus, 2010). However, an appropriate

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<sup>163</sup> Instead of the indicator variable of  $FINANCIAL$ , the continuous variable of  $FINANCIALI$  is included due to a lack of variation as most industry superannuation fund boards have at least one director with financial qualifications.

instrumental variable which explains governance practices and performance, but does not determine CIOs compensation, cannot be identified. This study does not use a two-stage-least-squares (2SLS) regression as a regression with weak instrumental variables leads to more biased estimates and is more likely to provide wrong statistical inference than OLS estimates (Larcker et al., 2007; Larcker and Rusticus, 2010).

### 3.5 Additional tests

Further to the main results in the previous section, additional tests are carried out to explore the results in greater detail and assess the robustness of the findings.

#### 3.5.1 Alternative measures of performance

The pay-performance relationship of CIOs is investigated further by using alternate performance measures, return on assets (*ROA*), APRA rate of return (*ROR*), lagged *EXCESS\_ROA* (*EXCESS\_ROA\_lag*) and lagged *ROA* (*ROA\_lag*). *ROR* is measured as net earnings after tax divided by cash flow adjusted net assets. *EXCESS\_ROA\_lag* is measured as the previous year *EXCESS\_ROA*. *ROA\_lag* is measured as the previous year *ROA*.

< Insert Table A1.1A >

< Insert Table A1.1B >

< Insert Table A1.1C >

The results for the alternate performance measure of *ROA* and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* are shown in Table A1.1A, A1.1B and A1.1C respectively. Similar to the main findings in Panel A of Table 5, the coefficient on *ROA* (coef. = 0.118,  $p < 0.10$ ) has a positive and significant association with *Ln\_Totalcomp* in column (2) of Table A1.1A. In addition, the coefficient on *%OUTSOURCED* (coef. = -0.771,  $p < 0.10$ ) is negative and significant in column (8) and the coefficients on *GOV\_INDEX* and *GOV\_INDEX\*ROA* remain insignificant in all models. Furthermore, the findings for *Ln\_Cashbonus* in Table A1.1B and *Ln\_Salary* in Table A1.1C remain similar to the main findings. Overall, the results using *ROA* remain similar.

< Insert Table A1.1D >

< Insert Table A1.1E >

< Insert Table A1.1F >

The individual governance variables included in the *GOV\_INDEX* are examined separately. Table A1.1D, A1.1E and A1.1F present the results for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively. Table A1.1D reveals that, as expected, the coefficient on *IND\_DIR\_33%* (coef. = -0.488,  $p < 0.10$ ) is negatively associated with total compensation. Similar to the main findings, individual governance variables do not suggest that better governance practices strengthen the pay-performance relationship. However, Table A1.1E reveals that superannuation funds where one-third of board of directors are independent is associated with a decrease CIO cash bonus (*IND\_DIR\_33%*, coef. = -11.155,  $p < 0.10$ ) and an improved pay-performance relationship (*IND\_DIR\_33%\*ROA*, coef. = 1.063,  $p < 0.10$ ). Female directors (*FEMALE\_DIR\*ROA*, coef. = -5.413,  $p < 0.10$ ) and busy directors (*BUSY\_DIR\*ROA*, coef. = -2.730,  $p < 0.10$ ) are negatively associated with the pay-performance relationship. Furthermore, Table 1.1F shows evidence that board independence (*IND\_DIR\*ROA*, coef. = 0.278,  $p < 0.05$ ; and *IND\_DIR\_33%\*ROA*, coef. = 0.075,  $p < 0.01$ ) reduces CIO salary and strengthens the association between fund performance and CIO salary. These findings support the recommendations from the Cooper Review 2010 and the Murray Inquiry 2014 mandating a minimum proportion of independent directors. The finding suggests that independent directors are effective in monitoring managers and help strengthen the pay-performance relationship.

< Insert Table A1.2A >

< Insert Table A1.2B >

< Insert Table A1.2C >

The results for the alternate performance measure of *ROR* and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* are shown in Table A1.2A, A1.2B and A1.2C respectively. Similar to the main findings, Table A1.2A and A1.2C reveal an insignificant association between *GOV\_INDEX* and the pay-performance relationship. Interestingly, Table A1.2B shows a negative and significant coefficient on *GOV\_INDEX\*ROR* (coef. = -0.425,  $p < 0.05$ ) in column (3), suggesting that superannuation funds with good governance practices provide ineffective

monitoring activities that weaken the pay-performance relationship. It could be that as the superannuation fund industry is complex, directors may focus less on monitoring or developing an appropriate compensation structure of managers to align the interests between managers and members. However, in other models including controls and year fixed effects, the coefficients on *GOV\_INDEX\*ROR* are insignificant. Overall, the results for *ROR* are generally similar to the main findings.

< Insert Table A1.2D >

< Insert Table A1.2E >

< Insert Table A1.2F >

The individual governance variables included in the *GOV\_INDEX* are examined separately. Table A1.2D, A1.2E and A1.2F present the results for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively. The results in all Tables show that independent directors on the board strengthen the pay-performance relationship. In Table A1.2E, as expected, a negative and significant coefficient on *BUSY\_DIR\*ROR* (coef. = -1.864,  $p < 0.10$ ) suggests that less busy directors strengthens the relationship between cash bonus and fund performance.

< Insert Table A1.3A >

< Insert Table A1.3B >

< Insert Table A1.3C >

Next, this study estimates regression models using lagged performance variables as CIO pay may be influenced by fund performance in the prior year. The results for the alternate performance measure of *EXCESS\_ROA\_lag* and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* are shown in Table A1.3A, A1.3B and A1.3C respectively. Table A1.3A and A1.3C for total compensation and salary, respectively, reveal that in some models, better governance practices (a negative coefficient on *GOV\_INDEX\*EXCESS\_ROA\_lag* and a positive coefficient on *B\_SIZE\*EXCESS\_ROA\_lag*) weaken the pay-performance relationship. The results in Table A1.3B for cash bonus remain consistent with the main findings.

< Insert Table A1.3D >

< Insert Table A1.3E >

< Insert Table A1.3F >

The individual governance variables included in the *GOV\_INDEX* are examined separately. Table A1.3D, A1.3E and A1.3F present the results for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively. The findings show no evidence that individual governance practices improve the pay-performance relationship. The findings are generally similar to the main findings.

< Insert Table A1.4A >

< Insert Table A1.4B >

< Insert Table A1.4C >

Next, the results for the alternate performance measure of *ROA\_lag* and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* are shown in Table A1.4A, A1.4B and A1.4C respectively. The results are similar to the main findings except the negative and significant coefficient on *%OUTSOURCED* (in column (8), coef. =  $-0.783$ ,  $p < 0.10$ ) and insignificant coefficients on *BFSIZE* in Table A1.4A for *Ln\_Totalcomp*.

< Insert Table A1.4D >

< Insert Table A1.4E >

< Insert Table A1.4F >

The individual governance variables included in the *GOV\_INDEX* are examined separately; Table A1.4D, A1.4E and A1.4F present the results for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively. Table A1.4D and A1.4F, for *Ln\_Totalcomp* and *Ln\_Salary* respectively, reveal that an independent chairperson (*IND\_CHAIR\*ROA\_lag*), less female directors (*FEMALE\_DIR\*ROA\_lag*), and more busy directors (*BUSY\_DIR\*ROA\_lag*) on the board strengthen the pay-performance relationship. Moreover, Table A1.4E shows that directors with financial qualifications (*FINANCIALI\*ROA\_lag*), longer tenured directors (*TENURE\*ROA\_lag*),

and less female directors ( $FEMALE\_DIR*ROA\_lag$ ) on the board strengthens the association between cash bonus and fund performance.

Although the sample size is small, the regression model is estimated to investigate the pay-performance relationship and the effectiveness of governance practices for each year. The results for  $Ln\_Totalcomp$ ,  $Ln\_Cashbonus$  and  $Ln\_Salary$ , including CIO and economic characteristics controls, are presented in Table A1.5A, A1.5B and A1.5C respectively. The results for  $Ln\_Totalcomp$  in Table A1.5A show similar findings to the main findings, except that the coefficient on  $BFSIZE*EXCESS\_ROA$  (coef. = 0.135,  $p<0.05$ ) in 2015 is positive and significant. The findings for  $Ln\_Cashbonus$  in Table A1.5B show inconsistent results. The association between  $Ln\_Cashbonus$  and  $EXCESS\_ROA$  is positive in 2014; however its association is negative in 2015 and 2018. The findings indicate that governance practices weaken the association between performance and cash bonus in 2014 and 2017. The findings for  $Ln\_Salary$  in Table A1.5C are similar to the main findings.

< Insert Table A1.5A >

< Insert Table A1.5B >

< Insert Table A1.5C >

To reduce the concern of multicollinearity where fund size are highly correlated with other predictors such as investment options, investment outsourcing and board size, the regression models are re-estimated by excluding  $Ln\_TA_{t-1}$ . The results for  $Ln\_TotalComp$ ,  $Ln\_Cashbonus$  and  $Ln\_Salary$  are presented in Table A1.6A, A1.6B and A1.6C respectively. The findings in Table A1.6A show an insignificant coefficient on  $EXCESS\_ROA$  and  $GOV\_INDEX*EXCESS\_ROA$ , which is similar to the main results. Interestingly, the positive coefficients on  $BFSIZE*EXCESS\_ROA$  indicate that the larger board size strengthens the association between total compensation and performance. Larger boards have more female directors, directors with financial qualifications, and shorter tenure directors as shown in the correlation matrix of Table 4. In Table A1.6B, the negative and significant coefficient on  $GOV\_INDEX*EXCESS\_ROA$  (coef. = -1.470,  $p<0.10$ ) in column (3) suggests that governance practices weaken the association between cash bonus and performance. Interestingly, the findings in column (5) of Table A1.6C show a negative

coefficient on *EXCESS\_ROA* (coef. = -0.310,  $p < 0.10$ ) and a positive coefficient on *BFSIZE\*EXCESS\_ROA* (coef. = 0.053,  $p < 0.10$ ).

< Insert Table A1.6A >

< Insert Table A1.6B >

< Insert Table A1.6C >

To investigate whether smaller superannuation funds and larger superannuation funds have different governance practices and compensation structures, the sample is separated into small and large superannuation funds based on their asset size. Small superannuation funds are those superannuation funds equal to or below the median total assets and large superannuation funds are those superannuation funds above the median total assets. Table A1.7 presents summary statistics and the mean differences of variables between small funds and large funds. The results show that mean CIO pay, *EXCESS\_ROA*, *GOV\_INDEX* and a number of governance practices (such as *IND\_DIR*, *FEMALE\_DIR*, *FINANCIAL1*, *EXPERIENCE1* and *TENURE*) are statistically different between small and large superannuation funds. The findings suggest that large superannuation funds have better governance practices and pay higher CIO pay.

< Insert Table A1.7 >

< Insert Table A1.8A >

< Insert Table A1.8B >

< Insert Table A1.8C >

< Insert Table A1.9A >

< Insert Table A1.9B >

< Insert Table A1.9C >

As performance and governance practices are different between small and large superannuation funds, the regression is estimated by examining small funds and large funds separately. The fund

size ( $Ln\_TA_{t-1}$ ) is excluded from the regression as the two sub-samples are separated based on the size of their total assets. The results of small funds using  $Ln\_Totalcomp$ ,  $Ln\_Cashbonus$  and  $Ln\_Salary$  as the dependent variable are shown in Table A1.8A, A1.8B and A1.8C respectively. The findings in Table A1.8A and A1.8C are generally similar to the main findings. However, in Table A1.8B, the negative and significant coefficient on  $GOV\_INDEX*EXCESS\_ROA$  suggests that better governance practices weaken the association between performance and cash bonus in small funds. The results of large funds using  $Ln\_Totalcomp$ ,  $Ln\_Cashbonus$  and  $Ln\_Salary$  as the dependent variable are shown in Table A1.9A, A1.9B and A1.9C respectively. The results are generally similar to the main findings, except for a negative and significant coefficient on  $GOV\_INDEX*EXCESS\_ROA$  (coef. =  $-0.074$ ,  $p < 0.10$ ) in column (9) of Table A1.9A.

Overall, the findings using alternate performance measures ( $ROA$ ,  $ROR$ ,  $EXCESS\_ROA\_lag$  and  $ROA\_lag$ ) are generally similar to the main findings in Table 5. However, the results of the individual governance variables included in the  $GOV\_INDEX$  show that a number of these governance variables influence the pay-performance relationship. In particular, independent directors on the board strengthen the pay-performance relationship for alternate performance measures of  $ROA$  and  $ROR$ . Although the results of the governance index are generally similar, the individual governance variables are sensitive to the alternative performance measures. Furthermore, although there are differences in governance practices and CIOs' pay between small and large funds, the findings are generally similar to the main findings.

### **3.5.2 Alternative measures of the governance index**

Six alternative measures of the governance index are used to examine the effect of governance practices on the pay-performance relationship of CIOs. The definition and detailed results for the alternative measures of the governance index are documented in Appendix A2. Overall, the results remain generally similar when the governance index is modified. However, when the governance index is modified into an indicator variable, particularly the  $GOV\_INDEX\_med1$ , the findings show evidence that industry superannuation funds with good governance practices weakens the association between cash bonus and  $ROA$  (as shown in Table A2.6B). The results on the other alternative measures of governance index are consistent with the main findings; that is, better governance practices do not enhance the pay-performance relationship.

### 3.5.3 Asset allocations

As additional testing, the proportion of asset allocation is included in the regression to investigate whether CIO effort in managing different types of asset classes influences their pay.<sup>164</sup> Additional asset allocation variables are included: the percentage of investments in (i) cash (*%CASH*), (ii) fixed income (*%FIXED\_INC*), (iii) equity (*%EQUITY*), (iv) property (*%PROPERTY*), (v) infrastructure (*%INFRASTRUCTURE*), and (vi) commodities (*%COMMODITIES*).

< Insert Table A3.1A >

< Insert Table A3.1B >

< Insert Table A3.1C >

< Insert Table A3.2A >

< Insert Table A3.2B >

< Insert Table A3.2C >

Table A3.1A, A3.1B and A3.1C present regression results including asset allocations for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively. In column (1), Table A3.1A, the coefficient on *%EQUITY* (coef. =  $-1.091$ ,  $p < 0.01$ ) is negative and the coefficient on *%PROPERTY* (coef. =  $5.705$ ,  $p < 0.05$ ) is positive, indicating that CIOs receive more total compensation for their effort in managing a lower proportion of equity and an increased proportion of property. This result is consistent with property investments requiring the CIOs to put in more time and effort in managing the investments. In column (1) Table A3.1B, using *Ln\_Cashbonus* as the dependent variable, the results show that CIOs receive a higher cash bonus for managing a higher proportion of cash (*%CASH*, coef. =  $63.995$ ,  $p < 0.05$ ) and a lower proportion of equity (*%EQUITY*, coef. =  $-40.640$ ,  $p < 0.01$ ). In column (1), Table A3.1C, for the dependent variable of *Ln\_Salary*, the results show that CIOs receive less salary for managing equity (*%EQUITY*, coef. =  $-0.635$ ,  $p < 0.10$ ). The regression results using the alternate measure of performance, *ROA*, shown in Table A3.2A, A3.2B

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<sup>164</sup> The percentage of investments in different asset classes is obtained from APRA 2018 *Annual Fund-level Superannuation Statistics back series*. However, the information for the proportion of assets outsourced to external investment managers within each asset classes is not available.

and A3.2C for *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* respectively, remain consistent with the findings in Table A3.1A, A3.1B and A3.1C. However, the results need to be interpreted with caution due to a data limitation on the proportion of investments outsourced for each asset classes. As the proportion of investments managed in-house for each asset class is not available, it is difficult to interpret the association between CIO pay and their efforts in each asset class.

### 3.5.4 CIO turnover

In addition to the influence of governance practices on the pay-performance relationship of CIOs, the effect of governance practices and fund performance on CIO turnover is also investigated. The dependent variable is an indicator variable equal to 1 if there is a CIO change during the year, 0 otherwise. Table A4.1 shows the regression results using *EXCESS\_ROA* and Table A4.2 shows the regression results using the alternate measure of performance, *ROA*. Table A4.1A shows no evidence that fund performance, *EXCESS\_ROA* and the governance index (*GOV\_INDEX*) influence CIO turnover. However, industry superannuation funds with larger boards (*B\_SIZE*, coef. = 0.218,  $p < 0.05$  in column (9)) are more likely to experience CIO turnover. In table A4.1B, when governance variables are examined individually, superannuation fund boards with more independent directors (*IND\_DIR*, coef. = 2.637,  $p < 0.10$ ), female directors (*FEMALE\_DIR*, coef. = 2.733,  $p < 0.10$ ), and directors with prior superannuation fund experience (*EXPERIENCE1*, coef. = 2.579,  $p < 0.01$ ), are more likely to replace CIOs. The negative and significant coefficient on *IND\_DIR\_33%\*EXCESS\_ROA* (coef. = -0.844,  $p < 0.10$ ) suggests that industry superannuation funds with one-third of independent directors on the board are less likely to replace CIOs when the fund generates higher *EXCESS\_ROA*.

The negative and significant coefficient on *ROA* (coef. = -0.110,  $p < 0.10$ ) in column (1), Table A4.2A, indicates that industry superannuation funds with higher *ROA* are less likely to replace CIOs. Besides the insignificant coefficients on *B\_SIZE*, the findings are generally similar to Table A4.1A. Table A4.2B reveals that industry superannuation funds with more independent directors (*IND\_DIR\*ROA* (coef. = -0.740,  $p < 0.10$ ) and *IND\_DIR\_33%\*ROA* (coef. = -1.229,  $p < 0.05$ )) and higher *ROA* decrease the likelihood of replacing CIOs. Overall, although there is no evidence that the governance index influences CIO turnover, there is some evidence that CIOs are less likely to be replaced when the fund is performing well and has more independent directors on the board.

< Insert Table A4.1A >

< Insert Table A4.1B >

< Insert Table A4.2A >

< Insert Table A4.2B >

### **3.6 Conclusion**

This chapter examines (i) the association between CIO pay and the performance of Australian industry superannuation funds, (ii) whether better governance practices strengthen the pay-performance relationship of CIOs, and (iii) whether CIO responsibilities and effort are reflected in their pay. This study uses the unique setting of Australian industry superannuation funds where the board of directors is the main governance mechanism. This study argues that as CIOs play a critical role in managing the assets of superannuation funds, the CIOs' efforts in managing and allocating investments are directly linked to fund performance.

This chapter provides evidence based on a sample of 147 CIOs of Australian industry superannuation funds for the period 2014–2018. First, this chapter documents some evidence that CIOs' pay is positively associated with fund performance. The finding suggests that fund performance, which is the outcome of CIOs responsibilities and effort, is reflected in their pay. Second, the findings in this chapter show that better governance practices do not influence the pay-performance relationship of CIOs. This suggests that good governance practices do not necessarily provide better monitoring activities. However, the results from additional tests, using *ROA* as the alternate measure of performance, show that independent directors on the board strengthen the association between fund performance and fixed salary and cash bonus. This supports the recommendation of having more independent directors on the board as suggested by the Cooper Review (2010) and the Murray Inquiry (2014). Third, this chapter documents that greater outsourcing of the investment function reduces CIO cash bonus. The finding indicates that a high proportion of investment outsourcing leads to a lower cash bonus; CIOs can reduce their investment responsibilities and effort by delegating responsibilities to external investment managers. However, the evidence is limited as outsourcing does not explain variations in total compensation and fixed salary. Overall, the findings in this chapter provide some evidence on a

positive pay-performance relationship for CIOs, but no evidence that better governance practices strengthen the pay-performance relationship. The results are generally robust in additional tests, which use alternate measures of performance and governance practices.

The results from this chapter have implications for regulators, policy-makers, practitioners and researchers, and contribute to the literature on the pay-performance relationship and governance practices in Australian industry superannuation funds (Chalmers et al., 2006; Benson et al., 2011; Schultz et al., 2013; Liu, 2014; Liu and Ooi, 2016). The findings raise doubts on whether the governance practices recommended by the Cooper Review (2010) and the Murray Inquiry (2014) provide effective monitoring and enhance the pay-performance relationship of the highest paid executives in Australian superannuation funds. The results presented in this chapter provide no evidence that good governance practices strengthen the pay-performance relationship of CIOs. The findings suggest that as each superannuation fund is different (i.e., the demographics of members, asset allocations, investment risks and investment strategies), there is not one approach to governance practices that produces the best outcome for members of industry superannuation funds.

The findings in this chapter are subject to a number of limitations, in particular the small sample size and short sample period. The sample size is small due to the relatively low number of industry superannuation funds (38 industry superannuation funds in 2018). It is noteworthy, however, that the asset size of these industry superannuation funds account for a significant proportion of the total superannuation fund industry. Moreover, as governance disclosures, including remuneration and the profile of directors and executives, have only been available since 1 July 2014 (under s29QB of the *SIS Act 1993*), the sample period starts from 2014 onwards. Further, CIOs of retail superannuation funds are not included in the sample because they are not only responsible for managing superannuation funds but they may also have other roles in the parent company. Consequently, the compensation of retail superannuation fund CIOs includes their compensation from other roles. Therefore, the results in this chapter may not be generalisable to retail superannuation funds – this can be examined in future research. Future research can also increase the sample size by employing longer time periods and examining corporate and public sector superannuation funds.

## CHAPTER 3 TABLES

**Table 1: Definition of variables**

Variable	Definition
<b>Dependent variables</b>	
<i>Ln Totalcomp</i>	is measured as the natural logarithm of the CIO's total compensation plus 1;
<i>Ln Cashbonus</i>	is measured as the natural logarithm of the CIO's cash bonus plus 1;
<i>Dummy Cashbonus</i>	is an indicator variable set equal to 1 if <i>Cashbonus</i> ( $\$$ ) > 0, 0 otherwise;
<i>Ln Salary</i>	is measured as the natural logarithm of the CIO's fixed salary plus 1;
<b>Independent variables</b>	
<i>EXCESS ROA</i>	is measured as the difference between a superannuation fund's <i>ROA</i> and the median <i>ROA</i> for each year;
<i>ROA</i>	is measured as net earnings after tax divided by total assets;
<i>ROR</i>	is measured as net earnings after tax divided by cash flow adjusted net assets;
<i>GOV INDEX</i>	is a measure of governance practices composed of the sum of seven individual components given 1 if: (i) <i>IND_DIR</i> $\geq$ 33rd percentile, 0 otherwise; (ii) <i>IND_CHAIR</i> equals to 1, 0 otherwise; (iii) <i>FEMALE_DIR</i> > median, 0 otherwise; (iv) <i>BUSY_DIR</i> < median, 0 otherwise; (v) <i>FINANCIAL</i> equals to 1, 0 otherwise; (vi) <i>EXPERIENCE</i> equals to 1, 0 otherwise; (vii) <i>TENURE</i> < median, 0 otherwise;
<i>GOV INDEX_med</i>	is an indicator variable set equal to 1 if <i>GOV INDEX</i> > median, 0 otherwise;
<i>IND DIR</i>	is the percentage of independent directors on the board;
<i>IND DIR 33%</i>	is an indicator variable set equal to 1 if <i>IND DIR</i> $\geq$ the 33rd percentile, 0 otherwise;
<i>IND CHAIR</i>	is an indicator variable set equal to 1 if a superannuation fund has an independent chairperson on the board, 0 otherwise;
<i>FEMALE DIR</i>	is measured as the percentage of female directors on the board;
<i>FEMALE DIR_med</i>	is an indicator variable set equal to 1 if <i>FEMALE DIR</i> > median, 0 otherwise;
<i>BUSY DIR</i>	is measured as the average number of outside directorships on ASX-listed companies held by directors;
<i>BUSY DIR Less_med</i>	is an indicator variable set equal to 1 if <i>DIR BUSY</i> < median, 0 otherwise;
<i>FINANCIAL</i>	is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification, 0 otherwise;
<i>FINANCIALI</i>	is measured as the percentage of directors with financial qualification on the board;
<i>FINANCIAL_med</i>	is an indicator variable set equal to 1 if <i>FINANCIAL</i> > median, 0 otherwise;
<i>EXPERIENCE</i>	is an indicator variable equal to 1 if a fund has at least one director with prior superannuation fund industry experience, 0 otherwise;
<i>EXPERIENCEI</i>	is measured as the percentage of directors with prior superannuation fund industry experience;
<i>EXPERIENCE_med</i>	is an indicator variable set equal to 1 if <i>EXPERIENCE</i> > median, 0 otherwise;
<i>TENURE</i>	is measured as the average director tenure (in years);
<i>TENURE_med</i>	is an indicator variable set equal to 1 if <i>TENURE</i> < median, 0 otherwise;
<i>%OUTSOURCED</i>	is measured as the percentage of investments outsourced;
<i>BSIZE</i>	is defined as the total number of directors on the board.
<i>BSIZE_med</i>	is an indicator variable set equal to 1 if <i>BSIZE</i> < median, 0 otherwise;
<b>Controls</b>	
<i>FEMALE CIO</i>	is an indicator variable equal to 1 if a CIO is female, 0 otherwise;
<i>FINANCE Qual CIO</i>	is an indicator variable equal to 1 if a CIO has a finance or an investment qualification, 0 otherwise;
<i>TENURE CIO</i>	is measured as the total number of years CIOs have been employed in a fund;
<i>TA<sub>t-1</sub></i>	is defined as the total assets at the end of the period in the previous year;
<i>Ln TA<sub>t-1</sub></i>	is measured as the natural logarithm of <i>TA<sub>t-1</sub></i> ;
<i>INV OPTIONS<sub>t-1</sub></i>	is defined as the total number of investment options in the previous year;
<i>Ln INV OPTIONS<sub>t-1</sub></i>	is measured as the natural logarithm of <i>INV OPTIONS<sub>t-1</sub></i> ;
<i>PRS AGE<sub>t-1</sub></i>	is measured as the percentage of members who are aged 50 or over in the previous year.

**Table 2: Sample selection**

	Fund level	CIO observations
Initial sample of industry superannuation funds from APRA 2018 Statistics <i>Annual Fund-level Superannuation Statistics back series</i> (from 2014 to 2018)	203	
<i>Less: Missing governance data</i>	-62	
<b>Final sample</b>	<b>141</b>	<b>147</b>

Data source: governance data is hand collected and financial data is from APRA *Annual Fund-level Superannuation Statistics back series*.

## Table 3 Panel A: Descriptive statistics of CIOs

This table displays the descriptive statistics of CIOs for the full sample throughout the sample period between 2014 and 2018.

	Mean	Median	Std.Dev.	min	max
<b>Dependent variables</b>					
<i>Totalcomp(\$)</i>	418,582	352,594	311,078	28,089	1,589,162
<i>Ln_Totalcomp</i>	12.726	12.773	0.648	10.816	14.203
<i>Cashbonus(\$)</i>	76,691	0.000	176,037	0.000	882,924
<i>Ln_Cashbonus</i>	4.212	0.000	5.603	0.000	13.509
<i>Dummy_Cashbonus</i>	0.367	0.000	0.484	0.000	1.000
<i>Salary(\$)</i>	297,010	278,779	144,854	24,923	711,350
<i>Ln_Salary</i>	12.478	12.538	0.516	10.742	13.287
<b>Independent variables</b>					
<i>EXCESS_ROA</i>	-0.002	0.000	1.053	-2.606	3.662
<i>ROA</i>	7.349	8.065	2.551	1.382	10.943
<i>ROR</i>	8.600	9.500	3.077	1.500	13.000
<i>GOV_INDEX</i>	3.721	4.000	1.281	1.000	6.000
<i>GOV_INDEX_med</i>	0.299	0.000	0.460	0.000	1.000
<i>IND_DIR</i>	0.120	0.111	0.110	0.000	0.375
<i>IND_DIR_33%</i>	0.122	0.000	0.329	0.000	1.000
<i>IND_CHAIR</i>	0.449	0.000	0.499	0.000	1.000
<i>FEMALE_DIR</i>	0.282	0.300	0.145	0.000	0.545
<i>BUSY_DIR</i>	0.185	0.111	0.203	0.000	0.889
<i>FINANCIAL</i>	0.986	1.000	0.116	0.000	1.000
<i>FINANCIAL1</i>	0.444	0.417	0.214	0.100	0.909
<i>EXPERIENCE</i>	0.741	1.000	0.439	0.000	1.000
<i>EXPERIENCE1</i>	0.226	0.222	0.193	0.000	0.692
<i>TENURE</i>	6.288	6.111	2.284	1.875	12.333
<i>BSIZE</i>	9.653	9.000	2.086	6.000	14.000
<i>BSIZE_med</i>	0.224	0.000	0.419	0.000	1.000
<i>%OUTSOURCED</i>	0.534	0.520	0.216	0.190	0.990
<b>Controls</b>					
<i>FEMALE_CIO</i>	0.177	0.000	0.383	0.000	1.000
<i>FINANCE_Qual_CIO</i>	0.592	1.000	0.493	0.000	1.000
<i>TENURE_CIO</i>	5.163	4.000	3.861	0.000	13.000
<i>TA(\$millions)</i>	14,666	7,028	17,484	1,089	71,822
<i>TA<sub>t-1</sub>(\$millions)</i>	12,808	6,176	15,240	893	63,097
<i>Ln_TA<sub>t-1</sub></i>	8.843	8.729	1.108	6.795	11.052
<i>INV_OPTIONS<sub>t-1</sub></i>	17	16	8.6	3	42
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	2.749	2.833	0.553	1.386	3.761
<i>PRS_AGE<sub>t-1</sub></i>	0.273	0.259	0.098	0.101	0.511
Observations	147				

*Totalcomp(\$)* is defined as the total compensation paid to a CIO; *Ln\_Totalcomp* is measured as the natural logarithm of *Totalcomp(\$)*; *Cashbonus(\$)* is defined as the cash bonus paid to a CIO; *Ln\_Cashbonus* is measured as the natural logarithm of *Cashbonus(\$)*; *Dummy\_Cashbonus* is an indicator variable set equal to 1 if *Cashbonus(\$)* > 0, 0 otherwise; *Salary(\$)* is defined as the fixed salary paid to a CIO; *Ln\_Salary* is measured as the natural logarithm of *Salary(\$)*; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *ROA* is measured as net earnings after tax divided by total assets; *ROR* is measured as net earnings after tax divided by cash flow adjusted net assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile, 0 otherwise; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR* ≥ the 33<sup>rd</sup> percentile, 0 otherwise; percentage of independent

directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, 0 otherwise; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile, 0 otherwise; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *TA<sub>t-1</sub>* is the total assets at the end of the period in the previous year; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *INV\_OPTIONS<sub>t-1</sub>* is the total number of investment options in the previous year; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 3 Panel B: Descriptive statistics of CIOs with and without cash bonuses**

This table displays summary statistics for the sample with and without CIO cash bonuses. The sample consists of 93 CIOs without cash bonuses, and 54 CIOs with cash bonuses.

	CIOs without Cashbonus Mean	CIOs with Cashbonus Mean	Std.Dev.	Stat diff.
<b>Dependent variables</b>				
<i>Totalcomp(\$)</i>	288,792	642,109	44,623	-353,317***
<i>Ln_Totalcomp</i>	12.469	13.169	0.095	-0.700***
<i>Cashbonus(\$)</i>	0.000	208,769	24,754	-208,769***
<i>Ln_Cashbonus</i>	0.000	11.467	0.135	-11.467***
<i>Salary(\$)</i>	255,787	368,005	23,056.	-112,218***
<i>Ln_Salary</i>	12.350	12.699	0.084	-0.350***
<b>Independent variables</b>				
<i>EXCESS_ROA</i>	-0.156	0.262	0.177	-0.418**
<i>ROA</i>	7.017	7.922	0.431	-0.905**
<i>ROR</i>	8.212	9.269	0.521	-1.057**
<i>GOV_INDEX</i>	3.753	3.667	0.220	0.086
<i>GOV_INDEX_med</i>	0.301	0.296	0.079	0.005
<i>IND_DIR</i>	0.109	0.141	0.019	-0.032*
<i>IND_DIR_33%</i>	0.075	0.204	0.055	-0.128**
<i>IND_CHAIR</i>	0.441	0.463	0.086	-0.022
<i>FEMALE_DIR</i>	0.291	0.267	0.025	0.024
<i>BUSY_DIR</i>	0.154	0.238	0.034	-0.083**
<i>FINANCIAL</i>	0.978	1.000	0.020	-0.022
<i>FINANCIAL1</i>	0.451	0.432	0.037	0.019
<i>EXPERIENCE</i>	0.677	0.852	0.074	-0.174**
<i>EXPERIENCE1</i>	0.219	0.237	0.033	-0.018
<i>TENURE</i>	6.432	6.041	0.391	0.392
<i>BSIZE</i>	10.065	8.944	0.346	1.120***
<i>BSIZE_med</i>	0.183	0.296	0.071	-0.114
<b>Controls</b>				
<i>%OUTSOURCED</i>	0.554	0.498	0.037	0.057
<i>FEMALE_CIO</i>	0.215	0.111	0.065	0.104
<i>FINANCE_Qual_CIO</i>	0.538	0.685	0.084	-0.148*
<i>TENURE_CIO</i>	5.065	5.333	0.662	-0.269
<i>TA(\$millions)</i>	9,014	24,398	2,716	-15,384***
<i>TA<sub>t-1</sub>(\$millions)</i>	8,021	21,051	2,382	-13,030***
<i>Ln_TA<sub>t-1</sub></i>	8.506	9.425	0.174	-0.919***
<i>INV_OPTIONS<sub>t-1</sub></i>	14.602	20.759	1.385	-6.157***
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	2.599	3.009	0.089	-0.410***
<i>PRS_AGE<sub>t-1</sub></i>	0.291	0.244	0.016	0.047***
Observations	93	54		

\*\*\*, \*\*, \* significance at the 1, 5 and 10 percent levels, respectively.

*Totalcomp(\$)* is defined as the total compensation paid to a CIO; *Ln\_Totalcomp* is measured as the natural logarithm of *Totalcomp(\$)*; *Cashbonus(\$)* is defined as the cash bonus paid to a CIO; *Ln\_Cashbonus* is measured as the natural logarithm of *Cashbonus(\$)*; *Salary(\$)* is defined as the fixed salary paid to a CIO; *Ln\_Salary* is measured as the natural logarithm of *Salary(\$)*; *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *ROA* is measured as net earnings after tax divided by total assets; *ROR* is measured as net earnings after tax divided by cash flow adjusted net assets;

*GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX*  $>$  the 50<sup>th</sup> percentile, 0 otherwise; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, 0 otherwise; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE*  $<$  the 50<sup>th</sup> percentile, 0 otherwise; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *TA<sub>t-1</sub>* is the total assets at the end of the period in the previous year; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *INV\_OPTIONS<sub>t-1</sub>* is the total number of investment options in the previous year; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 4: Correlation matrix

This table provides a correlation matrix for variables for the full sample included in the main results.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 <i>Ln_Totalcomp</i>		0.6133*	0.9470*	0.2934*	0.1386*	0.0626	0.1887*	-0.3474*	-0.3407*	0.0038	0.4649*	0.6554*	0.2888*	0.2279*
2 <i>Ln_Cashbonus</i>	0.5922*		0.4543*	0.2646*	0.1854*	0.0074	-0.1904*	-0.3327*	-0.1624*	0.1687*	0.1106	0.4645*	0.3464*	-0.1580*
3 <i>Ln_Salary</i>	0.9350*	0.3860*		0.3203*	0.1438*	0.0481	0.3081*	-0.2807*	-0.2981*	0.053	0.5204*	0.6087*	0.2070*	0.2750*
4 <i>EXCESS_ROA</i>	0.3074*	0.2220*	0.3044*		0.3939*	-0.0647	0.0247	0.0078	-0.1620*	0.2384*	0.3421*	0.2536*	0.0551	-0.1895*
5 <i>ROA</i>	0.1953*	0.1765*	0.1977*	0.2242*		-0.0858	0.0136	-0.0103	-0.1048	0.0962	0.1088	0.0745	-0.1278	-0.1233
6 <i>GOV_INDEX</i>	0.0479	-0.0087	0.0326	-0.0602	-0.0806		0.1398*	-0.0338	-0.0935	0.0592	-0.0597	0.2240*	0.1593*	-0.0491
7 <i>BSIZE</i>	0.1420*	-0.2219*	0.2061*	-0.0231	0.0183	0.1532*		-0.2296*	0.0345	0.0053	-0.0089	0.4287*	0.1147	0.4823*
8 <i>%OUTSOURCED</i>	-0.2593*	-0.1647*	-0.1493*	0.0454	0.0021	-0.0119	-0.3170*		0.0071	0.1186	-0.0556	-0.4934*	-0.3389*	-0.1084
9 <i>FEMALE_CIO</i>	-0.3318*	-0.1492*	-0.2978*	-0.1302	-0.0793	-0.0803	0.0516	-0.0631		0.0948	-0.3444*	-0.105	-0.0316	-0.005
10 <i>FINANCE_Qual_CIO</i>	0.0694	0.1599*	0.0764	0.2176*	0.0667	0.0354	0.0279	0.1272	0.0948		0.0111	0.1380*	0.006	-0.3087*
11 <i>TENURE_CIO</i>	0.4530*	0.0705	0.5088*	0.3206*	0.095	-0.035	-0.004	-0.017	-0.3440*	-0.0259		0.2154*	-0.0729	0.1826*
12 <i>Ln_TA<sub>t-1</sub></i>	0.6533*	0.4587*	0.5613*	0.2614*	0.0774	0.1704*	0.4179*	-0.4507*	-0.1102	0.1787*	0.2493*		0.5295*	0.1266
13 <i>Ln_INV_OPTIONS<sub>t-1</sub></i>	0.2333*	0.3616*	0.1563*	0.043	-0.0676	0.1938*	0.1431*	-0.2829*	-0.0356	0.0351	-0.1092	0.5117*		0.0255
14 <i>PRS_AGE<sub>t-1</sub></i>	0.1590*	-0.2233*	0.2143*	-0.1749*	-0.0439	-0.0403	0.4338*	-0.1510*	-0.0165	-0.3624*	0.2084*	0.0478	-0.0375	

\* significance at the 10 percent level. All variables are defined in Table 1. Spearman (above the Diagonal) and Pearson (below the Diagonal).

*Ln\_Totalcomp* is measured as the natural logarithm of *Totalcomp*(\$); *Ln\_Cashbonus* is measured as the natural logarithm of *Cashbonus*(\$); *Ln\_Salary* is measured as the natural logarithm of *Salary*(\$); *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *BSIZE* is the total number of directors on the board; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 5 Panel A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, fund performance, governance practices and investment outsourcing.

<i>VARIABLES</i>		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.727*** (131.744)	9.518*** (19.566)	12.577*** (48.976)	9.540*** (19.271)	9.614*** (19.601)	12.802*** (24.336)	9.582*** (14.493)	12.586*** (25.126)	9.889*** (16.080)
<i>EXCESS_ROA</i>	+	0.189** (2.624)	0.118* (1.786)	0.286 (1.507)	0.125 (0.792)	-0.014 (-0.070)	-0.104 (-0.401)	-0.018 (-0.085)	-0.221 (-0.922)	-0.122 (-0.663)
<i>GOV_INDEX</i>	-			0.040 (0.622)	-0.012 (-0.264)	0.012 (0.287)	0.045 (0.734)	0.012 (0.292)	0.037 (0.604)	0.002 (0.043)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-0.026 (-0.611)	-0.002 (-0.074)	-0.024 (-0.638)	-0.051 (-1.044)	-0.024 (-0.641)	-0.046 (-1.041)	-0.022 (-0.580)
<i>BSIZE</i>	+					-0.088*** (-3.044)	0.013 (0.321)	-0.088*** (-3.044)	0.013 (0.366)	-0.066** (-2.113)
<i>BSIZE*EXCESS_ROA</i>	-					0.022 (0.786)	0.050 (1.344)	0.022 (0.780)	0.053 (1.571)	0.028 (0.989)
<i>%OUTSOURCED</i>	-						-0.702 (-1.484)	0.023 (0.066)	-0.707 (-1.651)	-0.068 (-0.209)
<i>FEMALE_CIO</i>	?								-0.340* (-1.991)	-0.297* (-1.876)
<i>FINANCE_Qual_CIO</i>	+								0.078 (0.519)	0.035 (0.292)
<i>TENURE_CIO</i>	+								0.055*** (2.998)	0.027 (1.541)
<i>Ln_TA<sub>t-1</sub></i>	+		0.376*** (4.833)		0.378*** (4.848)	0.431*** (4.819)		0.433*** (4.719)		0.364*** (3.832)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.116 (-1.115)		-0.112 (-1.021)	-0.109 (-1.129)		-0.108 (-1.121)		-0.040 (-0.334)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.939 (1.218)		0.931 (1.153)	1.766* (1.907)		1.769* (1.895)		1.326 (1.418)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0134	0.000	0.0951	0.0001	0.000	0.0462	0.0000	0.0007	0.0000
Adjusted R-squared		0.0882	0.472	0.0834	0.465	0.516	0.174	0.513	0.362	0.567

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 5 Panel B: Cash bonus, *EXCESS\_ROA* and governance practices

This table provides evidence on the association between CIOs cash bonus, fund performance, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-3.046 (-0.920)	-40.434*** (-2.683)	-3.848 (-0.580)	-39.104** (-2.578)	-35.532** (-2.562)	27.221** (2.473)	-36.322** (-2.088)	29.561** (2.257)	-37.066* (-1.800)
<i>EXCESS_ROA</i>	+	2.818** (2.044)	1.635 (1.142)	5.683 (1.407)	2.501 (0.782)	2.614 (0.510)	3.429 (0.534)	2.573 (0.479)	3.712 (0.548)	4.644 (0.856)
<i>GOV_INDEX</i>	-		0.196 (0.129)	-0.988 (-0.794)	-0.051 (-0.049)	1.070 (0.749)	-0.052 (-0.050)	0.731 (0.499)	-0.243 (-0.163)	-0.243 (-0.819)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-0.777 (-0.818)	-0.297 (-0.392)	-0.884 (-1.154)	-1.438 (-1.402)	-0.889 (-1.151)	-1.163 (-1.248)	-0.819 (-1.096)
<i>BSIZE</i>	+					-2.993*** (-3.687)	-2.645*** (-3.285)	-2.988*** (-3.685)	-2.797*** (-3.356)	-3.214*** (-4.190)
<i>BSIZE*EXCESS_ROA</i>	-					0.198 (0.342)	0.514 (0.732)	0.203 (0.337)	0.374 (0.526)	-0.025 (-0.044)
<i>%OUTSOURCED</i>	-						-16.735 (-1.617)	0.457 (0.056)	-17.714* (-1.804)	0.263 (0.030)
<i>FEMALE_CIO</i>	?								-5.758* (-1.820)	-3.281 (-1.243)
<i>FINANCE_Qual_CIO</i>	+								4.555 (1.107)	2.793 (0.850)
<i>TENURE_CIO</i>	+								-0.186 (-0.422)	-0.476 (-1.268)
<i>Ln_TA<sub>t-1</sub></i>	+		3.332* (1.920)		3.463** (2.042)	5.888*** (3.638)		5.932*** (3.205)		6.367*** (2.960)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.096** (1.980)		7.508* (1.940)	4.595 (1.514)		4.628 (1.624)		4.168 (1.482)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.036* (-1.815)		-35.439* (-1.747)	-3.044 (-0.166)		-2.852 (-0.157)		7.960 (0.397)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0427	0.000	0.225	0.000	0.000	0.00381	0.000	0.000	0.000
Log likelihood		-267.6	-242.8	-267.2	-241.7	-228.2	-256.4	-228.2	-248.8	-225.7
Pseudo R2		0.0113	0.103	0.0130	0.107	0.157	0.0529	0.157	0.0808	0.166

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 5 Panel C: Salary, *EXCESS\_ROA* and governance practices

This table provides evidence on the association between CIOs salary, fund performance, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.479*** (181.967)	10.263*** (31.551)	12.395*** (60.723)	10.274*** (30.465)	10.333*** (28.735)	12.124*** (33.184)	9.949*** (18.719)	11.851*** (37.660)	10.194*** (24.321)
<i>EXCESS_ROA</i>	+	0.149** (2.664)	0.111* (2.037)	0.179 (1.131)	0.082 (0.618)	-0.053 (-0.276)	-0.166 (-0.779)	-0.091 (-0.496)	-0.271 (-1.447)	-0.212 (-1.254)
<i>GOV_INDEX</i>	-			0.022 (0.458)	-0.008 (-0.222)	0.005 (0.136)	0.019 (0.415)	-0.000 (-0.005)	0.015 (0.356)	-0.006 (-0.152)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-0.008 (-0.228)	0.007 (0.276)	-0.007 (-0.188)	-0.023 (-0.592)	-0.004 (-0.125)	-0.021 (-0.575)	-0.007 (-0.205)
<i>BFSIZE</i>	+					-0.038 (-1.344)	0.040 (1.268)	-0.034 (-1.298)	0.039 (1.529)	-0.010 (-0.362)
<i>BFSIZE*EXCESS_ROA</i>	-					0.019 (0.688)	0.042 (1.264)	0.022 (0.777)	0.045 (1.470)	0.031 (1.039)
<i>%OUTSOURCED</i>	-						-0.199 (-0.637)	0.276 (1.074)	-0.182 (-0.677)	0.210 (0.933)
<i>FEMALE_CIO</i>	?								-0.192 (-1.221)	-0.165 (-1.063)
<i>FINANCE_Qual_CIO</i>	+								0.038 (0.357)	0.017 (0.173)
<i>TENURE_CIO</i>	+								0.055*** (3.908)	0.038** (2.683)
<i>Ln_TA<sub>t-1</sub></i>	+		0.259*** (5.189)		0.261*** (5.358)	0.276*** (4.643)		0.297*** (4.532)		0.219*** (3.362)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.130 (-1.599)		-0.129 (-1.492)	-0.116 (-1.395)		-0.103 (-1.272)		-0.013 (-0.128)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.040* (2.028)		1.022* (1.923)	1.393** (2.216)		1.427** (2.320)		0.865 (1.492)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0121	0.000	0.0631	0.000	0.000	0.0128	0.000	0.000	0.000
Adjusted R-squared		0.0864	0.399	0.0768	0.391	0.403	0.143	0.409	0.373	0.489

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BFSIZE* is the total number of directors on the board; *BFSIZE\*EXCESS\_ROA* is an interaction term between *BFSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Table 6 Panel A: Total compensation, *EXCESS\_ROA* and each governance variable

This table provides evidence on the association between CIOs total compensation, fund performance, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		9.868*** (16.736)	9.835*** (15.751)	9.851*** (16.739)	9.812*** (16.521)	9.858*** (17.097)	9.809*** (16.320)	9.908*** (16.304)	9.809*** (15.360)	10.039*** (15.356)
<i>EXCESS_ROA</i>	+	-0.161 (-0.813)	-0.153 (-0.742)	-0.163 (-0.816)	-0.143 (-0.727)	-0.155 (-0.729)	-0.074 (-0.355)	-0.138 (-0.718)	-0.157 (-0.771)	-0.348 (-1.021)
<i>IND_DIR</i>	-	-0.013 (-0.025)								
<i>IND_DIR*EXCESS_ROA</i>	+	0.040 (0.103)								
<i>IND_DIR_33%</i>	-		-0.031 (-0.134)							
<i>IND_DIR_33%*EXCESS_ROA</i>	+		-0.038 (-0.239)							
<i>IND_CHAIR</i>	-			0.012 (0.100)						
<i>IND_CHAIR*EXCESS_ROA</i>	+			0.038 (0.370)						
<i>FEMALE_DIR</i>	-				-0.316 (-0.677)					
<i>FEMALE_DIR*EXCESS_ROA</i>	+				-0.446 (-1.307)					
<i>BUSY_DIR</i>	+					-0.220 (-0.631)				
<i>BUSY_DIR*EXCESS_ROA</i>	-					0.122 (0.506)				
<i>FINANCIAL1</i>	-						-0.070 (-0.253)			
<i>FINANCIAL1*EXCESS_ROA</i>	+						-0.240 (-1.202)			
<i>EXPERIENCE</i>	-							0.107 (1.073)		
<i>EXPERIENCE*EXCESS_ROA</i>	+							-0.055 (-0.470)		
<i>EXPERIENCE1</i>	-								-0.214 (-0.652)	
<i>EXPERIENCE1*EXCESS_ROA</i>	+								-0.104 (-0.348)	
<i>TENURE</i>	+									-0.020 (-0.642)
<i>TENURE*EXCESS_ROA</i>	-									0.015 (0.789)
<i>BSIZE</i>	+	-0.064** (-2.156)	-0.064** (-2.052)	-0.065** (-2.089)	-0.056 (-1.654)	-0.062** (-2.262)	-0.058* (-1.882)	-0.061** (-2.235)	-0.063** (-2.072)	-0.067** (-2.274)
<i>BSIZE*EXCESS_ROA</i>	-	0.024 (1.015)	0.024 (1.032)	0.022 (0.925)	0.035 (1.309)	0.021 (0.914)	0.026 (1.241)	0.027 (1.127)	0.025 (0.995)	0.034 (1.250)
<i>%OUTSOURCED</i>	-	-0.058 (-0.181)	-0.038 (-0.118)	-0.051 (-0.166)	-0.023 (-0.078)	-0.060 (-0.185)	0.027 (0.084)	-0.086 (-0.262)	-0.046 (-0.142)	0.006 (0.017)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.565	0.566	0.566	0.574	0.570	0.572	0.571	0.568	0.572

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA* is the interaction term between *IND\_DIR* and *EXCESS\_ROA*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*EXCESS\_ROA* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA* is the interaction term between *TENURE* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 6 Panel B: Cash bonus, *EXCESS\_ROA* and each governance variable**

This table provides evidence on the association between CIOs cash bonus, fund performance, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		-35.949* (-1.798)	-38.864* (-1.798)	-38.626** (-2.076)	-37.297* (-1.953)	-35.871** (-2.010)	-34.828* (-1.731)	-40.356** (-2.189)	-35.993* (-1.807)	-30.605 (-1.597)
<i>EXCESS_ROA</i>	+	3.883 (0.721)	4.307 (0.790)	3.710 (0.695)	4.815 (0.936)	4.448 (0.854)	2.619 (0.490)	4.719 (0.945)	4.057 (0.759)	-5.776 (-0.615)
<i>IND_DIR</i>	-	-1.633 (-0.141)								
<i>IND_DIR*EXCESS_ROA</i>	+	0.976 (0.115)								
<i>IND_DIR_33%</i>	-		-3.358 (-0.869)							
<i>IND_DIR_33%*EXCESS_ROA</i>	+		0.596 (0.187)							
<i>IND_CHAIR</i>	-			1.709 (0.564)						
<i>IND_CHAIR*EXCESS_ROA</i>	+			-1.765 (-0.827)						
<i>FEMALE_DIR</i>	-				-8.330 (-0.765)					
<i>FEMALE_DIR*EXCESS_ROA</i>	+				-14.196 (-1.561)					
<i>BUSY_DIR</i>	+					13.589** (2.424)				
<i>BUSY_DIR*EXCESS_ROA</i>	-					-6.700 (-1.282)				
<i>FINANCIALI</i>	-						-9.193 (-1.274)			
<i>FINANCIALI*EXCESS_ROA</i>	+						4.773 (1.031)			
<i>EXPERIENCE</i>	-							6.433** (2.044)		
<i>EXPERIENCE*EXCESS_ROA</i>	+							-2.899 (-1.400)		
<i>EXPERIENCE1</i>	-								0.685 (0.088)	
<i>EXPERIENCE1*EXCESS_ROA</i>	+								-2.821 (-0.548)	
<i>TENURE</i>	+									-0.405 (-0.591)
<i>TENURE*EXCESS_ROA</i>	-									0.836* (1.741)
<i>BFSIZE</i>	+	-3.149*** (-4.403)	-3.209*** (-4.583)	-3.262*** (-4.325)	-2.955*** (-3.281)	-3.210*** (-4.285)	-2.840*** (-3.748)	-3.226*** (-4.004)	-3.156*** (-4.353)	-3.247*** (-4.038)
<i>BFSIZE*EXCESS_ROA</i>	-	-0.269 (-0.437)	-0.309 (-0.547)	-0.135 (-0.233)	0.073 (0.113)	-0.160 (-0.246)	-0.333 (-0.634)	-0.043 (-0.066)	-0.206 (-0.382)	0.244 (0.338)
<i>%OUTSOURCED</i>	-	-0.401 (-0.046)	0.121 (0.013)	-0.071 (-0.009)	0.569 (0.072)	-1.516 (-0.196)	-0.558 (-0.063)	1.464 (0.186)	-0.262 (-0.031)	-0.405 (-0.049)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-226.8	-226	-226.1	-224.9	-222.3	-224.5	-224.1	-226.6	-224.7
Pseudo R2		0.162	0.165	0.165	0.169	0.179	0.171	0.172	0.163	0.170

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA* is the interaction term between *IND\_DIR* and *EXCESS\_ROA*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA*; *FEMALE\_DIR* is the percentage of female directors on the board;

*FEMALE\_DIR\*EXCESS\_ROA* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA* is the interaction term between *TENURE* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table 6 Panel C: Salary, *EXCESS\_ROA* and each governance variable**

This table provides evidence on the association between CIOs salary, fund performance, governance variables and investment outsourcing.

VARIABLES	Pred. Sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		10.228*** (24.091)	10.147*** (23.089)	10.147*** (24.740)	10.086*** (25.294)	10.173*** (26.092)	10.071*** (25.895)	10.258*** (23.186)	10.185*** (21.843)	10.269*** (24.190)
<i>EXCESS_ROA</i>	+	-0.248 (-1.281)	-0.219 (-1.085)	-0.225 (-1.164)	-0.217 (-1.124)	-0.222 (-1.078)	-0.129 (-0.673)	-0.198 (-1.037)	-0.224 (-1.146)	-0.319 (-1.203)
<i>IND_DIR</i>	-	-0.346 (-0.929)								
<i>IND_DIR*EXCESS_ROA</i>	+	0.255 (0.725)								
<i>IND_DIR_33%</i>	-		-0.088 (-0.620)							
<i>IND_DIR_33%*EXCESS_ROA</i>	+		0.044 (0.356)							
<i>IND_CHAIR</i>	-			0.041 (0.440)						
<i>IND_CHAIR*EXCESS_ROA</i>	+			0.034 (0.366)						
<i>FEMALE_DIR</i>	-				-0.386 (-1.199)					
<i>FEMALE_DIR*EXCESS_ROA</i>	+				-0.272 (-1.086)					
<i>BUSY_DIR</i>	+					-0.195 (-0.633)				
<i>BUSY_DIR*EXCESS_ROA</i>	-					0.144 (0.742)				
<i>FINANCIALI</i>	-						0.188 (0.926)			
<i>FINANCIALI*EXCESS_ROA</i>	+						-0.301* (-1.813)			
<i>EXPERIENCE</i>	-							0.050 (0.532)		
<i>EXPERIENCE*EXCESS_ROA</i>	+							-0.075 (-0.653)		
<i>EXPERIENCE1</i>	-								-0.184 (-0.772)	
<i>EXPERIENCE1*EXCESS_ROA</i>	+								-0.230 (-0.756)	
<i>TENURE</i>	+									-0.010 (-0.487)
<i>TENURE*EXCESS_ROA</i>	-									0.007 (0.633)
<i>BSIZE</i>	+	-0.009 (-0.385)	-0.013 (-0.524)	-0.011 (-0.438)	0.002 (0.070)	-0.008 (-0.349)	-0.012 (-0.483)	-0.008 (-0.345)	-0.007 (-0.297)	-0.011 (-0.447)
<i>BSIZE*EXCESS_ROA</i>	-	0.028 (1.193)	0.028 (1.200)	0.028 (1.084)	0.037 (1.390)	0.027 (1.104)	0.033 (1.694)	0.033 (1.347)	0.033 (1.376)	0.035 (1.384)
<i>%OUTSOURCED</i>	-	0.198 (0.848)	0.199 (0.795)	0.211 (0.963)	0.262 (1.254)	0.208 (0.884)	0.307 (1.364)	0.167 (0.687)	0.210 (0.896)	0.241 (1.015)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.496	0.491	0.492	0.498	0.496	0.506	0.495	0.496	0.491

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA* is the interaction term between *IND\_DIR* and *EXCESS\_ROA*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR* ≥ the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA*; *FEMALE\_DIR* is the percentage of female directors on the board;

*FEMALE\_DIR\*EXCESS\_ROA* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA* is the interaction term between *TENURE* and *EXCESS\_ROA*; *BFSIZE* is the total number of directors on the board; *BFSIZE\*EXCESS\_ROA* is an interaction term between *BFSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

# APPENDICES

## Appendix A1 Alternative measures of performance

**Table A1.1A: Total compensation, *ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.362*** (56.430)	8.328*** (10.894)	11.746*** (15.918)	7.942*** (6.913)	8.436*** (8.486)	12.571*** (14.270)	8.433*** (7.756)	11.692*** (14.508)	9.342*** (10.095)
<i>ROA</i>	+	0.050* (1.963)	0.118* (1.786)	0.114 (1.411)	0.171 (1.463)	0.111 (1.115)	0.033 (0.343)	0.111 (1.139)	0.081 (0.834)	0.045 (0.530)
<i>GOV_INDEX</i>	-			0.159 (1.039)	0.097 (0.643)	0.097 (0.728)	0.182 (1.248)	0.097 (0.746)	0.143 (1.311)	0.079 (0.671)
<i>GOV_INDEX*ROA</i>	+			-0.017 (-1.006)	-0.014 (-0.868)	-0.012 (-0.808)	-0.021 (-1.457)	-0.012 (-0.815)	-0.017 (-1.379)	-0.012 (-0.830)
<i>BSIZE</i>	+					-0.120 (-1.269)	-0.056 (-0.500)	-0.120 (-1.263)	-0.063 (-0.674)	-0.119 (-1.338)
<i>BSIZE*ROA</i>	-					0.005 (0.447)	0.010 (0.834)	0.005 (0.443)	0.011 (1.076)	0.007 (0.754)
<i>%OUTSOURCED</i>	-						-0.718 (-1.379)	0.003 (0.008)	-0.771* (-1.868)	-0.094 (-0.295)
<i>FEMALE_CIO</i>	?								-0.385** (-2.425)	-0.324** (-2.254)
<i>FINANCE_Qual_CIO</i>	+								0.090 (0.618)	0.038 (0.320)
<i>TENURE_CIO</i>	+								0.051*** (2.746)	0.023 (1.383)
<i>Ln_TA<sub>t-1</sub></i>	+		0.376*** (4.833)		0.376*** (4.782)	0.443*** (5.287)		0.443*** (5.057)		0.381*** (4.232)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.116 (-1.115)		-0.114 (-1.046)	-0.131 (-1.466)		-0.131 (-1.498)		-0.073 (-0.695)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.939 (1.218)		0.986 (1.222)	1.746* (1.911)		1.746* (1.898)		1.353 (1.448)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0587	0.000	0.258	0.0002	0.0001	0.168	0.000	0.000	0.000
Adjusted R-squared		0.0315	0.472	0.0283	0.470	0.515	0.0910	0.512	0.343	0.566

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1B: Cash bonus, *ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *ROA*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-11.232** (-2.268)	-56.959*** (-2.682)	-26.629* (-1.881)	-59.580** (-2.481)	-47.397** (-1.984)	14.168 (0.752)	-47.635** (-2.298)	-6.956 (-0.279)	-53.598** (-2.538)
<i>ROA</i>	+	1.102*** (2.931)	1.635 (1.142)	3.064** (2.459)	2.231 (1.177)	1.219 (0.571)	1.711 (0.868)	1.208 (0.509)	3.845 (1.304)	1.973 (0.869)
<i>GOV_INDEX</i>	-			3.935 (1.304)	0.557 (0.227)	0.846 (0.335)	4.217 (1.401)	0.843 (0.330)	3.587 (1.412)	1.332 (0.548)
<i>GOV_INDEX*ROA</i>	+			-0.505* (-1.796)	-0.208 (-0.885)	-0.161 (-0.598)	-0.462 (-1.526)	-0.161 (-0.594)	-0.429 (-1.445)	-0.242 (-0.917)
<i>BSIZE</i>	+					-3.320** (-2.009)	-3.544** (-2.277)	-3.320** (-2.009)	-3.279** (-2.350)	-3.382** (-1.990)
<i>BSIZE*ROA</i>	-					0.060 (0.422)	0.136 (0.836)	0.061 (0.410)	0.088 (0.519)	0.044 (0.296)
<i>%OUTSOURCED</i>	-						-16.179 (-1.491)	0.192 (0.024)	-18.039* (-1.897)	0.054 (0.006)
<i>FEMALE_CIO</i>	?								-6.652** (-2.053)	-3.845 (-1.404)
<i>FINANCE_Qual_CIO</i>	+								4.420 (1.067)	2.117 (0.650)
<i>TENURE_CIO</i>	+								-0.262 (-0.573)	-0.496 (-1.361)
<i>Ln_TA<sub>t-1</sub></i>	+		3.332* (1.920)		3.467** (2.027)	5.915*** (3.631)		5.934*** (3.121)		6.219*** (2.953)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.096** (1.980)		7.437* (1.928)	4.475 (1.423)		4.486 (1.510)		4.103 (1.459)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.036* (-1.815)		-34.933* (-1.720)	-4.395 (-0.232)		-4.318 (-0.231)		4.973 (0.242)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.00392	0.000	0.0125	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-268.3	-242.8	-267.6	-241.6	-228.9	-258	-228.9	-249.1	-226.3
Pseudo R2		0.00884	0.103	0.0114	0.107	0.155	0.0468	0.155	0.0798	0.164

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1C: Salary, *ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *ROA*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.184*** (62.067)	9.144*** (14.944)	11.849*** (17.444)	8.886*** (8.851)	9.250*** (11.416)	12.134*** (16.192)	9.050*** (9.779)	11.444*** (18.472)	9.962*** (12.701)
<i>ROA</i>	+	0.040* (1.748)	0.111* (2.037)	0.074 (0.983)	0.146 (1.392)	0.100 (1.254)	0.001 (0.015)	0.083 (1.091)	0.028 (0.379)	0.008 (0.120)
<i>GOV_INDEX</i>	-			0.086 (0.634)	0.065 (0.480)	0.065 (0.508)	-0.097 (-0.723)	0.051 (0.404)	0.062 (0.589)	-0.025 (-0.210)
<i>GOV_INDEX*ROA</i>	+			-0.009 (-0.580)	-0.009 (-0.602)	-0.009 (-0.580)	-0.012 (-0.884)	-0.007 (-0.498)	-0.008 (-0.672)	-0.005 (-0.360)
<i>BSIZE</i>	+					-0.067 (-0.704)	-0.022 (-0.207)	-0.058 (-0.720)	-0.025 (-0.278)	-0.062 (-0.673)
<i>BSIZE*ROA</i>	-					0.004 (0.393)	0.009 (0.758)	0.005 (0.439)	0.009 (0.898)	0.007 (0.689)
<i>%OUTSOURCED</i>	-						-0.219 (-0.627)	0.250 (0.941)	-0.242 (-0.947)	0.176 (0.770)
<i>FEMALE_CIO</i>	?								-0.220 (-1.571)	-0.183 (-1.344)
<i>FINANCE_Qual_CIO</i>	+								0.053 (0.532)	0.027 (0.274)
<i>TENURE_CIO</i>	+								0.052*** (3.864)	0.034** (2.743)
<i>Ln_TA<sub>t-1</sub></i>	+		0.259*** (5.189)		0.259*** (5.279)	0.286*** (5.253)		0.306*** (4.847)		0.236*** (3.825)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.130 (-1.599)		-0.130 (-1.501)	-0.133* (-1.708)		-0.123 (-1.672)		-0.045 (-0.510)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.040* (2.028)		1.073* (1.994)	1.402** (2.250)		1.435** (2.328)		0.914 (1.493)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0903	0.000	0.280	0.000	0.000	0.130	0.000	0.000	0.000
Adjusted R-squared		0.0325	0.399	0.0240	0.393	0.402	0.0637	0.406	0.350	0.480

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1D: Total compensation, ROA and each governance variable**

This table provides evidence on the association between CIOs total compensation, ROA, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		10.088*** (10.066)	9.810*** (10.963)	9.593*** (10.636)	9.504*** (10.606)	9.684*** (10.349)	9.512*** (10.661)	9.098*** (8.750)	9.541*** (11.270)	9.709*** (9.579)
<i>ROA</i>	+	-0.055 (-0.551)	-0.028 (-0.317)	0.007 (0.084)	0.011 (0.121)	-0.013 (-0.144)	0.018 (0.214)	0.078 (0.869)	0.011 (0.159)	0.010 (0.103)
<i>IND_DIR</i>	-	-1.683 (-1.685)								
<i>IND_DIR*ROA</i>	+	0.224 (1.689)								
<i>IND_DIR_33%</i>	-		-0.488* (-1.872)							
<i>IND_DIR_33%*ROA</i>	+		0.056 (1.671)							
<i>IND_CHAIR</i>	-			0.041 (0.136)						
<i>IND_CHAIR*ROA</i>	+			-0.003 (-0.097)						
<i>FEMALE_DIR</i>	-				0.513 (0.558)					
<i>FEMALE_DIR*ROA</i>	+				-0.108 (-1.049)					
<i>BUSY_DIR</i>	+					-1.189 (-1.269)				
<i>BUSY_DIR*ROA</i>	-					0.130 (1.343)				
<i>FINANCIAL1</i>	-						0.468 (0.830)			
<i>FINANCIAL1*ROA</i>	+						-0.077 (-1.238)			
<i>EXPERIENCE</i>	-							0.515 (1.052)		
<i>EXPERIENCE*ROA</i>	+							-0.056 (-0.942)		
<i>EXPERIENCE1</i>	-								0.586 (0.504)	
<i>EXPERIENCE1*ROA</i>	+								-0.110 (-0.858)	
<i>TENURE</i>	+									-0.010 (-0.160)
<i>TENURE*ROA</i>	-									-0.001 (-0.184)
<i>BSIZE</i>	+	-0.143 (-1.576)	-0.142 (-1.567)	-0.117 (-1.374)	-0.129 (-1.340)	-0.111 (-1.428)	-0.127 (-1.326)	-0.092 (-1.439)	-0.119 (-1.442)	-0.121 (-1.369)
<i>BSIZE*ROA</i>	-	0.010 (0.974)	0.010 (0.960)	0.007 (0.725)	0.010 (0.929)	0.006 (0.698)	0.009 (0.857)	0.005 (0.612)	0.008 (0.883)	0.007 (0.732)
<i>%OUTSOURCED</i>	-	-0.069 (-0.220)	-0.082 (-0.258)	-0.086 (-0.272)	-0.049 (-0.163)	-0.057 (-0.177)	-0.068 (-0.212)	-0.125 (-0.380)	-0.073 (-0.224)	-0.026 (-0.076)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.574	0.569	0.563	0.568	0.577	0.567	0.575	0.573	0.566

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_DIR\*ROA is the interaction term between IND\_DIR and ROA; IND\_DIR\_33% is an indicator variable set equal to 1 if IND\_DIR ≥ the 33<sup>rd</sup> percentile, 0 otherwise; IND\_DIR\_33%\*ROA is the interaction term between IND\_DIR\_33% and ROA; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; IND\_CHAIR\*ROA is the interaction term between IND\_CHAIR and ROA; FEMALE\_DIR is the percentage of female directors on the board; FEMALE\_DIR\*ROA is the interaction term between FEMALE\_DIR and ROA; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; BUSY\_DIR\*ROA is the interaction term between BUSY\_DIR and ROA; FINANCIAL1 is the percentage of directors with financial qualification on the board; FINANCIAL1\*ROA is the interaction term between FINANCIAL1 and ROA; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; EXPERIENCE\*ROA is the interaction term between EXPERIENCE and ROA; EXPERIENCE1 is the percentage of directors with prior superannuation fund industry experience; EXPERIENCE1\*ROA is the interaction term between EXPERIENCE1 and ROA; TENURE is the average director tenure; TENURE\*ROA is the interaction term between TENURE and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1E: Cash bonus, ROA and each governance variable**

This table provides evidence on the association between CIOs cash bonus, ROA, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
Constant		-44.521* (-1.901)	-45.623* (-1.952)	-51.694** (-2.562)	-56.883*** (-2.954)	-47.379** (-2.205)	-47.064* (-1.970)	-57.756*** (-2.721)	-43.846* (-1.887)	-35.930 (-1.367)
ROA	+	0.746 (0.393)	0.483 (0.264)	1.515 (0.833)	2.009 (1.354)	1.367 (0.833)	1.086 (0.587)	1.926 (0.977)	0.717 (0.321)	0.009 (0.004)
IND_DIR	-	-10.155 (-0.471)								
IND_DIR*ROA	+	1.098 (0.436)								
IND_DIR_33%	-		-11.155* (-1.928)							
IND_DIR_33%*ROA	+		1.063* (1.736)							
IND_CHAIR	-			4.327 (0.704)						
IND_CHAIR*ROA	+			-0.404 (-0.708)						
FEMALE_DIR	-				31.733 (1.252)					
FEMALE_DIR*ROA	+				-5.413* (-1.876)					
BUSY_DIR	+					34.154*** (2.737)				
BUSY_DIR*ROA	-					-2.730* (-1.927)				
FINANCIAL1	-						-12.047 (-0.791)			
FINANCIAL1*ROA	+						0.536 (0.374)			
EXPERIENCE	-							6.339 (1.237)		
EXPERIENCE*ROA	+							-0.156 (-0.234)		
EXPERIENCE1	-								-11.500 (-0.695)	
EXPERIENCE1*ROA	+								1.641 (1.065)	
TENURE	+									-1.444 (-0.877)
TENURE*ROA	-									0.156 (1.043)
BSIZE	+	-3.621** (-2.254)	-3.885** (-2.380)	-3.415** (-2.033)	-3.799** (-2.081)	-3.870** (-2.137)	-2.909* (-1.850)	-3.214* (-1.815)	-3.478** (-2.020)	-3.669** (-2.090)
BSIZE*ROA	-	0.061 (0.431)	0.086 (0.610)	0.029 (0.194)	0.134 (0.853)	0.079 (0.492)	0.018 (0.135)	0.011 (0.070)	0.039 (0.255)	0.070 (0.456)
%OUTSOURCED	-	0.024 (0.003)	0.606 (0.069)	-0.217 (-0.027)	0.943 (0.124)	-2.128 (-0.285)	1.176 (0.141)	1.635 (0.215)	-0.090 (-0.011)	0.103 (0.012)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-226.9	-225.6	-226.6	-224.8	-222.9	-225.4	-225	-226.7	-226.2
Pseudo R2		0.162	0.167	0.163	0.170	0.177	0.167	0.169	0.163	0.164

The Tobit regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL1 = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_DIR\*ROA is the interaction term between IND\_DIR and ROA; IND\_DIR\_33% is an indicator variable set equal to 1 if IND\_DIR ≥ the 33<sup>rd</sup> percentile, 0 otherwise; IND\_DIR\_33%\*ROA is the interaction term between IND\_DIR\_33% and ROA; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; IND\_CHAIR\*ROA is the interaction term between IND\_CHAIR and ROA; FEMALE\_DIR is the percentage of female directors on the board; FEMALE\_DIR\*ROA is the interaction term between FEMALE\_DIR and ROA; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; BUSY\_DIR\*ROA is the interaction term between BUSY\_DIR and ROA; FINANCIAL1 is the percentage of directors with financial qualification on the board; FINANCIAL1\*ROA is the interaction term between FINANCIAL1 and ROA; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; EXPERIENCE\*ROA is the interaction term between EXPERIENCE and ROA; EXPERIENCE1 is the percentage of directors with prior superannuation fund industry experience; EXPERIENCE1\*ROA is the interaction term between EXPERIENCE1 and ROA; TENURE is the average director tenure; TENURE\*ROA is the interaction term between TENURE and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.1F: Salary, *ROA* and each governance variable**

This table provides evidence on the association between CIOs salary, *ROA*, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sogm	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		10.706*** (12.064)	10.286*** (13.622)	9.934*** (12.605)	9.923*** (12.805)	10.104*** (12.895)	9.858*** (13.438)	9.503*** (10.234)	9.866*** (13.437)	9.644*** (12.115)
<i>ROA</i>	+	-0.089 (-0.966)	-0.048 (-0.625)	0.004 (0.054)	-0.005 (-0.061)	-0.023 (-0.268)	0.011 (0.148)	0.074 (0.910)	0.017 (0.276)	0.052 (0.640)
<i>IND_DIR</i>	-	-2.355** (-2.528)								
<i>IND_DIR*ROA</i>	+	0.278** (2.321)								
<i>IND_DIR_33%</i>	-		-0.662*** (-3.935)							
<i>IND_DIR_33%*ROA</i>	+		0.075*** (2.799)							
<i>IND_CHAIR</i>	-			0.115 (0.420)						
<i>IND_CHAIR*ROA</i>	+			-0.009 (-0.283)						
<i>FEMALE_DIR</i>	-				-0.086 (-0.112)					
<i>FEMALE_DIR*ROA</i>	+				-0.036 (-0.427)					
<i>BUSY_DIR</i>	+					-1.140 (-1.304)				
<i>BUSY_DIR*ROA</i>	-					0.128 (1.428)				
<i>FINANCIAL1</i>	-						0.801 (1.494)			
<i>FINANCIAL1*ROA</i>	+						-0.088 (-1.450)			
<i>EXPERIENCE</i>	-							0.549 (1.121)		
<i>EXPERIENCE*ROA</i>	+							-0.068 (-1.165)		
<i>EXPERIENCE1</i>	-								0.962 (0.893)	
<i>EXPERIENCE1*ROA</i>	+								-0.153 (-1.241)	
<i>TENURE</i>	+									0.041 (0.817)
<i>TENURE*ROA</i>	-									-0.007 (-1.262)
<i>BSIZE</i>	+	-0.098 (-1.117)	-0.094 (-1.034)	-0.059 (-0.678)	-0.058 (-0.601)	-0.054 (-0.686)	-0.082 (-0.892)	-0.036 (-0.549)	-0.060 (-0.764)	-0.045 (-0.524)
<i>BSIZE*ROA</i>	-	0.011 (1.090)	0.010 (0.980)	0.006 (0.632)	0.008 (0.746)	0.006 (0.643)	0.009 (0.870)	0.004 (0.567)	0.007 (0.880)	0.005 (0.478)
<i>%OUTSOURCED</i>	-	0.187 (0.788)	0.176 (0.740)	0.165 (0.716)	0.229 (1.057)	0.201 (0.830)	0.184 (0.802)	0.123 (0.495)	0.174 (0.730)	0.213 (0.857)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.510	0.499	0.481	0.485	0.499	0.489	0.499	0.502	0.486

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*ROA* is the interaction term between *IND\_DIR* and *ROA*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*ROA* is the interaction term between *IND\_DIR\_33%* and *ROA*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*ROA* is the interaction term between *IND\_CHAIR* and *ROA*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*ROA* is the interaction term between *FEMALE\_DIR* and *ROA*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*ROA* is the interaction term between *BUSY\_DIR* and *ROA*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*ROA* is the interaction term between *FINANCIAL1* and *ROA*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*ROA* is the interaction term between *EXPERIENCE* and *ROA*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*ROA* is the interaction term between *EXPERIENCE1* and *ROA*; *TENURE* is the average director tenure; *TENURE\*ROA* is the interaction term between *TENURE* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2A: Total compensation, ROR and governance practices**

This table provides evidence on the association between CIOs total compensation, ROR, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.389*** (57.275)	8.602*** (11.111)	11.867*** (16.602)	8.266*** (7.139)	8.840*** (9.569)	12.779*** (14.462)	8.824*** (8.423)	11.673*** (14.931)	9.629*** (11.049)
<i>ROR</i>	+	0.039* (1.859)	0.076 (1.284)	0.085 (1.285)	0.117 (1.142)	0.057 (0.735)	0.007 (0.084)	0.056 (0.750)	0.067 (0.891)	0.014 (0.213)
<i>GOV_INDEX</i>	-			0.135 (0.910)	0.077 (0.530)	0.070 (0.557)	0.157 (1.085)	0.069 (0.558)	0.114 (1.101)	0.052 (0.482)
<i>GOV_INDEX*ROR</i>	+			-0.012 (-0.886)	-0.011 (-0.782)	-0.008 (-0.672)	-0.015 (-1.298)	-0.008 (-0.666)	-0.012 (-1.263)	-0.007 (-0.682)
<i>BSIZE</i>	+					-0.122 (-1.304)	-0.064 (-0.571)	-0.122 (-1.300)	-0.071 (-0.791)	-0.122 (-1.420)
<i>BSIZE*ROR</i>	-					0.004 (0.483)	0.010 (0.937)	0.004 (0.482)	0.011 (1.258)	0.007 (0.861)
<i>%OUTSOURCED</i>	-						-0.722 (-1.378)	0.019 (0.054)	-0.777* (-1.934)	-0.108 (-0.330)
<i>FEMALE_CIO</i>	?								-0.414** (-2.696)	-0.340** (-2.441)
<i>FINANCE_Qual_CIO</i>	+								0.080 (0.559)	0.044 (0.352)
<i>TENURE_CIO</i>	+								0.051*** (2.840)	0.025 (1.507)
<i>Ln_TA<sub>t-1</sub></i>	+		0.381*** (4.714)		0.382*** (4.662)	0.450*** (5.046)		0.452*** (4.867)		0.373*** (3.889)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.129 (-1.263)		-0.124 (-1.137)	-0.140 (-1.552)		-0.139 (-1.570)		-0.068 (-0.631)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.906 (1.122)		0.948 (1.112)	1.691* (1.733)		1.694* (1.722)		1.312 (1.379)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0725	0.000	0.297	0.000	0.000	0.182	0.000	0.000	0.000
Adjusted R-squared		0.0279	0.458	0.0226	0.455	0.500	0.0871	0.496	0.361	0.563

The OLS regression is estimated using the full sample of 147 CIO observations. ROR is measured as net earnings after tax divided by cash flow adjusted net assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX\*ROR is an interaction term between GOV\_INDEX and ROR; BSIZE is the total number of directors on the board; BSIZE\*ROR is an interaction term between BSIZE and ROR; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2B: Cash bonus, ROR and governance practices**

This table provides evidence on the association between CIOs cash bonus, ROR, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-10.680** (-2.208)	-51.257** (-2.499)	-25.678* (-1.854)	-55.704** (-2.281)	-42.387* (-1.772)	17.598 (0.917)	-43.451** (-2.055)	-4.166 (-0.174)	-47.570** (-2.264)
<i>ROR</i>	+	0.878*** (2.821)	0.857 (0.708)	2.530** (2.556)	1.564 (0.948)	0.568 (0.312)	1.081 (0.698)	0.542 (0.279)	2.934 (1.304)	1.063 (0.599)
<i>GOV_INDEX</i>	-			3.831 (1.339)	0.722 (0.310)	0.764 (0.328)	3.997 (1.344)	0.753 (0.318)	3.599 (1.470)	1.202 (0.527)
<i>GOV_INDEX*ROR</i>	+			-0.425** (-1.999)	-0.208 (-1.169)	-0.140 (-0.687)	-0.377 (-1.609)	-0.139 (-0.678)	-0.380* (-1.715)	-0.205 (-1.013)
<i>BSIZE</i>	+					-3.292** (-2.115)	-3.754** (-2.530)	-3.282** (-2.140)	-3.476** (-2.548)	-3.374** (-2.113)
<i>BSIZE*ROR</i>	-					0.048 (0.424)	0.142 (1.135)	0.048 (0.426)	0.103 (0.787)	0.039 (0.341)
<i>%OUTSOURCED</i>	-						-16.086 (-1.476)	0.778 (0.096)	-17.503* (-1.849)	0.455 (0.053)
<i>FEMALE_CIO</i>	?								-7.515** (-2.344)	-4.299 (-1.571)
<i>FINANCE_Qual_CIO</i>	+								4.296 (1.049)	2.459 (0.731)
<i>TENURE_CIO</i>	+								-0.224 (-0.499)	-0.417 (-1.135)
<i>Ln_TA<sub>t-1</sub></i>	+		3.485* (1.906)		3.591** (2.002)	6.083*** (3.570)		6.163*** (3.160)		6.252*** (2.856)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		6.858* (1.931)		7.327* (1.888)	4.363 (1.376)		4.411 (1.465)		4.266 (1.488)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.794* (-1.825)		-35.365* (-1.706)	-5.139 (-0.263)		-4.834 (-0.251)		4.471 (0.212)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.00545	0.000	0.0163	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-268.5	-243.6	-267.7	-242.2	-229.5	-258.3	-229.5	-249.2	-227.1
Pseudo R2		0.00823	0.100	0.0110	0.105	0.152	0.0459	0.152	0.0793	0.161

The Tobit regression is estimated using the full sample of 147 CIO observations. ROR is measured as net earnings after tax divided by cash flow adjusted net assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX\*ROR is an interaction term between GOV\_INDEX and ROR; BSIZE is the total number of directors on the board; BSIZE\*ROR is an interaction term between BSIZE and ROR; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2C: Salary, ROR and governance practices**

This table provides evidence on the association between CIOs salary, ROR, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		12.207*** (62.649)	9.326*** (15.325)	11.944*** (18.187)	9.105*** (9.219)	9.516*** (12.670)	12.257*** (16.038)	9.293*** (10.452)	11.374*** (19.464)	10.100*** (14.032)
<i>ROR</i>	+	0.031 (1.636)	0.080 (1.685)	0.053 (0.868)	0.106 (1.190)	0.062 (1.031)	-0.011 (-0.160)	0.049 (0.849)	0.029 (0.489)	-0.001 (-0.022)
<i>GOV_INDEX</i>	-			0.068 (0.512)	0.051 (0.390)	0.048 (0.394)	0.081 (0.607)	0.035 (0.289)	0.042 (0.425)	0.008 (0.074)
<i>GOV_INDEX*ROR</i>	+			-0.006 (-0.458)	-0.007 (-0.541)	-0.006 (-0.500)	-0.009 (-0.761)	-0.005 (-0.416)	-0.005 (-0.548)	-0.003 (-0.247)
<i>BSIZE</i>	+					-0.068 (-0.728)	-0.025 (-0.240)	-0.067 (-0.720)	-0.029 (-0.329)	-0.063 (-0.706)
<i>BSIZE*ROR</i>	-					0.004 (0.428)	0.008 (0.798)	0.004 (0.441)	0.008 (0.990)	0.006 (0.743)
<i>%OUTSOURCED</i>	-						-0.224 (-0.637)	0.254 (0.921)	-0.249 (-1.008)	0.155 (0.651)
<i>FEMALE_CIO</i>	?								-0.240* (-1.811)	-0.197 (-1.521)
<i>FINANCE_Qual_CIO</i>	+								0.045 (0.459)	0.031 (0.311)
<i>TENURE_CIO</i>	+								0.053*** (3.980)	0.036*** (2.821)
<i>Ln_TA<sub>t-1</sub></i>	+		0.260*** (5.089)		0.260*** (5.173)	0.287*** (5.144)		0.309*** (4.784)		0.227*** (3.525)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.140* (-1.750)		-0.137 (-1.601)	-0.140* (-1.804)		-0.130* (-1.791)		-0.042 (-0.465)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.032* (1.922)		1.060* (1.861)	1.377** (2.062)		1.406** (2.118)		0.904 (1.476)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.112	0.000	0.345	0.000	0.000	0.147	0.000	0.000	0.000
Adjusted R-squared		0.0285	0.385	0.0186	0.379	0.386	0.0600	0.391	0.367	0.481

The OLS regression is estimated using the full sample of 147 CIO observations. ROR is measured as net earnings after tax divided by cash flow adjusted net assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX\*ROR is an interaction term between GOV\_INDEX and ROR; BSIZE is the total number of directors on the board; BSIZE\*ROR is an interaction term between BSIZE and ROR; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2D: Total compensation, ROR and each governance variable**

This table provides evidence on the association between CIOs total compensation, ROR, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		10.316*** (10.288)	10.035*** (11.237)	9.808*** (11.245)	9.717*** (11.042)	9.866*** (10.751)	9.744*** (11.110)	9.355*** (9.697)	9.694*** (11.570)	9.882*** (10.042)
<i>ROR</i>	+	-0.066 (-0.771)	-0.041 (-0.559)	-0.010 (-0.159)	-0.007 (-0.093)	-0.025 (-0.320)	-0.002 (-0.033)	0.045 (0.651)	-0.002 (-0.042)	-0.005 (-0.063)
<i>IND_DIR</i>	-	-1.787* (-1.828)								
<i>IND_DIR*ROR</i>	+	0.202* (2.000)								
<i>IND_DIR_33%</i>	-		-0.551* (-2.009)							
<i>IND_DIR_33%*ROR</i>	+		0.054** (2.316)							
<i>IND_CHAIR</i>	-			0.024 (0.081)						
<i>IND_CHAIR*ROR</i>	+			-0.001 (-0.019)						
<i>FEMALE_DIR</i>	-				0.426 (0.481)					
<i>FEMALE_DIR*ROR</i>	+				-0.082 (-1.003)					
<i>BUSY_DIR</i>	+					-1.187 (-1.299)				
<i>BUSY_DIR*ROR</i>	-					0.115 (1.437)				
<i>FINANCIAL1</i>	-						0.360 (0.630)			
<i>FINANCIAL1*ROR</i>	+						-0.053 (-1.018)			
<i>EXPERIENCE</i>	-							0.471 (1.033)		
<i>EXPERIENCE*ROR</i>	+							-0.045 (-0.945)		
<i>EXPERIENCE1</i>	-								0.608 (0.546)	
<i>EXPERIENCE1*ROR</i>	+								-0.102 (-0.974)	
<i>TENURE</i>	+									-0.006 (-0.098)
<i>TENURE*ROR</i>	-									-0.001 (-0.237)
<i>BSIZE</i>	+	-0.146 (-1.682)	-0.146 (-1.683)	-0.121 (-1.470)	-0.131 (-1.417)	-0.112 (-1.505)	-0.128 (-1.366)	-0.098 (-1.560)	-0.125 (-1.574)	-0.122 (-1.441)
<i>BSIZE*ROR</i>	-	0.009 (1.075)	0.009 (1.078)	0.006 (0.832)	0.009 (1.016)	0.006 (0.788)	0.008 (0.899)	0.005 (0.773)	0.008 (1.057)	0.006 (0.804)
<i>%OUTSOURCED</i>	-	-0.081 (-0.255)	-0.104 (-0.322)	-0.108 (-0.330)	-0.070 (-0.227)	-0.072 (-0.220)	-0.091 (-0.277)	-0.136 (-0.402)	-0.087 (-0.261)	-0.053 (-0.151)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.573	0.570	0.561	0.565	0.575	0.564	0.571	0.575	0.563

The OLS regression is estimated using the full sample of 147 CIO observations. ROR is measured as net earnings after tax divided by cash flow adjusted net assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL1 = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_DIR\*ROR is the interaction term between IND\_DIR and ROR; IND\_DIR\_33% is an indicator variable set equal to 1 if IND\_DIR ≥ the 33<sup>rd</sup> percentile, 0 otherwise; IND\_DIR\_33%\*ROR is the interaction term between IND\_DIR\_33% and ROR; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; IND\_CHAIR\*ROR is the interaction term between IND\_CHAIR and ROR; FEMALE\_DIR is the percentage of female directors on the board; FEMALE\_DIR\*ROR is the interaction term between FEMALE\_DIR and ROR; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; BUSY\_DIR\*ROR is the interaction term between BUSY\_DIR and ROR; FINANCIAL1 is the percentage of directors with financial qualification on the board; FINANCIAL1\*ROR is the interaction term between FINANCIAL1 and ROR; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; EXPERIENCE\*ROR is the interaction term between EXPERIENCE and ROR; EXPERIENCE1 is the percentage of directors with prior superannuation fund industry experience; EXPERIENCE1\*ROR is the interaction term between EXPERIENCE1 and ROR; TENURE is the average director tenure; TENURE\*ROR is the interaction term between TENURE and ROR; BSIZE is the total number of directors on the board; BSIZE\*ROR is an interaction term between BSIZE and ROR; %OUTSOURCED is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2E: Cash bonus, ROR and each governance variable**

This table provides evidence on the association between CIOs cash bonus, ROR, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
Constant		-37.214 (-1.597)	-39.632* (-1.708)	-45.025** (-2.292)	-50.282*** (-2.667)	-40.134* (-1.883)	-40.524* (-1.724)	-47.032** (-2.337)	-36.146* (-1.688)	-30.479 (-1.192)
ROR	+	-0.164 (-0.115)	-0.265 (-0.198)	0.608 (0.449)	1.002 (0.888)	0.364 (0.286)	0.231 (0.164)	0.621 (0.444)	-0.196 (-0.123)	-0.610 (-0.333)
IND_DIR	-	-15.212 (-0.763)								
IND_DIR*ROR	+	1.445 (0.786)								
IND_DIR_33%	-		-12.435** (-2.077)							
IND_DIR_33%*ROR	+		1.019** (2.095)							
IND_CHAIR	-			3.990 (0.704)						
IND_CHAIR*ROR	+			-0.317 (-0.775)						
FEMALE_DIR	-				31.304 (1.272)					
FEMALE_DIR*ROR	+				-4.564* (-1.897)					
BUSY_DIR	+					30.169** (2.542)				
BUSY_DIR*ROR	-					-1.864* (-1.697)				
FINANCIALI	-						-14.782 (-0.992)			
FINANCIALI*ROR	+						0.771 (0.667)			
EXPERIENCE	-							3.670 (0.708)		
EXPERIENCE*ROR	+							0.065 (0.123)		
EXPERIENCE1	-								-14.924 (-0.911)	
EXPERIENCE1*ROR	+								1.505 (1.120)	
TENURE	+									-1.352 (-0.820)
TENURE*ROR	-									0.130 (1.039)
BSIZE	+	-3.676** (-2.513)	-3.874*** (-2.629)	-3.441** (-2.176)	-3.793** (-2.240)	-3.882** (-2.271)	-2.800* (-1.920)	-3.217** (-2.024)	-3.466** (-2.167)	-3.654** (-2.225)
BSIZE*ROR	-	0.055 (0.509)	0.071 (0.659)	0.027 (0.233)	0.116 (0.948)	0.067 (0.526)	0.002 (0.020)	0.007 (0.062)	0.033 (0.281)	0.058 (0.484)
%OUTSOURCED	-	0.524 (0.062)	1.084 (0.123)	0.155 (0.019)	1.420 (0.182)	-1.443 (-0.186)	1.546 (0.183)	1.799 (0.230)	0.091 (0.011)	0.321 (0.038)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-227.7	-226.2	-227.6	-225.7	-224.1	-226.3	-226.4	-227.6	-227.2
Pseudo R2		0.159	0.164	0.159	0.166	0.172	0.164	0.163	0.159	0.161

The Tobit regression is estimated using the full sample of 147 CIO observations. ROR is measured as net earnings after tax divided by cash flow adjusted net assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIALI = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_DIR\*ROR is the interaction term between IND\_DIR and ROR; IND\_DIR\_33% is an indicator variable set equal to 1 if IND\_DIR ≥ the 33<sup>rd</sup> percentile, 0 otherwise; IND\_DIR\_33%\*ROR is the interaction term between IND\_DIR\_33% and ROR; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; IND\_CHAIR\*ROR is the interaction term between IND\_CHAIR and ROR; FEMALE\_DIR is the percentage of female directors on the board; FEMALE\_DIR\*ROR is the interaction term between FEMALE\_DIR and ROR; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; BUSY\_DIR\*ROR is the interaction term between BUSY\_DIR and ROR; FINANCIALI is the percentage of directors with financial qualification on the board; FINANCIALI\*ROR is the interaction term between FINANCIALI and ROR; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; EXPERIENCE\*ROR is the interaction term between EXPERIENCE and ROR; EXPERIENCE1 is the percentage of directors with prior superannuation fund industry experience; EXPERIENCE1\*ROR is the interaction term between EXPERIENCE1 and ROR; TENURE is the average director tenure; TENURE\*ROR is the interaction term between TENURE and ROR; BSIZE is the total number of directors on the board; BSIZE\*ROR is an interaction term between BSIZE and ROR; %OUTSOURCED is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.2F: Salary, *ROR* and each governance variable**

This table provides evidence on the association between CIOs salary, *ROR*, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)				
<i>Constant</i>		10.775*** (12.520)	10.376*** (14.042)	10.038*** (13.681)	10.027*** (13.459)	10.168*** (13.501)	9.955*** (14.200)	9.634*** (11.287)	9.912*** (14.008)	9.766*** (12.847)
<i>ROR</i>	+	-0.079 (-1.037)	-0.044 (-0.699)	-0.001 (-0.011)	-0.008 (-0.124)	-0.021 (-0.292)	0.007 (0.105)	0.055 (0.865)	0.015 (0.295)	0.037 (0.577)
<i>IND_DIR</i>	-	-2.325** (-2.670)								
<i>IND_DIR*ROR</i>	+	0.234** (2.555)								
<i>IND_DIR_33%</i>	-		-0.679*** (-3.978)							
<i>IND_DIR_33%*ROR</i>	+		0.065*** (3.493)							
<i>IND_CHAIR</i>	-			0.102 (0.378)						
<i>IND_CHAIR*ROR</i>	+			-0.006 (-0.222)						
<i>FEMALE_DIR</i>	-				-0.149 (-0.202)					
<i>FEMALE_DIR*ROR</i>	+				-0.024 (-0.340)					
<i>BUSY_DIR</i>	+					-1.118 (-1.314)				
<i>BUSY_DIR*ROR</i>	-					0.110 (1.468)				
<i>FINANCIAL1</i>	-						0.742 (1.377)			
<i>FINANCIAL1*ROR</i>	+						-0.068 (-1.346)			
<i>EXPERIENCE</i>	-							0.495 (1.085)		
<i>EXPERIENCE*ROR</i>	+							-0.054 (-1.146)		
<i>EXPERIENCE1</i>	-								1.003 (0.983)	
<i>EXPERIENCE1*ROR</i>	+								-0.138 (-1.383)	
<i>TENURE</i>	+									0.039 (0.800)
<i>TENURE*ROR</i>	-									-0.005 (-1.236)
<i>BSIZE</i>	+	-0.095 (-1.139)	-0.093 (-1.073)	-0.061 (-0.726)	-0.058 (-0.626)	-0.053 (-0.698)	-0.081 (-0.916)	-0.040 (-0.617)	-0.063 (-0.832)	-0.047 (-0.567)
<i>BSIZE*ROR</i>	-	0.009 (1.116)	0.009 (1.028)	0.006 (0.701)	0.007 (0.792)	0.005 (0.685)	0.008 (0.900)	0.004 (0.672)	0.007 (1.013)	0.004 (0.536)
<i>%OUTSOURCED</i>	-	0.172 (0.717)	0.152 (0.630)	0.139 (0.578)	0.203 (0.913)	0.180 (0.728)	0.156 (0.649)	0.110 (0.426)	0.158 (0.636)	0.185 (0.722)
Observations		147	147	147	147	147	147	147	147	147
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.510	0.501	0.481	0.485	0.499	0.489	0.499	0.509	0.486

The OLS regression is estimated using the full sample of 147 CIO observations. *ROR* is measured as net earnings after tax divided by cash flow adjusted net assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL1* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*ROR* is the interaction term between *IND\_DIR* and *ROR*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*ROR* is the interaction term between *IND\_DIR\_33%* and *ROR*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*ROR* is the interaction term between *IND\_CHAIR* and *ROR*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*ROR* is the interaction term between *FEMALE\_DIR* and *ROR*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*ROR* is the interaction term between *BUSY\_DIR* and *ROR*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*ROR* is the interaction term between *FINANCIAL1* and *ROR*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*ROR* is the interaction term between *EXPERIENCE* and *ROR*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*ROR* is the interaction term between *EXPERIENCE1* and *ROR*; *TENURE* is the average director tenure; *TENURE\*ROR* is the interaction term between *TENURE* and *ROR*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROR* is an interaction term between *BSIZE* and *ROR*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3A: Total compensation, *EXCESS\_ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA\_lag*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.727*** (129.039)	9.445*** (19.589)	12.536*** (49.632)	9.462*** (19.509)	9.517*** (21.050)	12.818*** (23.240)	9.429*** (14.714)	12.556*** (24.323)	9.734*** (16.081)
<i>EXCESS_ROA_lag</i>	+	0.147** (2.695)	0.075* (1.786)	0.293** (2.388)	0.100 (1.093)	-0.034 (-0.217)	0.086 (0.446)	-0.046 (-0.286)	-0.055 (-0.288)	-0.137 (-1.036)
<i>GOV_INDEX</i>	-			0.050 (0.789)	-0.013 (-0.289)	0.006 (0.152)	0.049 (0.839)	0.004 (0.124)	0.029 (0.503)	-0.009 (-0.230)
<i>GOV_INDEX*EXCESS_ROA_lag</i>	+			-0.038 (-1.291)	-0.007 (-0.336)	-0.012 (-0.637)	-0.054** (-2.247)	-0.012 (-0.607)	-0.035* (-1.728)	-0.007 (-0.424)
<i>BSIZE</i>	+					-0.091*** (-2.994)	0.011 (0.282)	-0.090*** (-2.996)	0.015 (0.425)	-0.067** (-2.107)
<i>BSIZE*EXCESS_ROA_lag</i>	-					0.017 (1.080)	0.029 (1.508)	0.018 (1.092)	0.028* (1.769)	0.021 (1.542)
<i>%OUTSOURCED</i>	-						-0.734 (-1.500)	0.065 (0.181)	-0.741* (-1.701)	-0.028 (-0.086)
<i>FEMALE_CIO</i>	?								-0.328* (-1.980)	-0.301* (-1.981)
<i>FINANCE_Qual_CIO</i>	+								0.107 (0.703)	0.046 (0.363)
<i>TENURE_CIO</i>	+								0.059*** (2.928)	0.029 (1.632)
<i>Ln_TA<sub>t-1</sub></i>	+		0.390*** (4.789)		0.391*** (4.759)	0.450*** (4.959)		0.455*** (4.878)		0.386*** (4.179)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.127 (-1.214)		-0.120 (-1.075)	-0.118 (-1.163)		-0.114 (-1.138)		-0.046 (-0.385)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.856 (1.115)		0.855 (1.077)	1.735* (1.833)		1.746* (1.814)		1.285 (1.348)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0113	0.000	0.0355	0.000	0.000	0.0156	0.000	0.000	0.000
Adjusted R-squared		0.0592	0.455	0.0595	0.448	0.500	0.131	0.497	0.321	0.555

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA\_lag* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3B: Cash bonus, *EXCESS\_ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA\_lag*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-3.049 (-0.931)	-40.412*** (-2.721)	-4.387 (-0.653)	- (-2.637)	- (-2.721)	27.657*** (2.633)	- (-2.209)	29.795** (2.338)	-34.823* (-1.897)
<i>EXCESS_ROA_lag</i>	+	3.160** (2.585)	1.850 (1.598)	5.234 (1.604)	2.389 (0.810)	-1.081 (-0.462)	2.677 (0.649)	-1.158 (-0.416)	1.763 (0.526)	-1.033 (-0.403)
<i>GOV_INDEX</i>	-			0.336 (0.217)	-0.971 (-0.765)	-0.239 (-0.237)	1.105 (0.753)	-0.243 (-0.242)	0.603 (0.403)	-0.468 (-0.486)
<i>GOV_INDEX*EXCESS_ROA_lag</i>	+			-0.554 (-0.748)	-0.201 (-0.287)	-0.323 (-0.602)	-0.920 (-1.403)	-0.322 (-0.603)	-0.423 (-0.669)	-0.137 (-0.256)
<i>BSIZE</i>	+					-2.950*** (-3.720)	-2.687*** (-3.631)	- (-3.717)	- (-3.544)	- (-3.987)
<i>BSIZE*EXCESS_ROA_lag</i>	-					0.423 (1.195)	0.465 (0.955)	0.430 (1.145)	0.309 (0.686)	0.354 (0.970)
<i>%OUTSOURCED</i>	-						-17.156* (-1.717)	0.508 (0.064)	-18.066* (-1.849)	0.466 (0.055)
<i>FEMALE_CIO</i>	?								-5.439 (-1.607)	-3.481 (-1.273)
<i>FINANCE_Qual_CIO</i>	+								4.574 (1.105)	2.338 (0.697)
<i>TENURE_CIO</i>	+								-0.159 (-0.348)	-0.448 (-1.163)
<i>Ln_TA<sub>t-1</sub></i>	+		3.254* (1.945)		3.366** (2.058)	5.490*** (3.450)		5.538*** (3.051)		5.879*** (2.842)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.290** (2.065)		7.757** (2.067)	5.473* (1.681)		5.513* (1.814)		5.127* (1.747)
<i>PRS_AGE<sub>t-1</sub></i>	?		-34.431* (-1.776)		-34.112* (-1.715)	-2.205 (-0.120)		-1.984 (-0.108)		6.980 (0.336)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0107	0.000	0.0777	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-266.4	-242.2	-266.2	-241.3	-227.7	-254.9	-227.7	-248.9	-225.4
Pseudo R2		0.0158	0.105	0.0166	0.109	0.159	0.0582	0.159	0.0807	0.167

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA\_lag* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3C: Salary, *EXCESS\_ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA\_lag*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.479*** (176.413)	10.185*** (31.289)	12.352*** (63.104)	10.188*** (30.499)	10.220*** (30.002)	12.137*** (30.363)	9.800*** (17.785)	11.824*** (35.776)	10.054*** (21.902)
<i>EXCESS_ROA_lag</i>	+	0.109*** (2.778)	0.066* (1.845)	0.228** (2.354)	0.100 (1.378)	0.013 (0.104)	0.043 (0.315)	-0.043 (-0.346)	-0.064 (-0.403)	-0.117 (-0.954)
<i>GOV_INDEX</i>	-			0.033 (0.684)	-0.005 (-0.167)	0.003 (0.107)	0.024 (0.577)	-0.003 (-0.114)	0.012 (0.316)	-0.011 (-0.355)
<i>GOV_INDEX*EXCESS_ROA_lag</i>	+			-0.031 (-1.410)	-0.009 (-0.586)	-0.013 (-0.792)	-0.040** (-2.257)	-0.010 (-0.645)	-0.028* (-1.906)	-0.012 (-0.907)
<i>BSIZE</i>	+					-0.042 (-1.391)	0.038 (1.186)	-0.038 (-1.337)	0.040 (1.548)	-0.013 (-0.449)
<i>BSIZE*EXCESS_ROA_lag</i>	-					0.011 (0.865)	0.024 (1.614)	0.015 (1.230)	0.023* (1.771)	0.019* (1.723)
<i>%OUTSOURCED</i>	-						-0.230 (-0.710)	0.307 (1.119)	-0.220 (-0.814)	0.224 (0.973)
<i>FEMALE_CIO</i>	?								-0.183 (-1.271)	-0.165 (-1.156)
<i>FINANCE_Qual_CIO</i>	+								0.068 (0.649)	0.037 (0.367)
<i>TENURE_CIO</i>	+								0.058*** (3.878)	0.039*** (2.974)
<i>Ln_TA<sub>t-1</sub></i>	+		0.274*** (4.897)		0.273*** (4.980)	0.297*** (4.506)		0.320*** (4.401)		0.238*** (3.680)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.142 (-1.694)		-0.136 (-1.536)	-0.129 (-1.481)		-0.114 (-1.382)		-0.020 (-0.206)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.951* (1.828)		0.961* (1.789)	1.373** (2.145)		1.423** (2.247)		0.886 (1.492)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.00920	0.000	0.0448	0.000	0.000	0.00214	0.000	0.000	0.000
Adjusted R-squared		0.0503	0.372	0.0487	0.364	0.375	0.0912	0.383	0.332	0.471

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA\_lag* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3D: Total compensation, *EXCESS\_ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA\_lag*, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		9.718*** (15.822)	9.731*** (15.277)	9.724*** (16.019)	9.657*** (15.852)	9.742*** (16.589)	9.727*** (15.970)	9.696*** (16.285)	9.542*** (15.016)	9.860*** (14.738)
<i>EXCESS_ROA_lag</i>	+	-0.154 (-1.244)	-0.144 (-1.106)	-0.148 (-1.142)	-0.157 (-1.271)	-0.121 (-0.830)	-0.104 (-0.690)	-0.148 (-0.963)	-0.194 (-1.269)	-0.317* (-1.787)
<i>IND_DIR</i>	-	-0.041 (-0.079)								
<i>IND_DIR*EXCESS_ROA_lag</i>	+	-0.038 (-0.169)								
<i>IND_DIR_33%</i>	-		-0.105 (-0.480)							
<i>IND_DIR_33%*EXCESS_ROA_lag</i>	+		0.080 (1.328)							
<i>IND_CHAIR</i>	-			0.011 (0.084)						
<i>IND_CHAIR*EXCESS_ROA_lag</i>	+			0.022 (0.315)						
<i>FEMALE_DIR</i>	-				-0.203 (-0.401)					
<i>FEMALE_DIR*EXCESS_ROA_lag</i>	+				-0.141 (-0.591)					
<i>BUSY_DIR</i>	+					-0.199 (-0.591)				
<i>BUSY_DIR*EXCESS_ROA_lag</i>	-					0.185 (1.071)				
<i>FINANCIAL1</i>	-						-0.069 (-0.241)			
<i>FINANCIAL1*EXCESS_ROA_lag</i>	+						-0.096 (-0.839)			
<i>EXPERIENCE</i>	-							0.089 (0.845)		
<i>EXPERIENCE*EXCESS_ROA_lag</i>	+							0.021 (0.248)		
<i>EXPERIENCE1</i>	-								-0.238 (-0.681)	
<i>EXPERIENCE1*EXCESS_ROA_lag</i>	+								0.190 (1.186)	
<i>TENURE</i>	+									-0.017 (-0.523)
<i>TENURE*EXCESS_ROA_lag</i>	-									0.012 (1.269)
<i>BSIZE</i>	+	-0.069** (-2.173)	-0.071** (-2.168)	-0.069** (-2.131)	-0.062* (-1.756)	-0.066** (-2.242)	-0.065* (-1.929)	-0.067** (-2.188)	-0.072* (-2.016)	-0.071** (-2.315)
<i>BSIZE*EXCESS_ROA_lag</i>	-	0.020 (1.370)	0.017 (1.205)	0.018 (1.302)	0.024 (1.504)	0.012 (0.696)	0.019 (1.540)	0.018 (1.339)	0.018 (1.230)	0.029* (1.914)
<i>%OUTSOURCED</i>	-	-0.030 (-0.090)	-0.047 (-0.143)	-0.036 (-0.111)	0.004 (0.014)	-0.032 (-0.097)	-0.014 (-0.043)	-0.019 (-0.059)	0.027 (0.082)	0.019 (0.054)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.554	0.558	0.555	0.556	0.561	0.556	0.558	0.563	0.560

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL1* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR* and *EXCESS\_ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA\_lag*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA\_lag* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA\_lag*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA\_lag* is the interaction term between *TENURE* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3E: Cash bonus, *EXCESS\_ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA\_lag*, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		-37.126* (-1.925)	-38.103* (-1.898)	-35.717** (-2.076)	-36.927** (-2.053)	-34.923** (-2.069)	-35.088* (-1.860)	-38.701** (-2.346)	-35.598** (-1.999)	-32.017* (-1.718)
<i>EXCESS_ROA_lag</i>	+	-1.800 (-0.572)	-1.509 (-0.517)	-0.963 (-0.318)	-1.263 (-0.448)	-0.657 (-0.228)	-1.812 (-0.607)	-0.424 (-0.166)	-1.819 (-0.633)	-3.823 (-0.730)
<i>IND_DIR</i>	-	-0.774 (-0.069)								
<i>IND_DIR*EXCESS_ROA_lag</i>	+	-5.017 (-0.911)								
<i>IND_DIR_33%</i>	-		-3.680 (-0.919)							
<i>IND_DIR_33%*EXCESS_ROA_lag</i>	+		0.099 (0.072)							
<i>IND_CHAIR</i>	-			0.990 (0.337)						
<i>IND_CHAIR*EXCESS_ROA_lag</i>	+			-0.076 (-0.045)						
<i>FEMALE_DIR</i>	-				-6.910 (-0.626)					
<i>FEMALE_DIR*EXCESS_ROA_lag</i>	+				-4.555 (-0.690)					
<i>BUSY_DIR</i>	+					12.948** (2.197)				
<i>BUSY_DIR*EXCESS_ROA_lag</i>	-					-1.599 (-0.370)				
<i>FINANCIAL1</i>	-						-7.271 (-1.045)			
<i>FINANCIAL1*EXCESS_ROA_lag</i>	+						2.933 (0.989)			
<i>EXPERIENCE</i>	-							5.812* (1.848)		
<i>EXPERIENCE*EXCESS_ROA_lag</i>	+							-0.385 (-0.309)		
<i>EXPERIENCE1</i>	-								3.123 (0.413)	
<i>EXPERIENCE1*EXCESS_ROA_lag</i>	+								2.435 (0.778)	
<i>TENURE</i>	+									-0.359 (-0.541)
<i>TENURE*EXCESS_ROA_lag</i>	-									0.229 (0.946)
<i>BSIZE</i>	+	-3.233*** (-4.050)	-3.277*** (-4.189)	-3.275*** (-4.251)	-3.025*** (-3.180)	-3.380*** (-4.313)	-2.926*** (-3.749)	-3.267*** (-4.192)	-3.323*** (-4.464)	-3.237*** (-4.107)
<i>BSIZE*EXCESS_ROA_lag</i>	-	0.469 (1.212)	0.367 (1.154)	0.306 (0.835)	0.456 (1.141)	0.308 (0.829)	0.236 (0.980)	0.327 (1.036)	0.355 (1.278)	0.459 (1.161)
<i>%OUTSOURCED</i>	-	0.960 (0.111)	1.244 (0.140)	0.255 (0.031)	1.248 (0.158)	-0.824 (-0.105)	0.871 (0.104)	2.188 (0.290)	1.068 (0.134)	0.846 (0.102)
Observations		147	147	147	147	147	147	147	147	147
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-225.4	-224.7	-225.6	-225.1	-222.8	-224.4	-223.3	-225.4	-225.2
Pseudo R2		0.167	0.170	0.167	0.169	0.177	0.171	0.175	0.167	0.168

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR* and *EXCESS\_ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA\_lag*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA\_lag* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA\_lag*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA\_lag* is the interaction term between *TENURE* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.3F: Salary, *EXCESS\_ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA\_lag*, governance variables and investment outsourcing

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		10.043*** (20.690)	10.009*** (20.650)	10.001*** (21.178)	9.937*** (22.930)	10.048*** (22.477)	10.009*** (23.506)	10.078*** (22.269)	9.913*** (21.992)	10.098*** (21.215)
<i>EXCESS_ROA_lag</i>	+	-0.154 (-1.334)	-0.145 (-1.223)	-0.137 (-1.161)	-0.150 (-1.313)	-0.140 (-1.083)	-0.093 (-0.710)	-0.115 (-0.930)	-0.170 (-1.180)	-0.308* (-1.911)
<i>IND_DIR</i>	-	-0.303 (-0.852)								
<i>IND_DIR*EXCESS_ROA_lag</i>	+	-0.051 (-0.266)								
<i>IND_DIR_33%</i>	-		-0.109 (-0.788)							
<i>IND_DIR_33%*EXCESS_ROA_lag</i>	+		0.025 (0.486)							
<i>IND_CHAIR</i>	-			0.048 (0.487)						
<i>IND_CHAIR*EXCESS_ROA_lag</i>	+			-0.023 (-0.393)						
<i>FEMALE_DIR</i>	-				-0.310 (-0.897)					
<i>FEMALE_DIR*EXCESS_ROA_lag</i>	+				-0.125 (-0.639)					
<i>BUSY_DIR</i>	+					-0.157 (-0.510)				
<i>BUSY_DIR*EXCESS_ROA_lag</i>	-					0.049 (0.302)				
<i>FINANCIAL1</i>	-						0.184 (0.823)			
<i>FINANCIAL1*EXCESS_ROA_lag</i>	+						-0.142 (-1.425)			
<i>EXPERIENCE</i>	-							0.036 (0.363)		
<i>EXPERIENCE*EXCESS_ROA_lag</i>	+							-0.036 (-0.489)		
<i>EXPERIENCE1</i>	-								-0.184 (-0.713)	
<i>EXPERIENCE1*EXCESS_ROA_lag</i>	+								0.125 (0.938)	
<i>TENURE</i>	+									-0.006 (-0.282)
<i>TENURE*EXCESS_ROA_lag</i>	-									0.012 (1.215)
<i>BSIZE</i>	+	-0.014 (-0.522)	-0.017 (-0.606)	-0.016 (-0.543)	-0.004 (-0.134)	-0.012 (-0.449)	-0.019 (-0.669)	-0.012 (-0.432)	-0.016 (-0.531)	-0.016 (-0.566)
<i>BSIZE*EXCESS_ROA_lag</i>	-	0.019 (1.450)	0.017 (1.350)	0.018 (1.382)	0.021 (1.553)	0.016 (1.040)	0.020 (1.689)	0.018 (1.587)	0.016 (1.177)	0.026* (2.015)
<i>%OUTSOURCED</i>	-	0.220 (0.892)	0.225 (0.935)	0.218 (0.933)	0.275 (1.278)	0.220 (0.929)	0.242 (1.074)	0.195 (0.827)	0.262 (1.131)	0.240 (1.003)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.473	0.473	0.471	0.474	0.472	0.477	0.470	0.475	0.474

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA\_lag* is *EXCESS\_ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR* and *EXCESS\_ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR* ≥ the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA\_lag* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA\_lag* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA\_lag*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA\_lag* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA\_lag*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA\_lag* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA\_lag* is the interaction term between *TENURE* and *EXCESS\_ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *EXCESS\_ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4A: Total compensation, *ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs total compensation, *ROA\_lag*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.684*** (105.206)	8.556*** (13.753)	12.721*** (30.299)	8.684*** (12.417)	8.439*** (11.076)	12.528*** (14.675)	8.412*** (9.391)	11.951*** (13.812)	9.444*** (11.051)
<i>ROA_lag</i>	+	0.005 (0.423)	0.075* (1.786)	-0.011 (-0.331)	0.065 (1.311)	0.097 (1.551)	0.040 (0.573)	0.096 (1.574)	0.049 (0.775)	0.027 (0.499)
<i>GOV_INDEX</i>	-			-0.013 (-0.118)	-0.035 (-0.502)	-0.041 (-0.697)	-0.029 (-0.304)	-0.041 (-0.693)	-0.040 (-0.472)	-0.056 (-0.991)
<i>GOV_INDEX*ROA_lag</i>	+			0.005 (0.534)	0.002 (0.344)	0.005 (0.802)	0.006 (0.764)	0.005 (0.810)	0.007 (0.974)	0.006 (0.932)
<i>BSIZE</i>	+					-0.051 (-1.126)	0.063 (1.096)	-0.051 (-1.127)	0.015 (0.269)	-0.048 (-1.069)
<i>BSIZE*ROA_lag</i>	-					-0.005 (-1.120)	-0.005 (-0.995)	-0.005 (-1.129)	0.000 (0.026)	-0.002 (-0.524)
<i>%OUTSOURCED</i>	-						-0.731 (-1.352)	0.028 (0.079)	-0.783* (-1.796)	-0.068 (-0.214)
<i>FEMALE_CIO</i>	?								-0.351** (-2.134)	-0.309** (-2.111)
<i>FINANCE_Qual_CIO</i>	+								0.118 (0.771)	0.042 (0.333)
<i>TENURE_CIO</i>	+								0.058*** (2.792)	0.027 (1.507)
<i>Ln_TA<sub>t-1</sub></i>	+		0.390*** (4.789)		0.392*** (4.804)	0.465*** (5.465)		0.468*** (5.254)		0.401*** (4.470)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.127 (-1.214)		-0.123 (-1.103)	-0.151 (-1.623)		-0.150 (-1.652)		-0.086 (-0.772)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.856 (1.115)		0.838 (1.065)	1.664* (1.796)		1.668* (1.777)		1.212 (1.288)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.676	0.000	0.902	0.000	0.000	0.271	0.000	0.00216	0.000
Adjusted R-squared		-0.00635	0.455	-0.0172	0.448	0.499	0.0374	0.495	0.308	0.551

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA\_lag* is an interaction term between *GOV\_INDEX* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4B: Cash bonus, *ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *ROA\_lag*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-4.139 (-1.061)	-62.185*** (-2.913)	-13.873 (-1.185)	-65.809*** (-2.645)	-55.861** (-2.391)	19.933 (1.229)	-56.381** (-2.495)	-9.945 (-0.399)	-63.895** (-2.538)
<i>ROA_lag</i>	+	0.125 (0.436)	1.850 (1.598)	1.402 (1.369)	2.560 (1.635)	1.905 (1.051)	0.938 (0.694)	1.889 (1.002)	3.534* (1.722)	2.612 (1.427)
<i>GOV_INDEX</i>	-			2.693 (0.992)	1.125 (0.500)	1.938 (0.959)	2.825 (1.321)	1.952 (0.999)	2.143 (1.020)	1.793 (0.941)
<i>GOV_INDEX*ROA_lag</i>	+			-0.356 (-1.295)	-0.270 (-1.322)	-0.284 (-1.384)	-0.301 (-1.324)	-0.286 (-1.489)	-0.212 (-0.976)	-0.282 (-1.468)
<i>BSIZE</i>	+					-3.343** (-2.280)	-2.631** (-1.982)	-3.347** (-2.297)	-2.817* (-1.969)	-3.114** (-2.031)
<i>BSIZE*ROA_lag</i>	-					0.060 (0.431)	0.024 (0.194)	0.061 (0.454)	0.016 (0.107)	0.001 (0.006)
<i>%OUTSOURCED</i>	-						-16.236 (-1.437)	0.400 (0.053)	-18.206* (-1.907)	0.403 (0.050)
<i>FEMALE_CIO</i>	?								-5.421 (-1.620)	-3.122 (-1.113)
<i>FINANCE_Qual_CIO</i>	+								4.972 (1.221)	2.799 (0.877)
<i>TENURE_CIO</i>	+								-0.159 (-0.338)	-0.467 (-1.154)
<i>Ln_TA<sub>t-1</sub></i>	+		3.254* (1.945)		3.449** (2.102)	5.834*** (3.751)		5.875*** (3.276)		6.216*** (2.946)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.290** (2.065)		7.582** (1.981)	4.632 (1.445)		4.656 (1.545)		4.473 (1.534)
<i>PRS_AGE<sub>t-1</sub></i>	?		-34.431* (-1.776)		-33.881* (-1.686)	-3.313 (-0.180)		-3.154 (-0.173)		7.947 (0.402)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.663	0.000	0.581	0.000	0.000	0.0764	0.000	0.000	0.000
Log likelihood		-270.7	-242.2	-270	-240.7	-227.5	-261.2	-227.4	-248.8	-225
Pseudo R2		0.000165	0.105	0.00252	0.111	0.160	0.0351	0.160	0.0807	0.169

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA\_lag* is an interaction term between *GOV\_INDEX* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4C: Salary, *ROA\_lag* and governance practices**

This table provides evidence on the association between CIOs salary, *ROA\_lag*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.474*** (124.122)	9.414*** (20.440)	12.618*** (39.672)	9.595*** (17.772)	9.256*** (14.101)	11.957*** (16.457)	8.992*** (11.519)	11.565*** (17.023)	9.975*** (14.329)
<i>ROA_lag</i>	+	0.001 (0.051)	0.066* (1.845)	-0.023 (-0.847)	0.047 (1.054)	0.089 (1.461)	0.026 (0.411)	0.078 (1.307)	0.019 (0.343)	0.007 (0.133)
<i>GOV_INDEX</i>	-			-0.041 (-0.520)	-0.050 (-0.852)	-0.064 (-1.177)	-0.058 (-0.801)	-0.064 (-1.168)	-0.058 (-0.816)	-0.067 (-1.172)
<i>GOV_INDEX*ROA_lag</i>	+			0.007 (0.894)	0.005 (0.756)	0.008 (1.184)	0.007 (1.040)	0.007 (1.111)	0.008 (1.070)	0.007 (1.049)
<i>BSIZE</i>	+					0.004 (0.094)	0.085 (1.554)	0.003 (0.075)	0.042 (0.765)	0.002 (0.039)
<i>BSIZE*ROA_lag</i>	-					-0.006 (-1.229)	-0.005 (-0.927)	-0.005 (-1.107)	-0.000 (-0.030)	-0.002 (-0.355)
<i>%OUTSOURCED</i>	-						-0.234 (-0.641)	0.272 (0.990)	-0.255 (-0.939)	0.192 (0.823)
<i>FEMALE_CIO</i>	?								-0.203 (-1.417)	-0.177 (-1.275)
<i>FINANCE_Qual_CIO</i>	+								0.076 (0.717)	0.031 (0.309)
<i>TENURE_CIO</i>	+								0.058*** (3.669)	0.037*** (2.797)
<i>Ln_TA<sub>t-1</sub></i>	+		0.274*** (4.897)		0.274*** (5.046)	0.309*** (5.000)		0.330*** (4.692)		0.254*** (3.918)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.142 (-1.694)		-0.139 (-1.559)	-0.156* (-1.878)		-0.145* (-1.862)		-0.059 (-0.635)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.951* (1.828)		0.937* (1.776)	1.319** (2.098)		1.357** (2.154)		0.803 (1.341)
Observations		147	147	147	147	147	147	147	147	147
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.959	0.000	0.843	0.000	0.000	0.376	0.000	0.000	0.000
Adjusted R-squared		-0.00689	0.372	-0.0174	0.364	0.378	0.0151	0.384	0.320	0.466

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA\_lag* is an interaction term between *GOV\_INDEX* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4D: Total compensation, *ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs total compensation, *ROA\_lag*, governance variables and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		9.337*** (11.448)	9.283*** (11.192)	9.449*** (11.174)	9.318*** (11.596)	9.428*** (12.049)	9.408*** (11.915)	9.246*** (11.076)	9.422*** (11.512)	9.313*** (10.628)
<i>ROA_lag</i>	+	0.037 (0.760)	0.040 (0.779)	0.022 (0.497)	0.027 (0.525)	0.022 (0.413)	0.031 (0.641)	0.044 (0.783)	0.020 (0.390)	0.055 (0.964)
<i>IND_DIR</i>	-	-0.225 (-0.357)								
<i>IND_DIR*ROA_lag</i>	+	0.027 (0.342)								
<i>IND_DIR_33%</i>	-		-0.026 (-0.086)							
<i>IND_DIR_33%*ROA_lag</i>	+		-0.005 (-0.145)							
<i>IND_CHAIR</i>	-			-0.403** (-2.302)						
<i>IND_CHAIR*ROA_lag</i>	+			0.051*** (2.987)						
<i>FEMALE_DIR</i>	-				1.126 (1.580)					
<i>FEMALE_DIR*ROA_lag</i>	+				-0.156** (-2.690)					
<i>BUSY_DIR</i>	+					-0.884* (-1.818)				
<i>BUSY_DIR*ROA_lag</i>	-					0.085** (2.547)				
<i>FINANCIAL1</i>	-						-0.207 (-0.446)			
<i>FINANCIAL1*ROA_lag</i>	+						0.012 (0.314)			
<i>EXPERIENCE</i>	-							-0.056 (-0.308)		
<i>EXPERIENCE*ROA_lag</i>	+							0.019 (1.011)		
<i>EXPERIENCE1</i>	-								-0.422 (-0.907)	
<i>EXPERIENCE1*ROA_lag</i>	+								0.016 (0.419)	
<i>TENURE</i>	+									-0.009 (-0.178)
<i>TENURE*ROA_lag</i>	-									-0.001 (-0.259)
<i>BSIZE</i>	+	-0.057 (-1.206)	-0.059 (-1.186)	-0.051 (-1.186)	-0.088* (-1.879)	-0.061 (-1.392)	-0.053 (-1.081)	-0.047 (-0.982)	-0.056 (-1.262)	-0.054 (-1.205)
<i>BSIZE*ROA_lag</i>	-	-0.001 (-0.328)	-0.001 (-0.302)	-0.002 (-0.492)	0.003 (0.813)	-0.001 (-0.192)	-0.001 (-0.333)	-0.002 (-0.538)	-0.001 (-0.347)	-0.002 (-0.437)
<i>%OUTSOURCED</i>	-	-0.071 (-0.222)	-0.064 (-0.202)	-0.052 (-0.167)	-0.021 (-0.073)	-0.070 (-0.217)	-0.065 (-0.196)	-0.069 (-0.214)	-0.047 (-0.145)	-0.022 (-0.063)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.550	0.550	0.564	0.559	0.556	0.551	0.555	0.556	0.553

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*ROA\_lag* is the interaction term between *IND\_DIR* and *ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*ROA\_lag* is the interaction term between *IND\_CHAIR* and *ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*ROA\_lag* is the interaction term between *FEMALE\_DIR* and *ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*ROA\_lag* is the interaction term between *BUSY\_DIR* and *ROA\_lag*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*ROA\_lag* is the interaction term between *FINANCIAL1* and *ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*ROA\_lag* is the interaction term between *EXPERIENCE* and *ROA\_lag*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*ROA\_lag* is the interaction term between *EXPERIENCE1* and *ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*ROA\_lag* is the interaction term between *TENURE* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4E: Cash bonus, *ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs cash bonus, *ROA\_lag*, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)						
<i>Constant</i>		-58.167** (-2.396)	-62.881** (-2.476)	-61.580** (-2.547)	-61.305** (-2.573)	-59.593** (-2.532)	-50.415** (-2.093)	-82.213*** (-3.260)	-64.119*** (-2.699)	-47.109* (-1.945)
<i>ROA_lag</i>	+	2.071 (1.257)	2.218 (1.341)	2.327 (1.350)	2.130 (1.345)	2.262 (1.358)	1.126 (0.734)	3.938** (2.195)	2.629 (1.556)	0.787 (0.442)
<i>IND_DIR</i>	-	-19.568 (-1.099)								
<i>IND_DIR*ROA_lag</i>	+	2.314 (1.395)								
<i>IND_DIR_33%</i>	-		-4.259 (-0.663)							
<i>IND_DIR_33%*ROA_lag</i>	+		0.124 (0.175)							
<i>IND_CHAIR</i>	-			1.084 (0.288)						
<i>IND_CHAIR*ROA_lag</i>	+			0.004 (0.009)						
<i>FEMALE_DIR</i>	-				17.596 (0.924)					
<i>FEMALE_DIR*ROA_lag</i>	+				-2.926* (-1.775)					
<i>BUSY_DIR</i>	+					1.051 (0.085)				
<i>BUSY_DIR*ROA_lag</i>	-					1.371 (1.067)				
<i>FINANCIALI</i>	-						-23.309** (-2.252)			
<i>FINANCIALI*ROA_lag</i>	+						1.997** (2.583)			
<i>EXPERIENCE</i>	-							14.253*** (2.698)		
<i>EXPERIENCE*ROA_lag</i>	+							-0.902 (-1.394)		
<i>EXPERIENCEI</i>	-								10.879 (0.900)	
<i>EXPERIENCEI*ROA_lag</i>	+								-0.981 (-0.949)	
<i>TENURE</i>	+									-1.703** (-2.270)
<i>TENURE*ROA_lag</i>	-									0.171* (1.826)
<i>BSIZE</i>	+	-2.712 (-1.601)	-2.872* (-1.697)	-2.753* (-1.692)	-3.128* (-1.748)	-2.728 (-1.626)	-2.406 (-1.427)	-2.486 (-1.500)	-2.870* (-1.755)	-3.134* (-1.937)
<i>BSIZE*ROA_lag</i>	-	-0.062 (-0.380)	-0.044 (-0.276)	-0.060 (-0.390)	0.023 (0.145)	-0.081 (-0.508)	-0.063 (-0.395)	-0.086 (-0.545)	-0.038 (-0.244)	-0.009 (-0.063)
<i>%OUTSOURCED</i>	-	-0.419 (-0.050)	0.376 (0.043)	-0.416 (-0.052)	0.819 (0.107)	-1.264 (-0.167)	1.502 (0.180)	2.066 (0.279)	-0.148 (-0.019)	0.417 (0.051)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes						
Controls		Yes	Yes	Yes						
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-225.6	-225.2	-225.8	-224.9	-222.4	-223.8	-222.9	-225.7	-224.7
Pseudo R2		0.167	0.168	0.166	0.169	0.178	0.173	0.177	0.166	0.170

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*ROA\_lag* is the interaction term between *IND\_DIR* and *ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR* ≥ the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*ROA\_lag* is the interaction term between *IND\_CHAIR* and *ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*ROA\_lag* is the interaction term between *FEMALE\_DIR* and *ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*ROA\_lag* is the interaction term between *BUSY\_DIR* and *ROA\_lag*; *FINANCIALI* is the percentage of directors with financial qualification on the board; *FINANCIALI\*ROA\_lag* is the interaction term between *FINANCIALI* and *ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*ROA\_lag* is the interaction term between *EXPERIENCE* and *ROA\_lag*; *EXPERIENCEI* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCEI\*ROA\_lag* is the interaction term between *EXPERIENCEI* and *ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*ROA\_lag* is the interaction term between *TENURE* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.4F: Salary, *ROA\_lag* and each governance variable**

This table provides evidence on the association between CIOs salary, *ROA\_lag*, governance variables and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)								
<i>Constant</i>		9.904*** (15.123)	9.781*** (14.769)	9.890*** (14.982)	9.797*** (15.458)	9.902*** (16.157)	9.673*** (15.288)	9.825*** (13.830)	9.870*** (14.781)	9.718*** (14.152)
<i>ROA_lag</i>	+	0.014 (0.299)	0.021 (0.417)	0.009 (0.212)	0.009 (0.172)	0.009 (0.182)	0.035 (0.711)	0.020 (0.348)	0.010 (0.200)	0.041 (0.813)
<i>IND_DIR</i>	-	-0.496 (-0.815)								
<i>IND_DIR*ROA_lag</i>	+	0.026 (0.342)								
<i>IND_DIR_33%</i>	-		-0.104 (-0.483)							
<i>IND_DIR_33%*ROA_lag</i>	+		0.002 (0.065)							
<i>IND_CHAIR</i>	-			-0.291* (-1.823)						
<i>IND_CHAIR*ROA_lag</i>	+			0.041** (2.583)						
<i>FEMALE_DIR</i>	-				0.770 (1.332)					
<i>FEMALE_DIR*ROA_lag</i>	+				-0.127** (-2.314)					
<i>BUSY_DIR</i>	+					-0.690 (-1.429)				
<i>BUSY_DIR*ROA_lag</i>	-					0.065* (1.712)				
<i>FINANCIAL1</i>	-						0.277 (0.694)			
<i>FINANCIAL1*ROA_lag</i>	+						-0.016 (-0.463)			
<i>EXPERIENCE</i>	-							-0.076 (-0.458)		
<i>EXPERIENCE*ROA_lag</i>	+							0.013 (0.774)		
<i>EXPERIENCE1</i>	-								-0.084 (-0.189)	
<i>EXPERIENCE1*ROA_lag</i>	+								-0.016 (-0.357)	
<i>TENURE</i>	+									0.008 (0.193)
<i>TENURE*ROA_lag</i>	-									-0.002 (-0.506)
<i>BSIZE</i>	+	-0.011 (-0.228)	-0.012 (-0.241)	-0.003 (-0.068)	-0.031 (-0.584)	-0.011 (-0.236)	-0.012 (-0.238)	-0.004 (-0.083)	-0.011 (-0.239)	-0.004 (-0.082)
<i>BSIZE*ROA_lag</i>	-	-0.000 (-0.061)	-0.000 (-0.092)	-0.001 (-0.279)	0.004 (0.697)	-0.000 (-0.056)	-0.001 (-0.164)	-0.001 (-0.233)	-0.000 (-0.023)	-0.001 (-0.271)
<i>%OUTSOURCED</i>	-	0.181 (0.739)	0.195 (0.812)	0.199 (0.876)	0.253 (1.212)	0.187 (0.782)	0.177 (0.752)	0.189 (0.792)	0.206 (0.881)	0.205 (0.818)
Observations		147	147	147	147	147	147	147	147	147
Year FE		Yes								
Controls		Yes								
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.466	0.466	0.479	0.475	0.469	0.466	0.465	0.468	0.464

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA\_lag* is *ROA* in the previous year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*ROA\_lag* is the interaction term between *IND\_DIR* and *ROA\_lag*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*ROA\_lag* is the interaction term between *IND\_DIR\_33%* and *ROA\_lag*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*ROA\_lag* is the interaction term between *IND\_CHAIR* and *ROA\_lag*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*ROA\_lag* is the interaction term between *FEMALE\_DIR* and *ROA\_lag*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*ROA\_lag* is the interaction term between *BUSY\_DIR* and *ROA\_lag*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*ROA\_lag* is the interaction term between *FINANCIAL1* and *ROA\_lag*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*ROA\_lag* is the interaction term between *EXPERIENCE* and *ROA\_lag*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*ROA\_lag* is the interaction term between *EXPERIENCE1* and *ROA\_lag*; *TENURE* is the average director tenure; *TENURE\*ROA\_lag* is the interaction term between *TENURE* and *ROA\_lag*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA\_lag* is an interaction term between *BSIZE* and *ROA\_lag*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.5A: Total compensation, *EXCESS\_ROA* and governance practices for each year**

This table provides evidence on the association between CIOs total compensation, fund performance, governance practices and investment outsourcing for each year.

VARIABLES		2014	2015	2016	2017	2018
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		9.938*** (6.568)	11.583*** (11.263)	9.560*** (7.894)	8.439*** (11.964)	9.271*** (12.123)
<i>EXCESS_ROA</i>	+	0.185 (0.287)	-0.813 (-1.502)	0.271 (0.650)	-0.173 (-0.487)	0.627 (0.895)
<i>GOV_INDEX</i>	-	-0.025 (-0.366)	0.035 (0.503)	0.166 (1.403)	-0.047 (-0.889)	0.022 (0.203)
<i>GOV_INDEX*EXCESS_ROA</i>	+	-0.050 (-0.429)	-0.078 (-1.002)	-0.089 (-1.335)	-0.013 (-0.211)	-0.016 (-0.138)
<i>BSIZE</i>	+	-0.067* (-1.715)	-0.125** (-2.189)	-0.101 (-1.360)	-0.051 (-1.037)	0.051 (0.842)
<i>BSIZE*EXCESS_ROA</i>	-	0.019 (0.310)	0.135** (2.083)	0.023 (0.559)	0.018 (0.539)	-0.061 (-1.116)
<i>%OUTSOURCED</i>	-	-0.258 (-0.355)	-0.402 (-0.713)	-0.113 (-0.165)	0.363 (1.103)	-0.046 (-0.104)
<i>FEMALE_CIO</i>	?	-0.394*** (-3.635)	-0.575* (-1.821)	-0.443 (-1.458)	-0.109 (-0.346)	-0.072 (-0.212)
<i>FINANCE_Qual_CIO</i>	+	0.087 (0.622)	-0.325 (-1.147)	0.205 (0.791)	0.145 (0.777)	-0.315 (-1.258)
<i>TENURE_CIO</i>	+	0.005 (0.176)	0.022 (0.740)	0.013 (0.424)	0.026 (0.899)	0.048 (1.285)
<i>Ln_TA<sub>t-1</sub></i>	+	0.353** (2.271)	0.300** (2.371)	0.326** (2.622)	0.430*** (3.046)	0.408*** (3.147)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.026 (0.144)	-0.178 (-0.884)	-0.180 (-0.953)	0.116 (0.737)	-0.059 (-0.323)
<i>PRS_AGE<sub>t-1</sub></i>	?	2.113*** (2.921)	1.299 (1.026)	3.385* (1.834)	1.778 (1.421)	-1.544 (-1.003)
Observations		25	30	32	29	31
Prob.		0.000	0.000	0.001	0.000	0.000
Adjusted R-squared		0.616	0.543	0.512	0.524	0.437

The OLS regression is estimated. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.5B: Cash bonus, *EXCESS\_ROA* and governance practices for each year**

This table provides evidence on the association between CIOs cash bonus, fund performance, governance practices and investment outsourcing for each year.

		2014	2015	2016	2017	2018
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-4.444 (-1.020)	-28.719 (-1.056)	-65.518 (-1.611)	-64.985** (-2.226)	-12.974 (-1.212)
<i>EXCESS_ROA</i>	+	24.157*** (4.884)	-40.971*** (-2.887)	5.200 (0.597)	7.589 (1.244)	-13.025** (-2.235)
<i>GOV_INDEX</i>	-	0.503 (0.959)	-3.230* (-2.050)	2.968 (1.050)	0.465 (0.369)	-1.173 (-1.297)
<i>GOV_INDEX*EXCESS_ROA</i>	+	-31.003*** (-13.625)	0.896 (0.603)	-1.714 (-1.191)	-4.336*** (-2.964)	0.799 (0.710)
<i>BSIZE</i>	+	0.838** (2.967)	-2.203 (-1.488)	-5.259*** (-2.974)	-4.430*** (-4.875)	-4.456*** (-5.062)
<i>BSIZE*EXCESS_ROA</i>	-	12.999*** (14.711)	4.220* (2.075)	0.343 (0.386)	0.595 (0.742)	1.832*** (3.005)
<i>%OUTSOURCED</i>	-	-11.759*** (-5.527)	8.981 (1.141)	6.330 (0.375)	3.367 (0.467)	-10.254* (-1.861)
<i>FEMALE_CIO</i>	?	-56.288*** (-13.656)	-37.791*** (-3.736)	-50.242*** (-6.565)	8.266* (2.057)	0.302 (0.093)
<i>FINANCE_Qual_CIO</i>	+	-63.212*** (-12.776)	-0.060 (-0.009)	9.946* (1.823)	3.996 (0.816)	2.713 (0.642)
<i>TENURE_CIO</i>	+	-3.187*** (-10.797)	0.356 (0.486)	-0.306 (-0.398)	0.398 (0.736)	-0.584 (-1.395)
<i>Ln_TA<sub>t-1</sub></i>	+	36.785*** (14.721)	1.931 (0.462)	6.321* (1.831)	5.246** (2.842)	6.234*** (4.321)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	-66.924*** (-14.330)	13.607** (2.134)	5.722 (0.775)	16.142* (2.013)	2.784 (0.903)
<i>PRS_AGE<sub>t-1</sub></i>	?	-482.968*** (-12.824)	-17.277 (-0.409)	66.177** (2.155)	17.750 (0.972)	13.234 (0.710)
Observations		25	30	32	29	31
Prob.		0.000	0.000	0.000	0.006	0.002
Log likelihood		-13.56	-28.51	-38.29	-45	-48.10
Pseudo R2		0.702	0.347	0.212	0.263	0.301

The Tobit regression is estimated. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.5C: Salary, *EXCESS\_ROA* and governance practices for each year**

This table provides evidence on the association between CIOs salary, fund performance, governance practices and investment outsourcing for each year.

VARIABLES	Pred. sign	2014 Coeff (t-stats)	2015 Coeff (t-stats)	2016 Coeff (t-stats)	2017 Coeff (t-stats)	2018 Coeff (t-stats)
<i>Constant</i>		10.412*** (10.042)	11.428*** (14.255)	9.986*** (9.648)	8.863*** (17.783)	9.999*** (18.051)
<i>EXCESS_ROA</i>	+	-0.261 (-0.558)	-0.711* (-1.758)	0.167 (0.422)	-0.159 (-0.611)	0.476 (0.814)
<i>GOV_INDEX</i>	-	0.005 (0.093)	0.004 (0.050)	0.133 (1.190)	-0.054 (-1.274)	0.007 (0.094)
<i>GOV_INDEX*EXCESS_ROA</i>	+	0.041 (0.339)	-0.032 (-0.447)	-0.079 (-1.319)	0.053 (1.236)	-0.002 (-0.017)
<i>BSIZE</i>	+	0.001 (0.010)	-0.071 (-1.201)	-0.038 (-0.504)	0.033 (0.882)	0.101** (2.060)
<i>BSIZE*EXCESS_ROA</i>	-	0.028 (0.493)	0.102* (1.910)	0.026 (0.612)	-0.000 (-0.011)	-0.058 (-1.250)
<i>%OUTSOURCED</i>	-	0.075 (0.126)	-0.214 (-0.499)	0.231 (0.439)	0.626** (2.245)	0.175 (0.511)
<i>FEMALE_CIO</i>	?	-0.114 (-0.761)	-0.395 (-1.347)	-0.340 (-1.300)	-0.115 (-0.484)	-0.005 (-0.017)
<i>FINANCE_Qual_CIO</i>	+	0.115 (0.836)	-0.246 (-1.036)	0.120 (0.526)	0.089 (0.580)	-0.350 (-1.560)
<i>TENURE_CIO</i>	+	0.039 (0.976)	0.032 (1.098)	0.023 (1.034)	0.026 (1.267)	0.044 (1.504)
<i>Ln_TA<sub>t-1</sub></i>	+	0.111 (0.704)	0.244* (1.805)	0.196* (1.887)	0.264** (2.474)	0.244** (2.461)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.185 (0.793)	-0.212 (-1.053)	-0.178 (-1.048)	0.134 (0.929)	-0.045 (-0.281)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.257 (1.178)	0.877 (0.770)	2.677 (1.657)	1.315 (1.568)	-1.712 (-1.447)
Observations		25	30	32	29	31
Prob.		0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.312	0.458	0.448	0.595	0.291

The OLS regression is estimated. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.6A: Total compensation, *EXCESS\_ROA* and governance practices without fund size**

This table provides evidence on the association between CIOs total compensation, fund performance, governance practices and investment outsourcing without controlling for the total assets.

VARIABLES		(1)	(2)	(3)	(4)	(5)
	Pred. sign	Coeff (t-stats)				
<i>Constant</i>		11.691*** (30.234)	11.610*** (27.084)	11.545*** (28.602)	12.083*** (20.834)	11.757*** (21.829)
<i>EXCESS_ROA</i>	+	0.225*** (2.891)	0.326 (1.661)	-0.256 (-1.259)	-0.163 (-0.640)	-0.284 (-1.279)
<i>GOV_INDEX</i>	-		0.026 (0.419)	0.041 (0.663)	0.048 (0.785)	0.031 (0.532)
<i>GOV_INDEX*EXCESS_ROA</i>	+		-0.027 (-0.630)	-0.061 (-1.276)	-0.062 (-1.246)	-0.060 (-1.358)
<i>BSIZE</i>	+			-0.011 (-0.257)	-0.025 (-0.558)	-0.012 (-0.286)
<i>BSIZE*EXCESS_ROA</i>	-			0.073** (2.142)	0.065* (1.766)	0.065* (2.003)
<i>%OUTSOURCED</i>	-				-0.511 (-1.078)	-0.516 (-1.175)
<i>FEMALE_CIO</i>	?					-0.308* (-1.768)
<i>FINANCE_Qual_CIO</i>	+					0.145 (0.951)
<i>TENURE_CIO</i>	+					0.056*** (3.108)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.267** (2.068)	0.257* (1.930)	0.292** (2.359)	0.233* (1.735)	0.275** (2.508)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.408* (1.732)	1.463* (1.756)	1.587 (1.690)	1.539 (1.607)	1.038 (1.052)
Observations		147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes
Prob.		0.0554	0.138	0.0383	0.0427	0.002
Adjusted R-squared		0.187	0.181	0.230	0.249	0.411

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.6B: Cash bonus, *EXCESS\_ROA* and governance practices without fund size**

This table provides evidence on the association between CIOs cash bonus, fund performance, governance practices and investment outsourcing without controlling for the total assets.

VARIABLES	Pred. Sign	(1)	(2)	(3)	(4)	(5)
		Coeff (t-stats)				
<i>Constant</i>		-22.324* (-1.951)	-21.027* (-1.795)	-12.941 (-1.085)	-1.409 (-0.100)	-3.148 (-0.197)
<i>EXCESS_ROA</i>	+	2.612* (1.780)	4.064 (1.319)	-1.766 (-0.335)	-0.345 (-0.057)	0.179 (0.029)
<i>GOV_INDEX</i>	-		-0.664 (-0.494)	0.296 (0.224)	0.298 (0.228)	0.019 (0.015)
<i>GOV_INDEX*EXCESS_ROA</i>	+		-0.425 (-0.593)	-1.470* (-1.672)	-1.329 (-1.465)	-1.266 (-1.500)
<i>BSIZE</i>	+			-1.868** (-2.384)	-2.125** (-2.577)	-2.317*** (-2.732)
<i>BSIZE*EXCESS_ROA</i>	-			1.058 (1.655)	0.862 (1.190)	0.708 (1.035)
<i>%OUTSOURCED</i>	-				-9.028 (-1.013)	-9.261 (-1.042)
<i>FEMALE_CIO</i>	?					-4.375 (-1.520)
<i>FINANCE_Qual_CIO</i>	+					4.319 (1.180)
<i>TENURE_CIO</i>	+					0.018 (0.048)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	11.164*** (3.880)	11.556*** (3.643)	12.006*** (4.186)	10.489*** (3.434)	10.668*** (3.362)
<i>PRS_AGE<sub>t-1</sub></i>	?	-35.257 (-1.652)	-34.622 (-1.588)	-14.399 (-0.739)	-17.059 (-0.888)	-5.368 (-0.256)
Observations		147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000
Log likelihood		-247.8	-247.2	-241.2	-239.6	-237.6
Pseudo R2		0.0846	0.0870	0.109	0.115	0.122

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.6C: Salary, *EXCESS\_ROA* and governance practices without fund size**

This table provides evidence on the association between CIOs salary, fund performance, governance practices and investment outsourcing without controlling for the total assets.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)
<i>Constant</i>		11.757*** (37.855)	11.703*** (34.502)	11.569*** (34.787)	11.664*** (26.056)	11.317*** (29.715)
<i>EXCESS_ROA</i>	+	0.184*** (2.984)	0.221 (1.333)	-0.208 (-1.101)	-0.191 (-0.910)	-0.310* (-1.728)
<i>GOV_INDEX</i>	-		0.019 (0.391)	0.024 (0.494)	0.025 (0.524)	0.012 (0.275)
<i>GOV_INDEX*EXCESS_ROA</i>	+		-0.009 (-0.266)	-0.030 (-0.736)	-0.031 (-0.732)	-0.030 (-0.799)
<i>BSIZE</i>	+			0.011 (0.307)	0.009 (0.245)	0.022 (0.662)
<i>BSIZE*EXCESS_ROA</i>	-			0.052 (1.665)	0.051 (1.538)	0.053* (1.724)
<i>%OUTSOURCED</i>	-				-0.090 (-0.278)	-0.060 (-0.213)
<i>FEMALE_CIO</i>	?					-0.171 (-1.051)
<i>FINANCE_Qual_CIO</i>	+					0.083 (0.739)
<i>TENURE_CIO</i>	+					0.055*** (4.211)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.134 (1.377)	0.126 (1.241)	0.141 (1.459)	0.130 (1.186)	0.177** (2.076)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.363** (2.370)	1.389** (2.370)	1.278* (1.768)	1.270* (1.743)	0.692 (1.012)
Observations		147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes
Prob.		0.0349	0.0755	0.0173	0.0226	0.000
Adjusted R-squared		0.188	0.179	0.221	0.216	0.402

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.7: Descriptive statistics between small and large industry funds**

This table displays summary statistics for the sample between small and large superannuation funds. The sample consists of 74 small superannuation funds and 73 large superannuation funds.

	Small funds Mean	Large funds Mean	Std.Dev.	Stat diff.
<b>Dependent variables</b>				
<i>Totalcomp(\$)</i>	261,734.472	577,578.497	44,311.259	-315,844.026***
<i>Ln_Totalcomp</i>	12.374	13.083	0.090	-0.709***
<i>Cashbonus(\$)</i>	12,289.689	141,974.096	27,075.994	-129,684.407***
<i>Ln_Cashbonus</i>	2.245	6.207	0.867	-3.963***
<i>Dummy_Cashbonus</i>	0.216	0.521	0.076	-0.304***
<i>Salary(\$)</i>	224,142.939	370,875.013	20,650.368	-146,732.075***
<i>Ln_Salary</i>	12.234	12.726	0.075	-0.493***
<b>Independent variables</b>				
<i>EXCESS_ROA</i>	-0.218	0.217	0.171	-0.436**
<i>ROA</i>	7.284	7.416	0.422	-0.132
<i>ROR</i>	8.421	8.781	0.508	-0.361
<i>GOV_INDEX</i>	3.338	4.110	0.202	-0.772***
<i>GOV_INDEX_med</i>	0.189	0.411	0.074	-0.222***
<i>IND_DIR</i>	0.099	0.142	0.018	-0.043**
<i>IND_DIR_33%</i>	0.014	0.233	0.051	-0.219***
<i>IND_CHAIR</i>	0.419	0.479	0.082	-0.061
<i>FEMALE_DIR</i>	0.237	0.328	0.023	-0.092***
<i>BUSY_DIR</i>	0.162	0.208	0.033	-0.045
<i>FINANCIAL</i>	0.973	1.000	0.019	-0.027
<i>FINANCIAL1</i>	0.394	0.494	0.034	-0.101***
<i>EXPERIENCE</i>	0.649	0.836	0.071	-0.187***
<i>EXPERIENCE1</i>	0.180	0.272	0.031	-0.091***
<i>TENURE</i>	6.900	5.668	0.364	1.232***
<i>BSIZE</i>	8.959	10.356	0.325	-1.397***
<i>BSIZE_med</i>	0.392	0.055	0.063	0.337***
<i>%OUTSOURCED</i>	0.624	0.444	0.033	0.180***
<b>Controls</b>				
<i>FEMALE_CIO</i>	0.243	0.110	0.062	0.134**
<i>FINANCE_Qual_CIO</i>	0.568	0.616	0.082	-0.049
<i>TENURE_CIO</i>	4.486	5.849	0.629	-1.363**
<i>TA(\$millions)</i>	3,812.526	25,667.402	2,254.230	-21,854.876***
<i>TA<sub>t-1</sub>(\$millions)</i>	3,296.659	22,448.864	1,958.167	-19,152.205***
<i>Ln_TA<sub>t-1</sub></i>	7.966	9.733	0.110	-1.767***
<i>INV_OPTIONS<sub>t-1</sub></i>	12.757	21.027	1.247	-8.271***
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	2.473	3.030	0.079	-0.557***
<i>PRS_AGE<sub>t-1</sub></i>	0.265	0.282	0.016	-0.017
Observations	74	73		

*Totalcomp(\$)* is defined as the total compensation paid to a CIO; *Ln\_Totalcomp* is measured as the natural logarithm of *Totalcomp(\$)*; *Cashbonus(\$)* is defined as the cash bonus paid to a CIO; *Ln\_Cashbonus* is measured as the natural logarithm of *Cashbonus(\$)*; *Dummy\_Cashbonus* is an indicator variable set equal to 1 if *Cashbonus(\$)* > 0, 0 otherwise; *Salary(\$)* is defined as the fixed salary paid to a CIO; *Ln\_Salary* is measured as the natural logarithm of *Salary(\$)*; *EXCESS\_ROA* is the difference between

the superannuation fund's *ROA* and the median *ROA* for each year; *ROA* is measured as net earnings after tax divided by total assets; *ROR* is measured as net earnings after tax divided by cash flow adjusted net assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile, 0 otherwise; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile, 0 otherwise; percentage of independent directors on the board; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *FEMALE\_DIR* is the percentage of female directors on the board; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *FINANCIAL* is an indicator variable equal to 1 if a fund has at least one director with an accounting and/or a finance qualification on the board, 0 otherwise; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *TENURE* is the average director tenure; *BSIZE* is the total number of directors on the board; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile, 0 otherwise; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *TA<sub>t-1</sub>* is the total assets at the end of the period in the previous year; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *INV\_OPTIONS<sub>t-1</sub>* is the total number of investment options in the previous year; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.8A: Total compensation, *EXCESS\_ROA* and governance practices for small funds**

This table provides evidence on the association between CIOs total compensation, fund performance, governance practices and investment outsourcing for small funds.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.396*** (137.508)	12.498*** (26.200)	12.467*** (52.125)	12.530*** (27.026)	12.699*** (26.802)	12.193*** (22.434)	12.362*** (23.432)	12.084*** (26.988)	12.076*** (24.599)
<i>EXCESS_ROA</i>	+	0.097 (1.425)	0.139 (1.707)	0.039 (0.268)	0.174 (1.145)	-0.059 (-0.184)	-0.284 (-0.861)	-0.069 (-0.227)	-0.453* (-1.920)	-0.355 (-1.154)
<i>GOV_INDEX</i>	-			-0.021 (-0.357)	-0.009 (-0.161)	0.030 (0.520)	-0.057 (-1.137)	0.015 (0.254)	-0.006 (-0.153)	0.009 (0.216)
<i>GOV_INDEX*EXCESS_ROA</i>	+			0.017 (0.517)	-0.011 (-0.303)	-0.059 (-0.647)	-0.034 (-0.321)	-0.041 (-0.438)	-0.048 (-0.603)	-0.050 (-0.583)
<i>BSIZE</i>	+					-0.094** (-2.109)	0.007 (0.155)	-0.078* (-1.827)	0.003 (0.099)	-0.036 (-0.945)
<i>BSIZE*EXCESS_ROA</i>	-					0.043 (0.623)	0.054 (0.696)	0.036 (0.512)	0.079 (1.398)	0.069 (1.030)
<i>%OUTSOURCED</i>	-						0.567 (1.360)	0.427 (1.047)	0.456 (1.271)	0.387 (1.064)
<i>FEMALE_CIO</i>	?								-0.029 (-0.154)	-0.077 (-0.403)
<i>FINANCE_Qual_CIO</i>	+								-0.204* (-1.723)	-0.141 (-1.319)
<i>TENURE_CIO</i>	+								0.059*** (3.594)	0.043* (1.784)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.175 (-1.215)		-0.178 (-1.255)	-0.076 (-0.637)		-0.081 (-0.802)		0.028 (0.295)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.611* (1.896)		1.628* (1.886)	2.905*** (4.195)		2.811*** (4.367)		1.291 (1.594)
Observations		74	74	74	74	74	74	74	74	74
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.169	0.0760	0.352	0.0673	0.000	0.120	0.000	0.000	0.000
Adjusted R-squared		0.0258	0.178	0.00363	0.154	0.273	0.0561	0.289	0.333	0.334

The OLS regression is estimated using the sub-sample of 74 CIO observations from small funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.8B: Cash bonus, *EXCESS\_ROA* and governance practices for small funds**

This table provides evidence on the association between CIOs cash bonus, fund performance, governance practices and investment outsourcing for small funds.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-10.803* (-1.729)	-18.869 (-1.070)	1.922 (0.180)	-6.553 (-0.338)	0.559 (0.038)	23.797 (1.409)	-4.414 (-0.274)	24.029 (1.113)	-10.803 (-0.545)
<i>EXCESS_ROA</i>	+	0.840 (0.279)	-0.019 (-0.006)	10.798** (2.398)	7.057 (1.563)	6.118 (1.309)	12.079* (1.948)	5.983 (1.313)	13.039* (1.994)	7.270 (1.050)
<i>GOV_INDEX</i>	-			-4.080 (-1.506)	-3.398 (-1.308)	-0.323 (-0.124)	-0.964 (-0.407)	-0.532 (-0.224)	-1.118 (-0.473)	-0.657 (-0.271)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-3.579*** (-3.280)	-2.670** (-2.486)	-3.762* (-1.841)	-1.457 (-0.670)	-3.414 (-1.593)	-2.291 (-0.921)	-3.890* (-1.828)
<i>BSIZE</i>	+					-4.916*** (-3.704)	-4.361*** (-2.885)	-4.492*** (-3.071)	-4.021*** (-3.389)	-4.700*** (-3.040)
<i>BSIZE*EXCESS_ROA</i>	-					0.344 (0.304)	-1.275 (-0.956)	0.213 (0.185)	-0.908 (-0.608)	0.174 (0.140)
<i>%OUTSOURCED</i>	-						8.434 (0.589)	5.700 (0.419)	9.936 (0.631)	7.859 (0.531)
<i>FEMALE_CIO</i>	?								2.729 (0.403)	2.701 (0.496)
<i>FINANCE_Qual_CIO</i>	+								0.207 (0.036)	3.397 (0.580)
<i>TENURE_CIO</i>	+								-0.482 (-0.810)	0.262 (0.366)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		11.380** (2.135)		9.941* (1.907)	13.370*** (2.922)		12.976** (2.626)		14.108** (2.522)
<i>PRS_AGE<sub>t-1</sub></i>	?		-75.535* (-1.925)		-64.626 (-1.657)	11.892 (0.405)		10.129 (0.355)		15.804 (0.428)
Observations		74	74	74	74	74	74	74	74	74
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.781	0.00323	0.0106	0.000	0.000	0.00234	0.000	0.000	0.000
Log likelihood		-89.52	-82.17	-85.78	-79.40	-72.47	-78.72	-72.26	-76.20	-71.83
Pseudo R2		0.000921	0.0830	0.0426	0.114	0.191	0.121	0.194	0.150	0.198

The Tobit regression is estimated using the sub-sample of 74 CIO observations from small funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.8C: Salary, *EXCESS\_ROA* and governance practices for small funds**

This table provides evidence on the association between CIOs salary, fund performance, governance practices and investment outsourcing for small funds.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.253*** (148.233)	12.284*** (27.740)	12.287*** (57.348)	12.280*** (28.574)	12.435*** (29.302)	11.949*** (25.720)	12.073*** (27.683)	11.801*** (31.842)	11.820*** (26.117)
<i>EXCESS_ROA</i>	+	0.088 (1.341)	0.128* (1.731)	-0.023 (-0.173)	0.108 (0.749)	-0.103 (-0.339)	-0.313 (-1.012)	-0.113 (-0.397)	-0.471** (-2.195)	-0.355 (-1.245)
<i>GOV_INDEX</i>	-			-0.009 (-0.163)	0.001 (0.027)	0.038 (0.629)	-0.046 (-0.937)	0.021 (0.350)	0.000 (0.003)	0.017 (0.362)
<i>GOV_INDEX*EXCESS_ROA</i>	+			0.034 (1.050)	0.006 (0.168)	-0.037 (-0.412)	-0.010 (-0.098)	-0.017 (-0.188)	-0.023 (-0.299)	-0.025 (-0.299)
<i>BSIZE</i>	+					-0.086* (-1.947)	0.012 (0.323)	-0.068 (-1.626)	0.010 (0.373)	-0.033 (-0.789)
<i>BSIZE*EXCESS_ROA</i>	-					0.039 (0.579)	0.048 (0.640)	0.031 (0.455)	0.070 (1.288)	0.059 (0.903)
<i>%OUTSOURCED</i>	-						0.588* (1.777)	0.458 (1.512)	0.490* (1.933)	0.415 (1.629)
<i>FEMALE_CIO</i>	?								-0.008 (-0.047)	-0.061 (-0.350)
<i>FINANCE_Qual_CIO</i>	+								-0.178 (-1.672)	-0.107 (-1.178)
<i>TENURE_CIO</i>	+								0.056*** (3.715)	0.038 (1.650)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.164 (-1.170)		-0.163 (-1.155)	-0.071 (-0.563)		-0.076 (-0.728)		0.019 (0.201)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.687** (2.312)		1.673** (2.276)	2.837*** (4.574)		2.736*** (4.856)		1.429* (1.788)
Observations		74	74	74	74	74	74	74	74	74
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.194	0.0601	0.254	0.0587	0.000	0.0189	0.000	0.000	0.000
Adjusted R-squared		0.0225	0.197	0.00619	0.172	0.282	0.0606	0.306	0.329	0.338

The OLS regression is estimated using the sub-sample of 74 CIO observations from small funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.9A: Total compensation, *EXCESS\_ROA* and governance practices for large funds**

This table provides evidence on the association between CIOs total compensation, fund performance, governance practices and investment outsourcing for large funds.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)	(8) Coeff (t-stats)	(9) Coeff (t-stats)
<i>Constant</i>		13.050*** (102.484)	11.628*** (12.732)	13.237*** (36.464)	11.521*** (14.189)	11.221*** (10.548)	13.623*** (18.133)	12.012*** (9.134)	12.949*** (19.607)	11.089*** (9.665)
<i>EXCESS_ROA</i>	+	0.150* (1.909)	0.229** (2.736)	0.308 (1.363)	0.501** (2.281)	0.381 (0.418)	0.835 (0.967)	0.941 (0.990)	0.394 (0.540)	0.340 (0.532)
<i>GOV_INDEX</i>	-			-0.047 (-0.535)	-0.042 (-0.493)	-0.044 (-0.533)	-0.027 (-0.374)	-0.027 (-0.364)	-0.008 (-0.100)	0.002 (0.031)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-0.042 (-0.789)	-0.068 (-1.466)	-0.057 (-0.878)	-0.055 (-0.925)	-0.069 (-1.110)	-0.048 (-1.018)	-0.074* (-1.788)
<i>BSIZE</i>	+					0.024 (0.471)	0.002 (0.052)	0.019 (0.427)	0.018 (0.382)	0.023 (0.456)
<i>BSIZE*EXCESS_ROA</i>	-					0.007 (0.113)	-0.042 (-0.710)	-0.041 (-0.609)	-0.014 (-0.266)	0.005 (0.118)
<i>%OUTSOURCED</i>	-						-1.127 (-1.327)	-0.971 (-1.079)	-0.980 (-1.371)	-0.701 (-0.967)
<i>FEMALE_CIO</i>	?								-0.517* (-2.107)	-0.536** (-2.760)
<i>FINANCE_Qual_CIO</i>	+								0.244 (1.148)	0.392 (1.617)
<i>TENURE_CIO</i>	+								0.041 (1.654)	0.040 (1.595)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		0.434 (1.673)		0.530** (2.186)	0.565** (2.267)		0.418 (1.443)		0.462 (1.430)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.617 (0.539)		0.677 (0.550)	0.533 (0.423)		0.349 (0.261)		1.139 (0.911)
Observations		73	73	73	73	73	73	73	73	73
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0744	0.0321	0.227	0.0401	0.0649	0.130	0.00975	0.000545	0.000
Adjusted R-squared		0.0597	0.0743	0.0677	0.104	0.0801	0.150	0.154	0.264	0.311

The OLS regression is estimated using the sub-sample of 74 CIO observations from large funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.9B: Cash bonus, *EXCESS\_ROA* and governance practices for large funds**

This table provides evidence on the association between CIOs cash bonus, fund performance, governance practices and investment outsourcing for large funds.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. Sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		2.016 (0.600)	-19.750 (-1.271)	7.603 (0.935)	-14.969 (-1.014)	12.660 (0.636)	41.501*** (4.507)	25.711 (1.336)	44.009*** (3.505)	22.106 (1.317)
<i>EXCESS_ROA</i>	+	2.556 (1.603)	3.910** (2.651)	-0.401 (-0.057)	2.560 (0.508)	5.416 (0.510)	13.169 (0.975)	15.448 (1.154)	11.253 (0.949)	12.932 (1.150)
<i>GOV_INDEX</i>	-			-1.317 (-0.667)	-1.442 (-0.933)	-1.173 (-0.789)	-0.875 (-0.605)	-0.989 (-0.774)	-0.890 (-0.566)	-0.914 (-0.652)
<i>GOV_INDEX*EXCESS_ROA</i>	+			0.668 (0.425)	0.260 (0.243)	-0.402 (-0.437)	-0.487 (-0.442)	-0.381 (-0.413)	-0.330 (-0.347)	-0.464 (-0.495)
<i>BSIZE</i>	+					-2.168** (-2.283)	-2.731*** (-3.542)	-2.152** (-2.582)	-3.024*** (-3.771)	-2.354*** (-2.965)
<i>BSIZE*EXCESS_ROA</i>	-					0.018 (0.023)	-0.771 (-0.789)	-0.927 (-0.951)	-0.638 (-0.725)	-0.693 (-0.873)
<i>%OUTSOURCED</i>	-						-17.521 (-1.386)	-18.191 (-1.599)	-17.482 (-1.484)	-15.986 (-1.492)
<i>FEMALE_CIO</i>	?								-4.484 (-1.006)	-4.493 (-1.081)
<i>FINANCE_Qual_CIO</i>	+								5.491 (1.535)	4.728 (1.295)
<i>TENURE_CIO</i>	+								-0.346 (-0.880)	-0.368 (-1.006)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		10.452** (2.342)		10.928** (2.277)	7.326 (1.359)		5.136 (0.960)		5.745 (1.133)
<i>PRS_AGE<sub>t-1</sub></i>	?		-23.726 (-1.244)		-23.968 (-1.224)	-10.705 (-0.549)		-16.928 (-0.887)		-4.537 (-0.244)
Observations		73	73	73	73	73	73	73	73	73
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.113	0.0199	0.344	0.0137	0.000	0.000	0.000	0.000	0.000
Log likelihood		-169.4	-159.3	-168.9	-158.3	-153.8	-156.5	-149.2	-148.3	-146.6
Pseudo R2		0.0116	0.0701	0.0145	0.0761	0.102	0.0865	0.129	0.134	0.144

The Tobit regression is estimated using the sub-sample of 73 CIO observations from large funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A1.9C: Salary, *EXCESS\_ROA* and governance practices for large funds**

This table provides evidence on the association between CIOs salary, fund performance, governance practices and investment outsourcing for large funds.

VARIABLES	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.700*** (154.886)	11.876*** (15.712)	12.859*** (43.469)	11.847*** (16.890)	10.877*** (13.717)	12.413*** (20.784)	11.192*** (11.999)	11.742*** (32.238)	10.509*** (13.907)
<i>EXCESS_ROA</i>	+	0.121** (2.204)	0.171** (2.718)	0.212 (1.054)	0.315 (1.423)	0.232 (0.373)	0.372 (0.666)	0.455 (0.770)	-0.065 (-0.165)	-0.091 (-0.243)
<i>GOV_INDEX</i>	-			-0.039 (-0.559)	-0.032 (-0.443)	-0.038 (-0.629)	-0.031 (-0.569)	-0.031 (-0.558)	-0.017 (-0.313)	-0.012 (-0.235)
<i>GOV_INDEX*EXCESS_ROA</i>	+			-0.025 (-0.550)	-0.036 (-0.790)	-0.016 (-0.336)	-0.013 (-0.283)	-0.021 (-0.455)	-0.006 (-0.226)	-0.022 (-0.863)
<i>BSIZE</i>	+					0.076* (1.933)	0.059 (1.574)	0.074* (1.988)	0.069** (2.377)	0.076** (2.216)
<i>BSIZE*EXCESS_ROA</i>	-					-0.000 (-0.002)	-0.019 (-0.484)	-0.019 (-0.449)	0.010 (0.356)	0.021 (0.753)
<i>%OUTSOURCED</i>	-						-0.463 (-0.810)	-0.387 (-0.674)	-0.350 (-0.770)	-0.171 (-0.380)
<i>FEMALE_CIO</i>	?								-0.316* (-1.908)	-0.331** (-2.526)
<i>FINANCE_Qual_CIO</i>	+								0.196 (1.334)	0.274 (1.591)
<i>TENURE_CIO</i>	+								0.050*** (3.092)	0.048*** (3.119)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		0.194 (0.913)		0.251 (1.300)	0.365* (2.024)		0.306 (1.521)		0.314 (1.446)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.533 (0.684)		0.559 (0.660)	0.133 (0.174)		0.060 (0.073)		0.588 (0.775)
Observations		73	73	73	73	73	73	73	73	73
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0425	0.200	0.0897	0.299	0.0234	0.0125	0.0135	0.000	0.000
Adjusted R-squared		0.0719	0.0759	0.0774	0.0854	0.149	0.139	0.160	0.358	0.391

The OLS regression is estimated using the sub-sample of 73 CIO observations from large funds. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A2 Alternative measures of the governance index

Six alternative measures of the governance index is examined to test the sensitivity of the governance index. First, the governance index is modified by altering the scoring matrix of financial qualification and prior superannuation fund experience. Instead of giving a score of 1 for having at least one director with financial qualification, a score of 1 is given if *FINANCIAL1* is greater than the 50<sup>th</sup> percentile, 0 otherwise; instead of giving a score of 1 for having at least one director with prior superannuation fund experience, a score of 1 is given if *EXPERIENCE1* is greater than the 50<sup>th</sup> percentile, 0 otherwise. The governance index (*GOV\_INDEX1*) which is the sum of these governance variables including the modified governance variables. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX1* are shown in Table A2.1A, A2.1B and A2.1C, respectively (Table A2.2A, A2.2B and A2.2C, respectively). The results are generally similar to the main findings except a significant and negative coefficient on *GOV\_INDEX2* in column (2) of Table A2.1B.

< Insert Table A2.1A >

< Insert Table A2.1B >

< Insert Table A2.1C >

< Insert Table A2.2A >

< Insert Table A2.2B >

< Insert Table A2.2C >

Second, the *GOV\_INDEX* and *BSIZE* are modified into an indicator variable to identify industry superannuation funds employing better governance practices. *GOV\_INDEX\_med* is an indicator variable set as 1 if *GOV\_INDEX* is greater than the 50<sup>th</sup> percentile, 0 otherwise. *BSIZE\_med* is an indicator variable set as 1 if *BSIZE* is less than the 50<sup>th</sup> percentile, 0 otherwise. The expectation of the coefficient on *GOV\_INDEX\_med\*EXCESS\_ROA* and *BSIZE\_med\*EXCESS\_ROA* are positive. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX\_med* and *BSIZE\_med* are shown in Table A2.3A, A2.3B and A2.3C, respectively (Table A2.4A, A2.4B and A2.4C, respectively). The results for *EXCESS\_ROA* in Table A2.3A, A2.3B and A2.3C are similar to the main findings, indicating no evidence that

governance practices influence the pay-performance relationship. The results for *ROA* in Table A2.4A and A2.4B show some evidence that *GOV\_INDEX\_med* weakens the association between *ROA* and *Ln\_Totalcomp* and *Ln\_Cashbonus*. However, the coefficient on *GOV\_INDEX\_med\*ROA* is insignificant when including controls and year fixed effects.

< Insert Table A2.3A >

< Insert Table A2.3B >

< Insert Table A2.3C >

< Insert Table A2.4A >

< Insert Table A2.4B >

< Insert Table A2.4C >

Third, the *GOV\_INDEX1* is modified into an indicator variable (*GOV\_INDEX\_med1*) equals to 1 if *GOV\_INDEX1* is greater than the 50<sup>th</sup> percentile, 0 otherwise. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX\_med1* and *B\_SIZE\_med* are shown in Table A2.5A, A2.5B and A2.5C, respectively (Table A2.6A, A2.6B and A2.6C, respectively). Similar to the main findings, the results for *EXCESS\_ROA* in Table A2.5A, A2.5B and A2.5C show no evidence that governance practices influence the pay-performance relationship. However, the results for *ROA* in Table A2.6B reveal that the coefficients on *GOV\_INDEX\_med1\*ROA* is negatively associated with *Ln\_Cashbonus*. The findings indicate that superannuation funds with good governance practices weaken the association between *ROA* and cash bonus. Overall, the results are generally similar to the main findings, except for the negative influence of governance practices on the association between CIO cash bonus and fund performance in Table A2.6B.

< Insert Table A2.5A >

< Insert Table A2.5B >

< Insert Table A2.5C >

< Insert Table A2.6A >

< Insert Table A2.6B >

< Insert Table A2.6C >

Fourth, as only 29.9 percent (22.4 percent) of industry superannuation funds are above the median *GOV\_INDEX* (less than the median *BSIZE*) the definition of better governed funds are modified to include observations with the median value of *GOV\_INDEX* and *BSIZE*. Specifically, while the measurement of other governance measures remain unchanged, a score of 1 is given if: *FEMALE\_DIR* is greater than or equal to the 50<sup>th</sup> percentile (instead of greater than the 50<sup>th</sup> percentile only); *BUSY\_DIR* is less than or equal to the 50<sup>th</sup> percentile (instead of less than the 50<sup>th</sup> percentile only); *TENURE* is less than or equal to the 50<sup>th</sup> percentile (instead of the 50<sup>th</sup> percentile only). *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the sum of the governance variables (including redefined governance variables above) is greater than or equal to the 50<sup>th</sup> percentile, 0 otherwise. Moreover, *BSIZE\_med1* is an indicator variable set equal to 1 if the board size is less than or equal to the 50<sup>th</sup> percentile (instead of less than the 50<sup>th</sup> percentile only for *BSIZE\_med*), 0 otherwise. Untabulated summary statistics reveal that the mean *GOV\_INDEX\_med2* is 0.592 and the mean *BSIZE\_med1* is 0.537. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX\_med2* and *BSIZE\_med1* are shown in Table A2.7A, A2.7B and A2.7C, respectively (Table A2.8A, A2.8B and A2.8C, respectively). Overall, the results are similar to the main findings.

< Insert Table A2.7A >

< Insert Table A2.7B >

< Insert Table A2.7C >

< Insert Table A2.8A >

< Insert Table A2.8B >

< Insert Table A2.8C >

Fifth, the *GOV\_INDEX\_med2* above is altered further to include *FINANCIAL1* and *EXPERIENCE1* instead of *FINANCIAL* and *EXPERIENCE*. Specifically, while others remain unchanged, a score of 1 is given if: *FEMALE\_DIR* is greater than or equal to the 50<sup>th</sup> percentile

(instead of greater than the 50<sup>th</sup> percentile only); *BUSY\_DIR* is less than or equal to the 50<sup>th</sup> percentile (instead of less than the 50<sup>th</sup> percentile only); *FINANCIAL1* is greater than or equal to the 50<sup>th</sup> percentile (instead of *FINANCIAL* equals to 1); *EXPERIENCE1* is greater than or equal to the 50<sup>th</sup> percentile (instead of *EXPERIENCE* equals to 1); *TENURE* is less than or equal to the the 50<sup>th</sup> percentile (instead of the 50<sup>th</sup> percentile only). *GOV\_INDEX\_med3* is an indicator variable set equal to 1 if the sum of the governance variables (including redefined governance variables above) is greater than or equal to the 50<sup>th</sup> percentile, 0 otherwise. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX\_med3* and *B\_SIZE\_med1* are shown in Table A2.9A, A2.9B and A2.9C, respectively (Table A2.10A, A2.10B and A2.10C, respectively). Overall, the results are consistent with the main findings.

< Insert Table A2.9A >

< Insert Table A2.9B >

< Insert Table A2.9C >

< Insert Table A2.10A >

< Insert Table A2.10B >

< Insert Table A2.10C >

Last, in addition to the *GOV\_INDEX\_med2* (including *FINANCIAL* and *EXPERIENCE*) in a fourth alternate measure of governance index, a scoring matrix for *BUSY\_DIR* is modified. Directors who sit on other ASX companies obtain and learn board skills, knowledge and experience, consequently bringing these skills and experience to provide diverse perspectives to board discussions (Srinidhi, Gul and Tsui, 2011). Instead of a score of 1 is given if *BUSY\_DIR* is less than or equal to the 50<sup>th</sup> percentile, a score of 1 given if *BUSY\_DIR* is greater than or equal to the 50<sup>th</sup> percentile, 0 otherwise. *GOV\_INDEX\_med4* is an indicator variable set equal to 1 if the sum of the governance variables (including redefined governance variables above) is greater than or equal to the 50<sup>th</sup> percentile, 0 otherwise. The results of *EXCESS\_ROA* (*ROA*) and its association with *Ln\_Totalcomp*, *Ln\_Cashbonus* and *Ln\_Salary* using *GOV\_INDEX\_med5* and *B\_SIZE\_med1* are shown in Table A2,11A, A2.11B and A2.11C, respectively (Table A2.12A, A2.12B and A2.12C,

respectively). Overall, similar to the main findings, the results show no evidence that good governance practices influence the pay-performance relationship.

< Insert Table A2.11A >

< Insert Table A2.11B >

< Insert Table A2.11C >

< Insert Table A2.12A >

< Insert Table A2.12B >

< Insert Table A2.12C >

Overall, the results remain generally similar when the governance index is modified. However, when the governance index is modified into an indicator variable, particularly, the *GOV\_INDEX\_med1* show evidence that industry superannuation funds with good governance practices weakens the association between cash bonus and *ROA* (as shown in Table A2.6B). The results on the other alternative measures of governance index are consistent with the main findings, i.e., governance practices do not enhance the pay-performance relationship.

**Table A2.1A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		12.624*** (56.948)	9.536*** (19.987)	9.639*** (19.507)	12.822*** (24.507)	9.555*** (14.423)	12.559*** (25.968)	9.865*** (15.900)
<i>EXCESS_ROA</i>	+	0.308 (1.674)	0.151 (1.048)	-0.024 (-0.118)	-0.135 (-0.525)	-0.030 (-0.150)	-0.232 (-0.976)	-0.126 (-0.666)
<i>GOV_INDEX1</i>	-	0.032 (0.508)	-0.032 (-0.653)	-0.002 (-0.049)	0.019 (0.293)	-0.003 (-0.059)	0.035 (0.584)	0.003 (0.059)
<i>GOV_INDEX1*EXCESS_ROA</i>	+	-0.041 (-0.725)	-0.016 (-0.386)	-0.031 (-0.811)	-0.056 (-0.930)	-0.031 (-0.835)	-0.068 (-1.363)	-0.041 (-1.110)
<i>BSIZE</i>	+			-0.084** (-2.719)	0.019 (0.428)	-0.084** (-2.710)	0.015 (0.419)	-0.063* (-2.031)
<i>BSIZE*EXCESS_ROA</i>	-			0.023 (0.822)	0.051 (1.325)	0.023 (0.829)	0.056* (1.766)	0.032 (1.179)
<i>%OUTSOURCED</i>	-				-0.641 (-1.342)	0.060 (0.168)	-0.644 (-1.494)	-0.036 (-0.109)
<i>FEMALE_CIO</i>	?						-0.359** (-2.198)	-0.299* (-1.994)
<i>FINANCE_Qual_CIO</i>	+						0.089 (0.600)	0.039 (0.317)
<i>TENURE_CIO</i>	+						0.056*** (3.092)	0.028 (1.639)
<i>Ln_TA<sub>t-1</sub></i>	+		0.384*** (5.052)	0.432*** (4.920)		0.437*** (4.816)		0.362*** (3.923)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.109 (-0.989)	-0.111 (-1.176)		-0.108 (-1.146)		-0.040 (-0.343)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.912 (1.129)	1.698* (1.895)		1.708* (1.886)		1.292 (1.465)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0821	0.000	0.000	0.0365	0.000	0.001	0.000
Adjusted R-squared		0.0849	0.471	0.517	0.170	0.514	0.369	0.572

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $>$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $>$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX1* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-1.368	-	-	28.340***	-	30.033**	-37.328*
		(-0.259)	39.427*** (-2.662)	35.411** (-2.522)	(2.715)	37.205** (-2.056)	(2.467)	(-1.769)
<i>EXCESS_ROA</i>	+	5.071 (1.574)	1.941 (0.785)	1.822 (0.360)	2.641 (0.400)	1.728 (0.326)	3.145 (0.472)	3.696 (0.706)
<i>GOV_INDEX1</i>	-	-0.648 (-0.474)	-1.919* (-1.890)	-0.850 (-0.972)	0.110 (0.082)	-0.848 (-0.974)	0.215 (0.156)	-0.860 (-1.065)
<i>GOV_INDEX1*EXCESS_ROA</i>	+	-0.893 (-0.835)	-0.399 (-0.493)	-0.635 (-0.892)	-1.001 (-0.887)	-0.664 (-0.875)	-0.961 (-0.962)	-0.594 (-0.799)
<i>BSIZE</i>	+			-	-2.415***	-	-	-
				2.695*** (-3.432)	(-2.882)	2.682*** (-3.381)	2.648*** (-3.121)	2.919*** (-3.996)
<i>BSIZE*EXCESS_ROA</i>	-			0.083 (0.159)	0.317 (0.439)	0.098 (0.175)	0.253 (0.365)	-0.100 (-0.189)
<i>%OUTSOURCED</i>	-				-16.250 (-1.532)	1.043 (0.118)	-17.203* (-1.735)	0.743 (0.080)
<i>FEMALE_CIO</i>	?						-6.521** (-2.054)	-3.370 (-1.221)
<i>FINANCE_Qual_CIO</i>	+						4.810 (1.142)	2.227 (0.655)
<i>TENURE_CIO</i>	+						-0.213 (-0.479)	-0.491 (-1.380)
<i>Ln_TA<sub>t-1</sub></i>	+		3.757** (2.374)	5.904*** (3.716)		6.002*** (3.258)		6.436*** (3.055)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.494** (2.010)	4.699 (1.588)		4.776* (1.744)		4.120 (1.542)
<i>PRS_AGE<sub>t-1</sub></i>	?		-35.535* (-1.771)	-6.792 (-0.363)		-6.373 (-0.351)		3.198 (0.163)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.134	0.000	0.000	0.0108	0.000	0.000	0.000
Log likelihood		-266.7	-239	-227.6	-257.4	-227.6	-249.3	-225.3
Pseudo R2		0.0148	0.117	0.159	0.0492	0.159	0.0790	0.168

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX1* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.1C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.369*** (69.143)	10.265*** (31.188)	10.347*** (28.865)	12.100*** (34.528)	9.947*** (18.595)	11.790*** (40.984)	10.191*** (23.943)
<i>EXCESS_ROA</i>	+	0.215 (1.517)	0.125 (1.068)	-0.042 (-0.222)	-0.165 (-0.769)	-0.075 (-0.404)	-0.256 (-1.325)	-0.192 (-1.036)
<i>GOV_INDEX1</i>	-	0.036 (0.706)	0.000 (0.004)	0.015 (0.409)	0.021 (0.418)	0.014 (0.379)	0.036 (0.835)	0.019 (0.525)
<i>GOV_INDEX1*EXCESS_ROA</i>	+	-0.021 (-0.514)	-0.005 (-0.173)	-0.018 (-0.539)	-0.039 (-0.856)	-0.022 (-0.701)	-0.050 (-1.375)	-0.035 (-1.148)
<i>BSIZE</i>	+			-0.039 (-1.398)	0.041 (1.275)	-0.036 (-1.383)	0.038 (1.511)	-0.012 (-0.487)
<i>BSIZE*EXCESS_ROA</i>	-			0.021 (0.793)	0.044 (1.361)	0.025 (0.935)	0.050* (1.787)	0.036 (1.335)
<i>%OUTSOURCED</i>	-				-0.161 (-0.499)	0.286 (1.048)	-0.138 (-0.500)	0.217 (0.894)
<i>FEMALE_CIO</i>	?						-0.196 (-1.363)	-0.163 (-1.132)
<i>FINANCE_Qual_CIO</i>	+						0.047 (0.444)	0.031 (0.318)
<i>TENURE_CIO</i>	+						0.056*** (4.163)	0.039*** (2.836)
<i>Ln_TA<sub>t-1</sub></i>	+		0.259*** (5.448)	0.273*** (4.673)		0.293*** (4.483)		0.210*** (3.306)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.130 (-1.489)	-0.120 (-1.453)		-0.106 (-1.331)		-0.014 (-0.138)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.043* (1.985)	1.415** (2.336)		1.461** (2.474)		0.934* (1.745)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0893	0.000	0.000	0.0142	0.000	0.000	0.000
Adjusted R-squared		0.0836	0.390	0.406	0.149	0.412	0.388	0.497

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $>$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $>$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX1* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		11.981*** (19.218)	7.957*** (7.656)	8.502*** (10.059)	12.914*** (15.670)	8.480*** (8.880)	11.791*** (15.257)	9.329*** (11.290)
<i>ROA</i>	+	0.096 (1.369)	0.168 (1.654)	0.102 (1.236)	-0.004 (-0.052)	0.101 (1.236)	0.066 (0.748)	0.041 (0.568)
<i>GOV_INDEX1</i>	-	0.125 (0.799)	0.115 (0.783)	0.123 (1.012)	0.141 (0.856)	0.123 (1.008)	0.158 (1.259)	0.118 (1.026)
<i>GOV_INDEX1*ROA</i>	+	-0.015 (-0.863)	-0.020 (-1.243)	-0.018 (-1.321)	-0.020 (-1.231)	-0.018 (-1.317)	-0.019 (-1.383)	-0.017 (-1.305)
<i>BSIZE</i>	+			-0.126 (-1.304)	-0.064 (-0.551)	-0.126 (-1.301)	-0.069 (-0.743)	-0.124 (-1.380)
<i>BSIZE*ROA</i>	-			0.006 (0.572)	0.012 (0.980)	0.006 (0.570)	0.012 (1.182)	0.008 (0.860)
<i>%OUTSOURCED</i>	-				-0.697 (-1.328)	0.023 (0.065)	-0.755* (-1.817)	-0.081 (-0.253)
<i>FEMALE_CIO</i>	?						-0.384** (-2.416)	-0.314** (-2.177)
<i>FINANCE_Qual_CIO</i>	+						0.092 (0.627)	0.035 (0.289)
<i>TENURE_CIO</i>	+						0.052*** (2.799)	0.024 (1.432)
<i>Ln_TA<sub>t-1</sub></i>	+		0.385*** (4.989)	0.444*** (5.362)		0.446*** (5.108)		0.382*** (4.256)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.109 (-1.016)	-0.125 (-1.414)		-0.124 (-1.429)		-0.070 (-0.673)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.970 (1.202)	1.707* (1.895)		1.711* (1.884)		1.328 (1.454)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.259	0.000	0.000	0.151	0.000	0.000	0.000
Adjusted R-squared		0.0242	0.480	0.521	0.0902	0.517	0.346	0.571

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX1 is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL > the 50<sup>th</sup> percentile; (vi) EXPERIENCE > the 50<sup>th</sup> percentile; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX1 \* ROA is an interaction term between GOV\_INDEX1 and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2B: Cash bonus, ROA and governance practices**

This table provides evidence on the association between CIOs cash bonus, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-17.392 (-1.627)	-55.006** (-2.366)	-42.321* (-1.884)	24.911 (1.452)	-43.077** (-2.250)	1.811 (0.075)	-48.105** (-2.340)
<i>ROA</i>	+	2.274** (2.382)	1.718 (1.030)	0.637 (0.326)	0.573 (0.323)	0.613 (0.285)	2.833 (1.066)	1.222 (0.606)
<i>GOV_INDEX1</i>	-	2.159 (0.763)	0.138 (0.059)	0.347 (0.174)	1.983 (0.731)	0.356 (0.182)	2.162 (0.921)	0.650 (0.358)
<i>GOV_INDEX1*ROA</i>	+	-0.415 (-1.419)	-0.275 (-1.127)	-0.180 (-0.853)	-0.308 (-1.079)	-0.181 (-0.889)	-0.292 (-1.100)	-0.218 (-1.096)
<i>BSIZE</i>	+			-3.270** (-2.036)	-3.544** (-2.186)	-3.270** (-2.039)	-3.372** (-2.352)	-3.358** (-2.032)
<i>BSIZE*ROA</i>	-			0.083 (0.597)	0.158 (0.943)	0.084 (0.583)	0.107 (0.634)	0.069 (0.486)
<i>%OUTSOURCED</i>	-				-16.071 (-1.438)	0.565 (0.069)	-17.909* (-1.864)	0.482 (0.056)
<i>FEMALE_CIO</i>	?						-6.826** (-2.125)	-3.474 (-1.266)
<i>FINANCE_Qual_CIO</i>	+						4.508 (1.080)	1.714 (0.529)
<i>TENURE_CIO</i>	+						-0.256 (-0.563)	-0.491 (-1.367)
<i>Ln_TA<sub>t-1</sub></i>	+		3.761** (2.367)	5.852*** (3.662)		5.909*** (3.134)		6.234*** (2.986)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.508** (2.030)	4.818 (1.563)		4.852* (1.675)		4.336 (1.568)
<i>PRS_AGE<sub>t-1</sub></i>	?		-34.641* (-1.741)	-6.738 (-0.355)		-6.518 (-0.350)		1.789 (0.088)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.00764	0.000	0.000	0.001	0.000	0.000	0.000
Log likelihood		-267.1	-238.8	-227.8	-258.5	-227.8	-249.5	-225.5
Pseudo R2		0.0133	0.118	0.158	0.0452	0.159	0.0784	0.167

The Tobit regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX1 is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL > the 50<sup>th</sup> percentile; (vi) EXPERIENCE > the 50<sup>th</sup> percentile; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX1 \* ROA is an interaction term between GOV\_INDEX1 and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.2C: Salary, *ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *ROA*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		11.854*** (20.578)	8.745*** (9.898)	9.135*** (12.922)	12.186*** (17.711)	8.896*** (10.790)	11.262*** (20.427)	9.723*** (13.694)
<i>ROA</i>	+	0.075 (1.181)	0.160* (1.790)	0.112 (1.564)	-0.006 (-0.077)	0.099 (1.477)	0.044 (0.634)	0.034 (0.541)
<i>GOV_INDEX1</i>	-	0.108 (0.763)	0.121 (0.974)	0.127 (1.084)	0.122 (0.815)	0.123 (1.071)	0.135 (1.185)	0.116 (1.064)
<i>GOV_INDEX1*ROA</i>	+	-0.012 (-0.733)	-0.016 (-1.153)	-0.015 (-1.193)	-0.017 (-1.089)	-0.015 (-1.200)	-0.015 (-1.211)	-0.014 (-1.159)
<i>BSIZE</i>	+			-0.072 (-0.762)	-0.028 (-0.260)	-0.073 (-0.780)	-0.030 (-0.335)	-0.067 (-0.742)
<i>BSIZE*ROA</i>	-			0.005 (0.459)	0.010 (0.858)	0.005 (0.506)	0.010 (0.958)	0.007 (0.739)
<i>%OUTSOURCED</i>	-				-0.209 (-0.592)	0.249 (0.914)	-0.235 (-0.911)	0.166 (0.696)
<i>FEMALE_CIO</i>	?						-0.216 (-1.576)	-0.177 (-1.310)
<i>FINANCE_Qual_CIO</i>	+						0.053 (0.526)	0.031 (0.324)
<i>TENURE_CIO</i>	+						0.053*** (3.881)	0.035** (2.661)
<i>Ln_TA<sub>t-1</sub></i>	+		0.259*** (5.347)	0.284*** (5.253)		0.304*** (4.806)		0.233*** (3.721)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.132 (-1.546)	-0.135* (-1.738)		-0.126* (-1.708)		-0.051 (-0.573)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.094** (2.067)	1.430** (2.345)		1.467** (2.444)		0.980 (1.671)
Observations		147	147	147	147	147	147	147
R-squared		0.047	0.441	0.458	0.108	0.466	0.417	0.543
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.333	0.000	0.000	0.0891	0.000	0.000	0.000
Adjusted R-squared		0.0269	0.400	0.409	0.0693	0.414	0.359	0.487

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX1* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* > the 50<sup>th</sup> percentile; (vi) *EXPERIENCE* > the 50<sup>th</sup> percentile; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX1\*ROA* is an interaction term between *GOV\_INDEX1* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.671*** (117.350)	9.544*** (19.204)	9.142*** (16.909)	13.100*** (46.612)	9.142*** (11.791)	12.877*** (48.198)	9.504*** (13.404)
<i>EXCESS_ROA</i>	+	0.195* (2.033)	0.127 (1.602)	0.121 (1.247)	0.245** (2.149)	0.121 (1.280)	0.187** (2.072)	0.095 (1.173)
<i>GOV_INDEX_med</i>	-	0.188 (1.164)	0.082 (0.580)	0.108 (0.788)	0.171 (1.111)	0.108 (0.812)	0.142 (1.018)	0.065 (0.553)
<i>GOV_INDEX_med*EXCESS_ROA</i>	+	-0.029 (-0.243)	-0.023 (-0.244)	-0.010 (-0.095)	-0.088 (-0.663)	-0.010 (-0.095)	-0.071 (-0.615)	-0.016 (-0.171)
<i>BSIZE_med</i>	-			0.228 (1.275)	-0.209 (-1.103)	0.228 (1.312)	-0.073 (-0.386)	0.230 (1.420)
<i>BSIZE_med*EXCESS_ROA</i>	+			0.005 (0.044)	-0.122 (-0.824)	0.005 (0.044)	-0.187 (-1.322)	-0.063 (-0.565)
<i>%OUTSOURCED</i>	-				-0.704 (-1.525)	0.000 (0.001)	-0.770* (-1.905)	-0.106 (-0.324)
<i>FEMALE_CIO</i>	?						-0.337* (-1.989)	-0.343** (-2.417)
<i>FINANCE_Qual_CIO</i>	+						0.052 (0.365)	-0.006 (-0.048)
<i>TENURE_CIO</i>	+						0.053*** (2.887)	0.029 (1.588)
<i>Ln_TA<sub>t-1</sub></i>	+		0.369*** (4.684)	0.404*** (5.162)		0.404*** (4.605)		0.351*** (4.217)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.118 (-1.143)	-0.145 (-1.420)		-0.145 (-1.435)		-0.080 (-0.722)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.024 (1.290)	1.432 (1.544)		1.432 (1.540)		1.070 (1.211)
Observations		147	147	147	147	147	147	147
R-squared		0.112	0.505	0.519	0.212	0.519	0.410	0.597
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0576	0.000	0.000	0.0728	0.000	0.000	0.000
Adjusted R-squared		0.0939	0.468	0.476	0.178	0.472	0.352	0.548

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-3.169	-	-	2.354	-	3.453	-
			41.197***	55.150***		57.740**		56.670**
<i>EXCESS_ROA</i>	+	(-0.909) 3.659** (2.072)	(-2.764) 2.008 (1.194)	(-3.151) 2.988 (1.566)	(0.380) 4.941** (2.154)	(-2.364) 2.931 (1.447)	(0.479) 4.789** (2.244)	(-2.130) 2.910 (1.524)
<i>GOV_INDEX_med</i>	-	0.508 (0.128)	-2.566 (-0.768)	-1.887 (-0.574)	1.037 (0.278)	-1.936 (-0.580)	0.141 (0.039)	-2.426 (-0.783)
<i>GOV_INDEX_med*EXCESS_ROA</i>	+	-2.624 (-1.076)	-1.501 (-0.752)	-2.015 (-0.837)	-3.303 (-1.230)	-2.021 (-0.841)	-2.330 (-0.898)	-1.665 (-0.723)
<i>BSIZE_med</i>	-			7.359 (1.605)	6.370 (1.327)	7.276* (1.658)	8.168 (1.567)	8.430* (1.837)
<i>BSIZE_med*EXCESS_ROA</i>	+			-2.488 (-0.881)	-3.326 (-1.001)	-2.488 (-0.892)	-3.365 (-0.961)	-2.364 (-0.786)
<i>%OUTSOURCED</i>	-				-13.346 (-1.178)	1.586 (0.167)	-14.523 (-1.368)	0.730 (0.076)
<i>FEMALE_CIO</i>	?						- 8.525** (-2.303)	-6.027* (-1.719)
<i>FINANCE_Qual_CIO</i>	+						2.983 (0.674)	0.207 (0.050)
<i>TENURE_CIO</i>	+						-0.216 (-0.462)	-0.340 (-0.775)
<i>Ln_TA<sub>t-1</sub></i>	+		3.551** (2.075)	4.517** (2.351)		4.690* (1.908)		4.937* (1.913)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.015* (1.953)	6.829* (1.969)		6.887** (2.070)		6.338* (1.859)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.777* (-1.827)	-20.774 (-1.181)		-20.027 (-1.141)		-16.384 (-0.830)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.207	0.000	0.000	0.0797	0.000	0.000	0.000
Log likelihood		-267	-241.7	-237.6	-262.2	-237.6	-254.6	-235.2
Pseudo R2		0.0135	0.107	0.122	0.0316	0.122	0.0595	0.131

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.3C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.434*** (150.237)	10.299*** (31.985)	10.041*** (25.357)	12.632*** (66.742)	9.750*** (15.924)	12.346*** (71.244)	10.056*** (18.800)
<i>EXCESS_ROA</i>	+	0.143* (1.875)	0.109 (1.639)	0.103 (1.222)	0.176* (1.893)	0.096 (1.171)	0.125 (1.472)	0.070 (0.943)
<i>GOV_INDEX_med</i>	-	0.148 (1.232)	0.102 (1.016)	0.118 (1.208)	0.124 (1.061)	0.103 (1.095)	0.115 (1.073)	0.076 (0.892)
<i>GOV_INDEX_med*EXCESS_ROA</i>	+	0.013 (0.136)	0.016 (0.192)	0.026 (0.291)	-0.030 (-0.269)	0.029 (0.319)	-0.018 (-0.184)	0.015 (0.192)
<i>BSIZE_med</i>	-			0.145 (0.956)	-0.238* (-1.879)	0.128 (0.930)	-0.125 (-1.006)	0.105 (0.820)
<i>BSIZE_med*EXCESS_ROA</i>	+			0.011 (0.104)	-0.081 (-0.732)	0.007 (0.074)	-0.137 (-1.246)	-0.053 (-0.582)
<i>%OUTSOURCED</i>	-				-0.255 (-0.838)	0.220 (0.784)	-0.289 (-1.145)	0.138 (0.603)
<i>FEMALE_CIO</i>	?						-0.166 (-1.102)	-0.179 (-1.315)
<i>FINANCE_Qual_CIO</i>	+						0.027 (0.256)	0.009 (0.104)
<i>TENURE_CIO</i>	+						0.053*** (3.882)	0.035** (2.530)
<i>Ln_TA<sub>t-1</sub></i>	+		0.250*** (5.130)	0.273*** (5.203)		0.290*** (4.445)		0.232*** (3.578)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.132 (-1.614)	-0.151* (-1.858)		-0.141* (-1.766)		-0.061 (-0.635)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.127** (2.232)	1.382** (2.217)		1.399** (2.368)		1.013* (1.989)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0248	0.000	0.000	0.0376	0.000	0.000	0.000
Adjusted R-squared		0.0915	0.398	0.399	0.139	0.401	0.344	0.483

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.4A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.120*** (39.149)	8.208*** (10.393)	7.884*** (8.632)	12.463*** (25.730)	7.913*** (7.447)	11.441*** (15.256)	8.661*** (9.006)
<i>ROA</i>	+	0.073* (2.008)	0.137* (1.892)	0.128 (1.646)	0.085* (2.028)	0.129 (1.688)	0.152** (2.254)	0.085 (1.323)
<i>GOV_INDEX_med</i>	-	0.668* (1.816)	0.468 (1.384)	0.453 (1.416)	0.784** (2.308)	0.458 (1.430)	0.509* (2.010)	0.322 (1.117)
<i>GOV_INDEX_med*ROA</i>	+	-0.062 (-1.527)	-0.053 (-1.432)	-0.047 (-1.328)	-0.080** (-2.163)	-0.048 (-1.318)	-0.050 (-1.605)	-0.035 (-1.016)
<i>BSIZE_med</i>	-			0.085 (0.248)	-0.002 (-0.005)	0.086 (0.256)	0.114 (0.440)	0.175 (0.612)
<i>BSIZE_med*ROA</i>	+			0.018 (0.516)	-0.027 (-0.670)	0.018 (0.513)	-0.027 (-0.780)	0.008 (0.246)
<i>%OUTSOURCED</i>	-				-0.717 (-1.410)	-0.029 (-0.079)	-0.813** (-2.041)	-0.133 (-0.406)
<i>FEMALE_CIO</i>	?						-0.334* (-2.010)	-0.340** (-2.449)
<i>FINANCE_Qual_CIO</i>	+						0.065 (0.467)	0.004 (0.032)
<i>TENURE_CIO</i>	+						0.050*** (2.755)	0.027 (1.556)
<i>Ln_TA<sub>t-1</sub></i>	+		0.367*** (4.698)	0.404*** (5.116)		0.402*** (4.516)		0.358*** (4.291)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.119 (-1.163)	-0.151 (-1.487)		-0.152 (-1.518)		-0.099 (-0.928)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.058 (1.363)	1.437 (1.591)		1.435 (1.582)		1.101 (1.244)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.226	0.000	0.000	0.135	0.000	0.000	0.000
Adjusted R-squared		0.0567	0.478	0.484	0.134	0.481	0.349	0.551

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med is an indicator variable set equal to 1 if GOV\_INDEX > the 50<sup>th</sup> percentile; GOV\_INDEX\_med\*ROA is an interaction term between GOV\_INDEX\_med and ROA; BSIZE\_med is an indicator variable set equal to 1 if BSIZE < the 50<sup>th</sup> percentile; BSIZE\_med\*ROA is an interaction term between BSIZE\_med and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.4B: Cash bonus, *ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-17.447** (-2.460)	-59.202*** (-2.819)	-71.628*** (-3.418)	-11.415 (-1.124)	-73.132*** (-3.213)	-31.437* (-1.797)	-75.254*** (-3.264)
<i>ROA</i>	+	1.875*** (2.995)	1.943 (1.304)	1.590 (1.208)	1.805*** (2.620)	1.547 (1.047)	3.621** (2.389)	1.766 (1.284)
<i>GOV_INDEX_med</i>	-	15.722** (2.029)	6.725 (0.926)	5.498 (0.765)	15.260** (2.157)	5.384 (0.703)	12.355* (1.894)	5.756 (0.774)
<i>GOV_INDEX_med*ROA</i>	+	-1.995** (-2.597)	-1.271* (-1.703)	-0.998 (-1.339)	-1.828** (-2.571)	-0.987 (-1.241)	-1.660** (-2.382)	-1.094 (-1.358)
<i>BSIZE_med</i>	-			3.284 (0.460)	5.210 (0.797)	3.253 (0.464)	6.088 (1.037)	4.321 (0.592)
<i>BSIZE_med*ROA</i>	+			0.525 (0.820)	0.141 (0.175)	0.522 (0.808)	0.196 (0.233)	0.533 (0.766)
<i>%OUTSOURCED</i>	-				-13.179 (-1.106)	1.172 (0.121)	-15.349 (-1.467)	0.485 (0.050)
<i>FEMALE_CIO</i>	?						-8.346** (-2.185)	-6.215* (-1.722)
<i>FINANCE_Qual_CIO</i>	+						3.678 (0.821)	0.791 (0.189)
<i>TENURE_CIO</i>	+						-0.295 (-0.641)	-0.404 (-0.971)
<i>Ln_TA<sub>t-1</sub></i>	+		3.479** (2.002)	4.910** (2.561)		5.038** (2.043)		5.308** (2.126)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		6.931* (1.947)	5.915 (1.615)		5.965* (1.708)		5.546 (1.579)
<i>PRS_AGE<sub>t-1</sub></i>	?		-35.894* (-1.805)	-22.040 (-1.205)		-21.497 (-1.177)		-15.705 (-0.780)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0149	0.000	0.000	0.0423	0.000	0.000	0.000
Log likelihood		-266.5	-240.8	-237.6	-262.7	-237.5	-254.2	-235
Pseudo R2		0.0157	0.110	0.122	0.0297	0.122	0.0609	0.132

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med\*ROA* is an interaction term between *GOV\_INDEX\_med* and *ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*ROA* is an interaction term between *BSIZE\_med* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.4C: Salary, *ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *ROA*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.039*** (41.784)	9.084*** (14.013)	8.900*** (11.808)	12.206*** (29.304)	8.700*** (9.700)	11.403*** (17.500)	9.420*** (11.414)
<i>ROA</i>	+	0.052 (1.568)	0.122* (1.995)	0.111 (1.632)	0.056 (1.419)	0.104 (1.564)	0.097 (1.497)	0.057 (0.949)
<i>GOV_INDEX_med</i>	-	0.394 (1.214)	0.301 (0.976)	0.300 (1.025)	0.469 (1.561)	0.263 (0.885)	0.248 (0.986)	0.143 (0.512)
<i>GOV_INDEX_med*ROA</i>	+	-0.030 (-0.805)	-0.027 (-0.765)	-0.024 (-0.718)	-0.043 (-1.278)	-0.021 (-0.604)	-0.017 (-0.547)	-0.008 (-0.234)
<i>BSIZE_med</i>	-			-0.046 (-0.144)	-0.159 (-0.535)	-0.058 (-0.187)	-0.086 (-0.335)	-0.023 (-0.081)
<i>BSIZE_med*ROA</i>	+			0.026 (0.744)	-0.009 (-0.249)	0.026 (0.745)	-0.006 (-0.177)	0.019 (0.609)
<i>%OUTSOURCED</i>	-				-0.262 (-0.758)	0.204 (0.728)	-0.322 (-1.268)	0.123 (0.525)
<i>FEMALE_CIO</i>	?						-0.159 (-1.074)	-0.173 (-1.317)
<i>FINANCE_Qual_CIO</i>	+						0.045 (0.441)	0.023 (0.268)
<i>TENURE_CIO</i>	+						0.052*** (3.905)	0.034** (2.594)
<i>Ln_TA<sub>t-1</sub></i>	+		0.249*** (5.159)	0.277*** (5.359)		0.294*** (4.462)		0.243*** (3.750)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.133 (-1.636)	-0.159* (-2.010)		-0.150* (-1.968)		-0.080 (-0.860)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.158** (2.329)	1.398** (2.277)		1.413** (2.433)		1.050* (2.004)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.249	0.000	0.000	0.127	0.000	0.000	0.000
Adjusted R-squared		0.0492	0.402	0.405	0.0874	0.406	0.333	0.482

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med* is an indicator variable set equal to 1 if *GOV\_INDEX* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med\*ROA* is an interaction term between *GOV\_INDEX\_med* and *ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*ROA* is an interaction term between *BSIZE\_med* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.5A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.704*** (107.670)	9.521*** (19.875)	9.155*** (17.045)	13.108*** (42.919)	9.094*** (11.621)	12.850*** (46.597)	9.484*** (13.586)
<i>EXCESS_ROA</i>	+	0.215** (2.632)	0.125* (1.754)	0.125 (1.446)	0.244** (2.559)	0.125 (1.455)	0.199** (2.442)	0.104 (1.403)
<i>GOV_INDEX_med1</i>	-	0.059 (0.350)	-0.031 (-0.223)	0.013 (0.086)	0.037 (0.226)	0.008 (0.061)	0.058 (0.366)	-0.002 (-0.018)
<i>GOV_INDEX_med1*EXCESS_ROA</i>	+	-0.097 (-0.631)	-0.039 (-0.323)	-0.026 (-0.210)	-0.080 (-0.476)	-0.029 (-0.240)	-0.128 (-0.784)	-0.064 (-0.546)
<i>BSIZE_med</i>	-			0.210 (1.092)	-0.223 (-1.169)	0.205 (1.135)	-0.081 (-0.427)	0.208 (1.282)
<i>BSIZE_med*EXCESS_ROA</i>	+			-0.004 (-0.037)	-0.133 (-0.948)	-0.006 (-0.050)	-0.206 (-1.494)	-0.078 (-0.727)
<i>%OUTSOURCED</i>	-				-0.648 (-1.394)	0.049 (0.127)	-0.714* (-1.738)	-0.061 (-0.189)
<i>FEMALE_CIO</i>	?						-0.355** (-2.060)	-0.347** (-2.446)
<i>FINANCE_Qual_CIO</i>	+						0.081 (0.563)	0.002 (0.017)
<i>TENURE_CIO</i>	+						0.055*** (2.942)	0.031* (1.737)
<i>Ln_TA<sub>t-1</sub></i>	+		0.378*** (4.870)	0.408*** (5.077)		0.412*** (4.582)		0.353*** (4.327)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.114 (-1.039)	-0.142 (-1.279)		-0.139 (-1.287)		-0.072 (-0.638)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.898 (1.148)	1.308 (1.409)		1.309 (1.408)		0.969 (1.119)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0720	0.000	0.000	0.0562	0.000	0.001	0.000
Adjusted R-squared		0.0824	0.466	0.470	0.163	0.466	0.349	0.547

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med1* is an indicator variable set equal to 1 if *GOV\_INDEX1* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med1* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.5B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-3.128 (-0.880)	-39.594*** (-2.765)	-51.713*** (-3.096)	1.692 (0.267)	-57.261** (-2.370)	2.282 (0.326)	-55.682** (-2.113)
<i>EXCESS_ROA</i>	+	3.564** (2.487)	1.992 (1.568)	3.072*** (2.619)	4.529*** (2.750)	3.012** (2.472)	4.597*** (2.887)	2.904** (2.280)
<i>GOV_INDEX_med1</i>	-	-0.203 (-0.049)	-4.162 (-1.278)	-2.418 (-0.718)	1.364 (0.334)	-2.670 (-0.780)	1.270 (0.316)	-2.597 (-0.834)
<i>GOV_INDEX_med1*EXCESS_ROA</i>	+	-3.062 (-0.857)	-3.081 (-1.207)	-3.453 (-1.320)	-2.580 (-0.715)	-3.734 (-1.375)	-2.365 (-0.763)	-3.005 (-1.219)
<i>BSIZE_med</i>	-			6.577 (1.410)	6.708 (1.417)	6.279 (1.456)	8.558 (1.614)	7.362 (1.616)
<i>BSIZE_med*EXCESS_ROA</i>	+			-2.519 (-1.000)	-2.970 (-0.995)	-2.580 (-1.068)	-3.159 (-0.962)	-2.441 (-0.910)
<i>%OUTSOURCED</i>	-				-12.810 (-1.154)	3.618 (0.356)	-14.033 (-1.357)	2.451 (0.243)
<i>FEMALE_CIO</i>	?						-8.361** (-2.389)	-5.248 (-1.491)
<i>FINANCE_Qual_CIO</i>	+						3.336 (0.745)	-0.011 (-0.003)
<i>TENURE_CIO</i>	+						-0.154 (-0.335)	-0.262 (-0.641)
<i>Ln_TA<sub>t-1</sub></i>	+		3.457** (2.152)	4.269** (2.291)		4.632* (1.911)		4.767* (1.934)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.304** (2.011)	6.981* (1.962)		7.151** (2.129)		6.662** (2.001)
<i>PRS_AGE<sub>t-1</sub></i>	?		-41.059** (-2.028)	-26.057 (-1.476)		-24.803 (-1.446)		-21.337 (-1.117)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0976	0.000	0.000	0.0559	0.000	0.000	0.000
Log likelihood		-267	-240	-236.8	-262.5	-236.6	-254.6	-234.8
Pseudo R2		0.0138	0.113	0.125	0.0304	0.126	0.0596	0.132

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med1* is an indicator variable set equal to 1 if *GOV\_INDEX1* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med1* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.5C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		12.448*** (142.538)	10.275*** (31.465)	9.998*** (24.608)	12.637*** (60.302)	9.730*** (15.768)	12.323*** (63.986)	10.053*** (19.033)
<i>EXCESS_ROA</i>	+	0.157** (2.331)	0.110* (1.723)	0.107 (1.328)	0.179** (2.162)	0.105 (1.324)	0.142* (1.779)	0.086 (1.192)
<i>GOV_INDEX_med1</i>	-	0.096 (0.734)	0.072 (0.706)	0.104 (0.958)	0.064 (0.490)	0.087 (0.818)	0.089 (0.740)	0.078 (0.825)
<i>GOV_INDEX_med1*EXCESS_ROA</i>	+	-0.018 (-0.157)	0.029 (0.317)	0.041 (0.428)	-0.026 (-0.202)	0.024 (0.244)	-0.074 (-0.572)	-0.025 (-0.239)
<i>BSIZE_med</i>	-			0.156 (0.969)	-0.241* (-1.867)	0.135 (0.918)	-0.126 (-0.990)	0.113 (0.865)
<i>BSIZE_med*EXCESS_ROA</i>	+			0.006 (0.057)	-0.090 (-0.844)	-0.001 (-0.013)	-0.156 (-1.441)	-0.066 (-0.718)
<i>%OUTSOURCED</i>	-				-0.235 (-0.734)	0.215 (0.735)	-0.263 (-0.969)	0.135 (0.549)
<i>FEMALE_CIO</i>	?						-0.177 (-1.195)	-0.188 (-1.393)
<i>FINANCE_Qual_CIO</i>	+						0.048 (0.449)	0.025 (0.274)
<i>TENURE_CIO</i>	+						0.055*** (3.781)	0.036** (2.529)
<i>Ln_TA<sub>t-1</sub></i>	+		0.255*** (5.221)	0.279*** (5.042)		0.295*** (4.406)		0.232*** (3.556)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.137 (-1.561)	-0.159* (-1.805)		-0.148* (-1.718)		-0.066 (-0.674)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.120** (2.316)	1.422** (2.356)		1.424** (2.431)		1.068** (2.116)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0861	0.000	0.000	0.0522	0.000	0.000	0.000
Adjusted R-squared		0.0818	0.394	0.396	0.130	0.398	0.345	0.483

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med1* is an indicator variable set equal to 1 if *GOV\_INDEX1* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med1\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med1* and *EXCESS\_ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*EXCESS\_ROA* is an interaction term between *BSIZE\_med* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.6A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.207*** (38.079)	8.209*** (10.009)	7.842*** (7.803)	12.509*** (22.782)	7.809*** (6.757)	11.375*** (14.774)	8.580*** (8.433)
<i>ROA</i>	+	0.068* (1.844)	0.132* (1.773)	0.131 (1.557)	0.081* (1.733)	0.129 (1.584)	0.159** (2.312)	0.089 (1.304)
<i>GOV_INDEX_med1</i>	-	0.391 (0.992)	0.296 (0.797)	0.321 (0.825)	0.417 (1.001)	0.318 (0.809)	0.422 (1.205)	0.314 (0.902)
<i>GOV_INDEX_med1*ROA</i>	+	-0.046 (-0.976)	-0.045 (-1.082)	-0.043 (-0.997)	-0.053 (-1.133)	-0.043 (-0.990)	-0.049 (-1.204)	-0.043 (-1.101)
<i>BSIZE_med</i>	-			0.154 (0.374)	0.126 (0.293)	0.151 (0.372)	0.212 (0.667)	0.230 (0.696)
<i>BSIZE_med*ROA</i>	+			0.008 (0.196)	-0.046 (-0.973)	0.008 (0.198)	-0.040 (-1.026)	-0.001 (-0.025)
<i>%OUTSOURCED</i>	-				-0.658 (-1.272)	0.035 (0.094)	-0.793* (-1.963)	-0.094 (-0.292)
<i>FEMALE_CIO</i>	?						-0.363** (-2.121)	-0.352** (-2.492)
<i>FINANCE_Qual_CIO</i>	+						0.080 (0.566)	0.002 (0.019)
<i>TENURE_CIO</i>	+						0.051*** (2.791)	0.028 (1.634)
<i>Ln_TA<sub>t-1</sub></i>	+		0.376*** (4.782)	0.410*** (5.034)		0.413*** (4.530)		0.363*** (4.311)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.109 (-1.005)	-0.142 (-1.308)		-0.140 (-1.329)		-0.088 (-0.806)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.921 (1.159)	1.321 (1.395)		1.323 (1.394)		1.016 (1.114)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.272	0.000	0.000	0.165	0.000	0.001	0.000
Adjusted R-squared		0.0276	0.473	0.477	0.101	0.474	0.341	0.551

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med1 is an indicator variable set equal to 1 if GOV\_INDEX1 > the 50<sup>th</sup> percentile; GOV\_INDEX\_med1\*ROA is an interaction term between GOV\_INDEX\_med1 and ROA; BSIZE\_med is an indicator variable set equal to 1 if BSIZE < the 50<sup>th</sup> percentile; BSIZE\_med\*ROA is an interaction term between BSIZE\_med and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.6B: Cash bonus, *ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-	-	-	-11.867	-	-	-
		15.681** (-2.478)	58.022*** (-2.854)	73.132*** (-3.647)		75.988*** (-3.496)	34.472** (-2.006)	78.742*** (-3.584)
<i>ROA</i>	+	1.679*** (3.496)	1.841 (1.359)	1.825 (1.436)	(-1.191) 1.835*** (3.087)	1.738 (1.217)	3.854** (2.540)	2.008 (1.473)
<i>GOV_INDEX_med1</i>	-	10.867 (1.437)	7.042 (1.041)	8.507 (1.183)	11.735 (1.563)	8.456 (1.156)	12.457* (1.872)	9.302 (1.382)
<i>GOV_INDEX_med1*ROA</i>	+	-1.485* (-1.819)	-1.505** (-2.074)	-1.472** (-2.004)	-1.401* (-1.898)	-1.484** (-2.042)	-1.520** (-2.216)	-1.576** (-2.221)
<i>BSIZE_med</i>	-			4.895 (0.666)	9.027 (1.233)	4.753 (0.669)	9.641 (1.547)	6.206 (0.871)
<i>BSIZE_med*ROA</i>	+			0.289 (0.428)	-0.288 (-0.334)	0.286 (0.428)	-0.156 (-0.187)	0.267 (0.366)
<i>%OUTSOURCED</i>	-				-13.043 (-1.076)	2.335 (0.246)	-15.511 (-1.488)	1.614 (0.170)
<i>FEMALE_CIO</i>	?						-8.621** (-2.354)	-5.981* (-1.670)
<i>FINANCE_Qual_CIO</i>	+						3.779 (0.834)	0.572 (0.137)
<i>TENURE_CIO</i>	+						-0.236 (-0.507)	-0.376 (-0.902)
<i>Ln_TA<sub>t-1</sub></i>	+		3.410** (2.107)	4.777** (2.550)		5.020** (2.097)		5.270** (2.175)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.603** (2.100)	6.476* (1.717)		6.602* (1.858)		6.186* (1.776)
<i>PRS_AGE<sub>t-1</sub></i>	?		-38.992* (-1.969)	-24.006 (-1.311)		-23.051 (-1.273)		-17.199 (-0.867)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.004	0.00	0.000	0.00816	0.000	0.000	0.000
Log likelihood		-267.3	-239.4	-236.5	-263.4	-236.4	-254.2	-233.9
Pseudo R2		0.0125	0.116	0.127	0.0271	0.127	0.0608	0.136

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med1* is an indicator variable set equal to 1 if *GOV\_INDEX1* > the 50<sup>th</sup> percentile; *GOV\_INDEX\_med1\*ROA* is an interaction term between *GOV\_INDEX\_med1* and *ROA*; *BSIZE\_med* is an indicator variable set equal to 1 if *BSIZE* < the 50<sup>th</sup> percentile; *BSIZE\_med\*ROA* is an interaction term between *BSIZE\_med* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.6C: Salary, ROA and governance practices**

This table provides evidence on the association between CIOs salary, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.051*** (41.316)	9.005*** (13.268)	8.767*** (10.558)	12.199*** (25.825)	8.557*** (8.868)	11.292*** (16.264)	9.288*** (10.775)
<i>ROA</i>	+	0.054 (1.612)	0.129* (1.981)	0.122 (1.614)	0.059 (1.307)	0.114 (1.556)	0.109 (1.621)	0.071 (1.089)
<i>GOV_INDEX_med1</i>	-	0.328 (0.986)	0.311 (1.002)	0.322 (0.962)	0.330 (0.920)	0.303 (0.908)	0.343 (1.128)	0.298 (0.988)
<i>GOV_INDEX_med1*ROA</i>	+	-0.033 (-0.806)	-0.034 (-0.906)	-0.031 (-0.797)	-0.038 (-0.901)	-0.031 (-0.784)	-0.034 (-0.921)	-0.030 (-0.832)
<i>BSIZE_med</i>	-			0.022 (0.061)	-0.073 (-0.209)	0.001 (0.002)	-0.022 (-0.080)	0.027 (0.090)
<i>BSIZE_med*ROA</i>	+			0.018 (0.474)	-0.022 (-0.524)	0.019 (0.490)	-0.014 (-0.388)	0.014 (0.406)
<i>%OUTSOURCED</i>	-				-0.230 (-0.659)	0.224 (0.818)	-0.320 (-1.251)	0.118 (0.507)
<i>FEMALE_CIO</i>	?						-0.179 (-1.233)	-0.187 (-1.442)
<i>FINANCE_Qual_CIO</i>	+						0.057 (0.556)	0.034 (0.378)
<i>TENURE_CIO</i>	+						0.053*** (3.801)	0.034** (2.609)
<i>Ln_TA<sub>t-1</sub></i>	+		0.254*** (5.105)	0.282*** (5.191)		0.300*** (4.483)		0.244*** (3.748)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.136 (-1.608)	-0.165* (-1.973)		-0.154* (-1.910)		-0.085 (-0.905)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.120** (2.243)	1.402** (2.209)		1.412** (2.325)		1.102** (2.044)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.356	0.000	0.000	0.154	0.000	0.000	0.000
Adjusted R-squared		0.0321	0.400	0.403	0.0688	0.405	0.334	0.487

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med1 is an indicator variable set equal to 1 if GOV\_INDEX1 > the 50<sup>th</sup> percentile; GOV\_INDEX\_med1\*ROA is an interaction term between GOV\_INDEX\_med1 and ROA; BSIZE\_med is an indicator variable set equal to 1 if BSIZE < the 50<sup>th</sup> percentile; BSIZE\_med\*ROA is an interaction term between BSIZE\_med and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.7A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.649*** (89.848)	9.519*** (19.331)	9.047*** (15.697)	13.074*** (38.642)	8.711*** (13.792)	12.833*** (40.798)	9.243*** (13.874)
<i>EXCESS_ROA</i>	+	0.247* (1.820)	0.159 (1.478)	0.244 (1.611)	0.379* (1.956)	0.242 (1.626)	0.279 (1.683)	0.183 (1.251)
<i>GOV_INDEX_med2</i>	-	0.127 (0.744)	0.036 (0.305)	0.041 (0.424)	0.157 (0.968)	0.028 (0.327)	0.133 (0.946)	0.031 (0.344)
<i>GOV_INDEX_med2*EXCESS_ROA</i>	+	-0.094 (-0.626)	-0.066 (-0.608)	-0.083 (-0.780)	-0.137 (-0.885)	-0.076 (-0.744)	-0.096 (-0.702)	-0.051 (-0.485)
<i>BSIZE_med1</i>	-			0.251* (1.717)	-0.115 (-0.690)	0.264* (1.817)	-0.104 (-0.739)	0.183 (1.288)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.118 (-1.048)	-0.194 (-1.257)	-0.135 (-1.175)	-0.186 (-1.362)	-0.138 (-1.264)
<i>%OUTSOURCED</i>	-				-0.722 (-1.534)	0.223 (0.671)	-0.729* (-1.721)	0.090 (0.273)
<i>FEMALE_CIO</i>	?						-0.328* (-1.880)	-0.278* (-1.721)
<i>FINANCE_Qual_CIO</i>	+						0.088 (0.625)	0.014 (0.109)
<i>TENURE_CIO</i>	+						0.053*** (3.054)	0.030* (1.861)
<i>Ln_TA<sub>t-1</sub></i>	+		0.372*** (4.839)	0.385*** (4.633)		0.405*** (5.030)		0.345*** (4.454)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.112 (-1.108)	-0.090 (-0.973)		-0.081 (-0.861)		-0.029 (-0.279)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.968 (1.241)	1.603* (1.973)		1.687* (2.038)		1.147 (1.356)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0884	0.000	0.000	0.0134	0.000	0.000	0.000
Adjusted R-squared		0.0906	0.468	0.500	0.190	0.500	0.366	0.558

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med2\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med2* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.7B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-4.205 (-1.001)	-41.160*** (-2.761)	-59.847*** (-3.598)	-3.729 (-0.515)	-69.647*** (-4.172)	-3.464 (-0.473)	-72.589*** (-3.792)
<i>EXCESS_ROA</i>	+	4.070* (1.925)	2.889* (1.766)	4.868* (1.956)	6.525** (2.013)	4.960* (1.966)	6.407** (1.996)	4.689* (1.959)
<i>GOV_INDEX_med2</i>	-	1.845 (0.483)	-0.358 (-0.112)	-0.559 (-0.209)	2.271 (0.616)	-0.756 (-0.302)	0.929 (0.256)	-1.594 (-0.665)
<i>GOV_INDEX_med2*EXCESS_ROA</i>	+	-1.943 (-0.735)	-2.067 (-0.916)	-2.593 (-1.277)	-2.945 (-1.100)	-2.671 (-1.350)	-2.981 (-1.147)	-2.877 (-1.579)
<i>BSIZE_med1</i>	-			10.819*** (2.972)	9.844*** (2.699)	10.990*** (2.933)	10.076*** (2.920)	11.480*** (3.086)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-2.102 (-0.747)	-2.374 (-0.689)	-2.544 (-0.814)	-2.196 (-0.662)	-1.914 (-0.648)
<i>%OUTSOURCED</i>	-				-11.838 (-1.138)	5.735 (0.696)	-12.097 (-1.195)	5.621 (0.652)
<i>FEMALE_CIO</i>	?						-5.497* (-1.930)	-3.213 (-1.143)
<i>FINANCE_Qual_CIO</i>	+						4.168 (0.979)	2.997 (0.929)
<i>TENURE_CIO</i>	+						-0.126 (-0.257)	-0.271 (-0.683)
<i>Ln_TA<sub>t-1</sub></i>	+		3.365** (2.045)	4.514*** (2.768)		5.127*** (3.171)		5.144*** (2.839)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.338** (2.007)	5.685* (1.847)		5.957** (1.994)		6.386** (2.131)
<i>PRS_AGE<sub>t-1</sub></i>	?		-35.724* (-1.806)	-6.649 (-0.319)		-2.981 (-0.153)		6.642 (0.315)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.178	0.000	0.000	0.00557	0.000	0.000	0.000
Log likelihood		-267.1	-242.2	-231.5	-256.9	-230.8	-250.2	-229.4
Pseudo R2		0.0133	0.105	0.145	0.0511	0.147	0.0758	0.153

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components). The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.; *GOV\_INDEX\_med2\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med2* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.7C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.434*** (112.221)	10.263*** (31.081)	10.135*** (24.284)	12.670*** (50.110)	9.572*** (18.331)	12.366*** (50.939)	10.042*** (19.792)
<i>EXCESS_ROA</i>	+	0.178 (1.548)	0.126 (1.298)	0.176 (1.199)	0.269 (1.576)	0.172 (1.217)	0.183 (1.171)	0.121 (0.838)
<i>GOV_INDEX_med2</i>	-	0.074 (0.565)	0.015 (0.165)	0.018 (0.213)	0.087 (0.691)	-0.003 (-0.040)	0.077 (0.747)	0.012 (0.162)
<i>GOV_INDEX_med2*EXCESS_ROA</i>	+	-0.047 (-0.383)	-0.024 (-0.253)	-0.033 (-0.326)	-0.067 (-0.527)	-0.020 (-0.217)	-0.031 (-0.273)	-0.002 (-0.025)
<i>BSIZE_med1</i>	-			0.082 (0.670)	-0.183 (-1.465)	0.104 (0.876)	-0.168* (-1.734)	0.024 (0.223)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.075 (-0.701)	-0.151 (-1.129)	-0.103 (-0.970)	-0.149 (-1.248)	-0.115 (-1.103)
<i>%OUTSOURCED</i>	-				-0.280 (-0.861)	0.373 (1.454)	-0.266 (-0.956)	0.259 (1.058)
<i>FEMALE_CIO</i>	?						-0.183 (-1.123)	-0.154 (-0.977)
<i>FINANCE_Qual_CIO</i>	+						0.055 (0.557)	0.010 (0.107)
<i>TENURE_CIO</i>	+						0.053*** (3.952)	0.037*** (2.939)
<i>Ln_TA<sub>t-1</sub></i>	+		0.257*** (5.272)	0.257*** (4.579)		0.291*** (4.897)		0.226*** (4.079)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.128 (-1.601)	-0.116 (-1.450)		-0.102 (-1.344)		-0.034 (-0.377)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.052* (2.031)	1.252** (2.074)		1.391** (2.363)		0.807 (1.431)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0469	0.000	0.000	0.00608	0.000	0.000	0.000
Adjusted R-squared		0.0808	0.391	0.393	0.147	0.407	0.363	0.485

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med2\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med2* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.8A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		12.077*** (27.240)	8.051*** (8.741)	7.382*** (7.355)	12.402*** (17.177)	7.165*** (6.485)	11.256*** (12.725)	8.115*** (7.368)
<i>ROA</i>	+	0.079 (1.558)	0.153* (1.723)	0.168* (1.790)	0.098 (1.482)	0.163* (1.804)	0.179** (2.244)	0.126 (1.578)
<i>GOV_INDEX_med2</i>	-	0.467 (0.956)	0.407 (0.868)	0.335 (0.887)	0.517 (1.190)	0.314 (0.861)	0.503 (1.522)	0.325 (0.975)
<i>GOV_INDEX_med2*ROA</i>	+	-0.048 (-0.848)	-0.050 (-0.913)	-0.041 (-0.892)	-0.052 (-1.071)	-0.040 (-0.874)	-0.053 (-1.315)	-0.042 (-1.015)
<i>BSIZE_med1</i>	-			0.410 (1.168)	0.089 (0.215)	0.440 (1.240)	0.187 (0.551)	0.426 (1.259)
<i>BSIZE_med1*ROA</i>	+			-0.022 (-0.565)	-0.031 (-0.662)	-0.024 (-0.619)	-0.042 (-1.020)	-0.033 (-0.886)
<i>%OUTSOURCED</i>	-				-0.759 (-1.489)	0.169 (0.522)	-0.820** (-2.069)	0.021 (0.067)
<i>FEMALE_CIO</i>	?						-0.389** (-2.456)	-0.328** (-2.371)
<i>FINANCE_Qual_CIO</i>	+						0.104 (0.740)	0.035 (0.270)
<i>TENURE_CIO</i>	+						0.051*** (2.782)	0.026 (1.620)
<i>Ln_TA<sub>t-1</sub></i>	+		0.371*** (4.679)	0.399*** (4.850)		0.415*** (5.125)		0.354*** (4.483)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.115 (-1.145)	-0.110 (-1.208)		-0.105 (-1.153)		-0.057 (-0.573)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.023 (1.301)	1.657* (1.979)		1.726* (2.017)		1.269 (1.408)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.252	0.000	0.000	0.198	0.000	0.000	0.000
Adjusted R-squared		0.0342	0.475	0.497	0.104	0.495	0.359	0.557

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med2 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\leq$  the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med2\*ROA is an interaction term between GOV\_INDEX\_med2 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.8B: Cash bonus, ROA and governance practices**

This table provides evidence on the association between CIOs cash bonus, ROA, governance practices and investment outsourcing.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	
<i>Constant</i>		-16.197** (-2.096)	-59.387*** (-2.770)	-82.999*** (-3.599)	-17.471 (-1.542)	-89.738*** (-4.141)	-43.328*** (-2.632)	-93.480*** (-4.016)
<i>ROA</i>	+	1.640** (2.453)	1.935 (1.290)	2.268* (1.803)	1.929*** (2.966)	2.116 (1.599)	4.331*** (2.796)	2.422* (1.890)
<i>GOV_INDEX_med2</i>	-	7.595 (0.884)	2.698 (0.370)	-1.802 (-0.308)	3.757 (0.480)	-2.068 (-0.348)	6.366 (0.936)	-0.007 (-0.001)
<i>GOV_INDEX_med2*ROA</i>	+	-0.811 (-0.884)	-0.447 (-0.564)	0.057 (0.089)	-0.306 (-0.382)	0.065 (0.099)	-0.820 (-1.030)	-0.301 (-0.496)
<i>BSIZE_med1</i>	-			14.820** (2.300)	15.152** (2.339)	15.280** (2.279)	15.186*** (2.674)	14.682** (2.203)
<i>BSIZE_med1*ROA</i>	+			-0.537 (-0.905)	-0.781 (-1.337)	-0.581 (-0.940)	-0.743 (-1.261)	-0.469 (-0.789)
<i>%OUTSOURCED</i>	-				-11.292 (-1.045)	4.753 (0.605)	-12.781 (-1.325)	4.808 (0.599)
<i>FEMALE_CIO</i>	?						-6.639** (-2.096)	-3.842 (-1.324)
<i>FINANCE_Qual_CIO</i>	+						4.272 (0.984)	2.401 (0.745)
<i>TENURE_CIO</i>	+						-0.175 (-0.347)	-0.337 (-0.808)
<i>Ln_TA<sub>t-1</sub></i>	+		3.350** (1.987)	4.803*** (2.892)		5.354*** (3.102)		5.332*** (2.809)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.153* (1.945)	5.206 (1.596)		5.360* (1.692)		5.591* (1.828)
<i>PRS_AGE<sub>t-1</sub></i>	?		-35.378* (-1.769)	-5.706 (-0.271)		-2.415 (-0.120)		5.669 (0.258)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0148	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-267.9	-242.6	-232.6	-259.4	-232.1	-250.7	-230.5
Pseudo R2		0.0104	0.104	0.141	0.0418	0.143	0.0740	0.148

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med2\*ROA* is an interaction term between *GOV\_INDEX\_med2* and *ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*ROA* is an interaction term between *BSIZE\_med1* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.8C: Salary, *ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *ROA*, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		11.994*** (28.070)	8.935*** (11.194)	8.697*** (9.178)	12.144*** (18.115)	8.288*** (7.792)	11.274*** (13.554)	9.214*** (8.766)
<i>ROA</i>	+	0.061 (1.243)	0.138* (1.698)	0.146 (1.583)	0.077 (1.182)	0.138 (1.562)	0.125 (1.572)	0.094 (1.158)
<i>GOV_INDEX_med2</i>	-	0.313 (0.696)	0.307 (0.707)	0.273 (0.731)	0.362 (0.894)	0.233 (0.653)	0.318 (0.992)	0.212 (0.640)
<i>GOV_INDEX_med2*ROA</i>	+	-0.034 (-0.645)	-0.039 (-0.759)	-0.035 (-0.777)	-0.040 (-0.863)	-0.033 (-0.734)	-0.035 (-0.888)	-0.029 (-0.697)
<i>BSIZE_med1</i>	-			0.192 (0.546)	-0.013 (-0.032)	0.250 (0.706)	0.075 (0.216)	0.236 (0.678)
<i>BSIZE_med1*ROA</i>	+			-0.015 (-0.393)	-0.025 (-0.559)	-0.020 (-0.509)	-0.034 (-0.830)	-0.028 (-0.729)
<i>%OUTSOURCED</i>	-				-0.317 (-0.903)	0.319 (1.241)	-0.349 (-1.376)	0.189 (0.800)
<i>FEMALE_CIO</i>	?						-0.224 (-1.582)	-0.189 (-1.417)
<i>FINANCE_Qual_CIO</i>	+						0.073 (0.763)	0.035 (0.345)
<i>TENURE_CIO</i>	+						0.051*** (3.832)	0.034*** (2.863)
<i>Ln_TA<sub>t-1</sub></i>	+		0.256*** (5.050)	0.264*** (5.035)		0.295*** (4.922)		0.231*** (3.999)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.129 (-1.607)	-0.127 (-1.632)		-0.117 (-1.640)		-0.053 (-0.625)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.101** (2.059)	1.299** (2.110)		1.430** (2.358)		0.928 (1.485)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.313	0.000	0.000	0.191	0.000	0.000	0.000
Adjusted R-squared		0.0294	0.400	0.397	0.0762	0.406	0.357	0.483

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med2* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med2\*ROA* is an interaction term between *GOV\_INDEX\_med2* and *ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*ROA* is an interaction term between *BSIZE\_med1* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.9A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.741*** (94.314)	9.557*** (19.288)	9.069*** (14.794)	13.166*** (35.358)	8.678*** (12.325)	12.814*** (37.216)	9.193*** (13.086)
<i>EXCESS_ROA</i>	+	0.215* (1.959)	0.124 (1.559)	0.206* (1.805)	0.311** (2.044)	0.214* (1.897)	0.250* (1.883)	0.176 (1.613)
<i>GOV_INDEX_med3</i>	-	-0.027 (-0.179)	-0.113 (-1.192)	-0.098 (-1.126)	-0.038 (-0.259)	-0.096 (-1.121)	0.094 (0.651)	-0.010 (-0.112)
<i>GOV_INDEX_med3*EXCESS_ROA</i>	+	-0.043 (-0.347)	-0.027 (-0.388)	-0.047 (-0.675)	-0.034 (-0.323)	-0.052 (-0.785)	-0.035 (-0.378)	-0.040 (-0.638)
<i>BSIZE_med1</i>	-			0.251 (1.609)	-0.117 (-0.667)	0.267* (1.734)	-0.106 (-0.733)	0.187 (1.269)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.105 (-1.016)	-0.187 (-1.212)	-0.126 (-1.165)	-0.186 (-1.385)	-0.134 (-1.321)
<i>%OUTSOURCED</i>	-				-0.671 (-1.416)	0.258 (0.738)	-0.673 (-1.593)	0.121 (0.364)
<i>FEMALE_CIO</i>	?						-0.373** (-2.296)	-0.285* (-1.897)
<i>FINANCE_Qual_CIO</i>	+						0.079 (0.569)	0.010 (0.080)
<i>TENURE_CIO</i>	+						0.053*** (2.889)	0.029* (1.773)
<i>Ln_TA<sub>t-1</sub></i>	+		0.381*** (5.028)	0.396*** (4.844)		0.418*** (5.106)		0.353*** (4.652)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.109 (-1.016)	-0.092 (-0.916)		-0.081 (-0.805)		-0.034 (-0.322)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.897 (1.123)	1.542* (1.798)		1.649* (1.902)		1.148 (1.336)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.103	0.000	0.000	0.0259	0.000	0.001	0.000
Adjusted R-squared		0.0771	0.472	0.501	0.166	0.503	0.354	0.557

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med3* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med3\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med3* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.9B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. Sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		-3.017 (-0.712)	-40.006*** (-2.659)	-60.007*** (-3.565)	-2.036 (-0.262)	-69.190*** (-4.128)	-2.401 (-0.314)	-71.575*** (-3.709)
<i>EXCESS_ROA</i>	+	2.988 (1.416)	1.393 (0.844)	3.387 (1.448)	4.971 (1.520)	3.594 (1.472)	5.234 (1.606)	3.332 (1.366)
<i>GOV_INDEX_med3</i>	-	-0.082 (-0.022)	-2.515 (-0.931)	-2.535 (-1.017)	-0.346 (-0.090)	-2.446 (-1.019)	-0.387 (-0.102)	-3.253 (-1.298)
<i>GOV_INDEX_med3*EXCESS_ROA</i>	+	-0.264 (-0.110)	-0.109 (-0.053)	-1.096 (-0.583)	-0.956 (-0.373)	-1.296 (-0.670)	-1.407 (-0.561)	-1.358 (-0.710)
<i>BSIZE_med1</i>	-			10.865*** (2.976)	9.753** (2.609)	11.004*** (2.950)	9.967*** (2.867)	11.504*** (3.120)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-1.564 (-0.581)	-1.906 (-0.552)	-1.995 (-0.661)	-1.775 (-0.542)	-1.326 (-0.463)
<i>%OUTSOURCED</i>	-				-11.903 (-1.122)	5.393 (0.633)	-12.127 (-1.195)	5.187 (0.591)
<i>FEMALE_CIO</i>	?						-5.955* (-1.945)	-2.877 (-0.993)
<i>FINANCE_Qual_CIO</i>	+						4.089 (0.955)	2.592 (0.816)
<i>TENURE_CIO</i>	+						-0.157 (-0.315)	-0.345 (-0.876)
<i>Ln_TA<sub>t-1</sub></i>	+		3.488** (2.096)	4.728*** (2.947)		5.280*** (3.224)		5.409*** (2.993)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.189* (1.946)	5.611* (1.801)		5.868* (1.963)		6.033** (2.065)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.289* (-1.794)	-6.615 (-0.311)		-3.073 (-0.158)		5.913 (0.280)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.243	0.000	0.000	0.0189	0.000	0.000	0.000
Log likelihood		-267.6	-242.1	-231.4	-257.9	-230.9	-250.9	-229.4
Pseudo R2		0.0114	0.106	0.145	0.0473	0.147	0.0732	0.153

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med3* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components). The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med3\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med3* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.9C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		12.513*** (118.077)	10.297*** (31.234)	10.160*** (23.244)	12.749*** (46.466)	9.585*** (16.597)	12.355*** (47.033)	10.024*** (18.508)
<i>EXCESS_ROA</i>	+	0.161* (1.921)	0.113* (1.732)	0.160 (1.516)	0.233* (1.885)	0.172* (1.696)	0.181 (1.568)	0.135 (1.356)
<i>GOV_INDEX_med3</i>	-	-0.055 (-0.482)	-0.098 (-1.374)	-0.090 (-1.292)	-0.057 (-0.512)	-0.087 (-1.392)	0.056 (0.543)	-0.010 (-0.156)
<i>GOV_INDEX_med3*EXCESS_ROA</i>	+	-0.025 (-0.270)	-0.020 (-0.367)	-0.028 (-0.481)	-0.019 (-0.242)	-0.035 (-0.682)	-0.019 (-0.280)	-0.025 (-0.480)
<i>BSIZE_med1</i>	-			0.083 (0.654)	-0.184 (-1.418)	0.106 (0.874)	-0.169* (-1.725)	0.028 (0.261)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.067 (-0.675)	-0.146 (-1.113)	-0.099 (-0.968)	-0.150 (-1.310)	-0.114 (-1.162)
<i>%OUTSOURCED</i>	-				-0.258 (-0.781)	0.379 (1.376)	-0.238 (-0.833)	0.267 (1.021)
<i>FEMALE_CIO</i>	?						-0.207 (-1.442)	-0.154 (-1.065)
<i>FINANCE_Qual_CIO</i>	+						0.053 (0.555)	0.014 (0.152)
<i>TENURE_CIO</i>	+						0.053*** (3.827)	0.037*** (2.901)
<i>Ln_TA<sub>t-1</sub></i>	+		0.263*** (5.568)	0.264*** (4.823)		0.296*** (4.889)		0.228*** (4.226)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.124 (-1.522)	-0.114 (-1.416)		-0.099 (-1.308)		-0.034 (-0.388)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.004* (1.855)	1.209* (1.925)		1.366** (2.253)		0.830 (1.465)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0801	0.000	0.000	0.00608	0.000	0.000	0.000
Adjusted R-squared		0.0770	0.399	0.400	0.139	0.415	0.359	0.486

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med3* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components). The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.; *GOV\_INDEX\_med3\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med3* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.10A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.581*** (85.222)	8.562*** (11.246)	7.768*** (8.612)	12.847*** (23.740)	7.510*** (7.234)	11.443*** (14.668)	8.336*** (8.330)
<i>ROA</i>	+	0.029 (1.495)	0.097 (1.533)	0.127* (1.758)	0.058 (1.672)	0.123* (1.784)	0.150** (2.430)	0.093 (1.573)
<i>GOV_INDEX_med3</i>	-	-0.288 (-1.078)	-0.178 (-0.779)	-0.144 (-0.657)	-0.270 (-0.993)	-0.145 (-0.650)	0.044 (0.190)	-0.059 (-0.307)
<i>GOV_INDEX_med3*ROA</i>	+	0.025 (0.654)	0.008 (0.254)	0.004 (0.129)	0.020 (0.515)	0.004 (0.134)	0.003 (0.106)	0.004 (0.159)
<i>BSIZE_med1</i>	-			0.472 (1.145)	0.205 (0.406)	0.501 (1.199)	0.283 (0.666)	0.478 (1.196)
<i>BSIZE_med1*ROA</i>	+			-0.029 (-0.668)	-0.044 (-0.817)	-0.032 (-0.707)	-0.053 (-1.081)	-0.039 (-0.901)
<i>%OUTSOURCED</i>	-				-0.739 (-1.432)	0.192 (0.566)	-0.779* (-1.936)	0.049 (0.157)
<i>FEMALE_CIO</i>	?						-0.395** (-2.482)	-0.303** (-2.092)
<i>FINANCE_Qual_CIO</i>	+						0.100 (0.711)	0.023 (0.181)
<i>TENURE_CIO</i>	+						0.053** (2.732)	0.027 (1.619)
<i>Ln_TA<sub>t-1</sub></i>	+		0.381*** (5.032)	0.408*** (5.122)		0.426*** (5.228)		0.361*** (4.657)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.109 (-1.008)	-0.105 (-1.031)		-0.099 (-0.981)		-0.054 (-0.521)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.875 (1.099)	1.545* (1.781)		1.630* (1.841)		1.174 (1.311)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.185	0.000	0.000	0.126	0.000	0.001	0.000
Adjusted R-squared		0.0249	0.472	0.497	0.0934	0.496	0.343	0.551

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med3 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\leq$  the 50<sup>th</sup> percentile; (v) FINANCIAL  $\geq$  the 50<sup>th</sup> percentile; (vi) EXPERIENCE  $\geq$  the 50<sup>th</sup> percentile; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med3\*ROA is an interaction term between GOV\_INDEX\_med3 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.10B: Cash bonus, ROA and governance practices**

This table provides evidence on the association between CIOs cash bonus, ROA, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-12.208 (-1.555)	-52.497** (-2.397)	-78.833*** (-3.276)	-14.852 (-1.255)	-84.991*** (-3.812)	-40.889** (-2.334)	-89.897*** (-3.759)
<i>ROA</i>	+	1.317* (1.840)	1.227 (0.815)	1.868 (1.374)	1.861*** (2.622)	1.723 (1.207)	4.157** (2.578)	2.042 (1.553)
<i>GOV_INDEX_med3</i>	-	1.303 (0.155)	-3.291 (-0.551)	-4.894 (-1.010)	-1.238 (-0.165)	-5.136 (-1.045)	2.800 (0.430)	-3.856 (-0.783)
<i>GOV_INDEX_med3*ROA</i>	+	-0.303 (-0.326)	0.094 (0.138)	0.229 (0.452)	-0.073 (-0.098)	0.259 (0.527)	-0.497 (-0.671)	-0.004 (-0.008)
<i>BSIZE_med1</i>	-			15.260** (2.381)	16.533** (2.535)	15.677** (2.340)	16.039*** (2.760)	15.337** (2.301)
<i>BSIZE_med1*ROA</i>	+			-0.583 (-0.971)	-0.939 (-1.598)	-0.624 (-0.996)	-0.830 (-1.381)	-0.519 (-0.872)
<i>%OUTSOURCED</i>	-				-11.620 (-1.073)	4.365 (0.566)	-13.069 (-1.360)	4.446 (0.557)
<i>FEMALE_CIO</i>	?						-6.360** (-2.018)	-3.030 (-1.055)
<i>FINANCE_Qual_CIO</i>	+						4.315 (0.992)	2.446 (0.753)
<i>TENURE_CIO</i>	+						-0.187 (-0.370)	-0.389 (-0.939)
<i>Ln_TA<sub>t-1</sub></i>	+		3.491** (2.097)	4.925*** (3.046)		5.418*** (3.161)		5.516*** (2.921)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.185* (1.944)	5.311 (1.613)		5.460* (1.710)		5.633* (1.851)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.470* (-1.796)	-6.311 (-0.296)		-3.312 (-0.166)		5.593 (0.258)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0246	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-268.2	-242.1	-231.6	-259.3	-231.2	-250.8	-229.6
Pseudo R2		0.00926	0.106	0.144	0.0420	0.146	0.0735	0.152

The Tobit regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med3 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\leq$  the 50<sup>th</sup> percentile; (v) FINANCIAL  $\geq$  the 50<sup>th</sup> percentile; (vi) EXPERIENCE  $\geq$  the 50<sup>th</sup> percentile; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med3\*ROA is an interaction term between GOV\_INDEX\_med3 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.10C: Salary, ROA and governance practices**

This table provides evidence on the association between CIOs salary, ROA, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.443*** (94.232)	9.397*** (15.476)	9.093*** (11.464)	12.551*** (27.721)	8.652*** (9.074)	11.497*** (17.345)	9.473*** (10.532)
<i>ROA</i>	+	0.016 (0.968)	0.087* (1.713)	0.103 (1.580)	0.038 (1.185)	0.096 (1.579)	0.094 (1.676)	0.059 (1.098)
<i>GOV_INDEX_med3</i>	-	-0.340 (-1.550)	-0.207 (-1.042)	-0.193 (-1.007)	-0.308 (-1.381)	-0.195 (-0.989)	-0.088 (-0.474)	-0.145 (-0.850)
<i>GOV_INDEX_med3*ROA</i>	+	0.031 (0.934)	0.014 (0.493)	0.012 (0.456)	0.025 (0.764)	0.012 (0.472)	0.017 (0.614)	0.016 (0.691)
<i>B_SIZE_med1</i>	-			0.239 (0.588)	0.067 (0.144)	0.290 (0.714)	0.132 (0.325)	0.263 (0.666)
<i>B_SIZE_med1*ROA</i>	+			-0.021 (-0.474)	-0.034 (-0.664)	-0.025 (-0.556)	-0.041 (-0.850)	-0.031 (-0.712)
<i>%OUTSOURCED</i>	-				-0.312 (-0.875)	0.329 (1.220)	-0.323 (-1.220)	0.207 (0.846)
<i>FEMALE_CIO</i>	?						-0.222 (-1.606)	-0.166 (-1.202)
<i>FINANCE_Qual_CIO</i>	+						0.068 (0.720)	0.022 (0.229)
<i>TENURE_CIO</i>	+						0.053*** (3.612)	0.036** (2.726)
<i>Ln_TA<sub>t-1</sub></i>	+		0.264*** (5.600)	0.271*** (5.428)		0.303*** (5.098)		0.236*** (4.244)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.124 (-1.501)	-0.123 (-1.510)		-0.112 (-1.491)		-0.051 (-0.581)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.973* (1.814)	1.190* (1.924)		1.335** (2.203)		0.823 (1.409)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.239	0.000	0.000	0.107	0.000	0.000	0.000
Adjusted R-squared		0.0330	0.399	0.398	0.0778	0.409	0.349	0.480

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX\_med3* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\leq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med3\*ROA* is an interaction term between *GOV\_INDEX\_med3* and *ROA*; *B\_SIZE\_med1* is an indicator variable set equal to 1 if *B\_SIZE*  $\leq$  the 50<sup>th</sup> percentile; *B\_SIZE\_med1\*ROA* is an interaction term between *B\_SIZE\_med1* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.11A: Total compensation, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.691*** (107.004)	9.510*** (19.191)	9.039*** (15.703)	13.093*** (40.644)	8.660*** (13.134)	12.848*** (41.283)	9.217*** (13.371)
<i>EXCESS_ROA</i>	+	0.148 (1.678)	0.067 (0.859)	0.184 (1.445)	0.287** (2.053)	0.192 (1.530)	0.225 (1.663)	0.141 (1.180)
<i>GOV_INDEX_med4</i>	-	0.057 (0.387)	-0.020 (-0.144)	0.026 (0.196)	0.080 (0.580)	0.019 (0.145)	0.079 (0.647)	0.006 (0.049)
<i>GOV_INDEX_med4*EXCESS_ROA</i>	+	0.071 (0.639)	0.086 (0.936)	0.006 (0.066)	0.010 (0.089)	-0.000 (-0.000)	-0.002 (-0.022)	0.011 (0.152)
<i>BSIZE_med1</i>	-			0.251 (1.656)	-0.113 (-0.664)	0.266* (1.759)	-0.100 (-0.692)	0.179 (1.210)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.110 (-0.947)	-0.194 (-1.212)	-0.132 (-1.109)	-0.192 (-1.272)	-0.131 (-1.132)
<i>%OUTSOURCED</i>	-				-0.668 (-1.443)	0.251 (0.717)	-0.676 (-1.602)	0.115 (0.342)
<i>FEMALE_CIO</i>	?						-0.343* (-2.037)	-0.289* (-1.942)
<i>FINANCE_Qual_CIO</i>	+						0.055 (0.376)	0.001 (0.006)
<i>TENURE_CIO</i>	+						0.053*** (2.957)	0.029* (1.820)
<i>Ln_TA<sub>t-1</sub></i>	+		0.378*** (4.724)	0.391*** (4.627)		0.412*** (4.976)		0.353*** (4.625)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.112 (-0.993)	-0.103 (-0.986)		-0.090 (-0.868)		-0.037 (-0.330)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.886 (1.112)	1.584* (1.832)		1.685* (1.908)		1.099 (1.276)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0649	0.000	0.000	0.0191	0.000	0.000	0.000
Adjusted R-squared		0.0807	0.470	0.495	0.168	0.496	0.352	0.556

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med4* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med4\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med4* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.11B: Cash bonus, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-4.826 (-1.184)	-40.310*** (-2.743)	-60.809*** (-3.853)	-5.407 (-0.740)	-69.875*** (-4.166)	-4.923 (-0.653)	-70.416*** (-3.799)
<i>EXCESS_ROA</i>	+	2.621 (1.237)	1.370 (0.621)	5.284 (1.578)	6.471* (1.657)	5.343 (1.632)	6.588 (1.597)	4.896 (1.482)
<i>GOV_INDEX_med4</i>	-	3.061 (0.788)	0.099 (0.027)	1.758 (0.538)	4.544 (1.214)	1.758 (0.567)	3.116 (0.930)	0.973 (0.300)
<i>GOV_INDEX_med4*EXCESS_ROA</i>	+	0.226 (0.088)	0.413 (0.172)	-2.536 (-1.010)	-2.422 (-0.777)	-2.583 (-1.080)	-2.378 (-0.734)	-2.336 (-0.983)
<i>BSIZE_med1</i>	-			11.456*** (3.124)	10.493*** (2.903)	11.599*** (3.056)	10.547*** (3.051)	11.690*** (3.067)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-2.710 (-0.849)	-3.303 (-0.852)	-3.065 (-0.917)	-3.164 (-0.813)	-2.414 (-0.731)
<i>%OUTSOURCED</i>	-				-11.577 (-1.137)	5.303 (0.663)	-11.380 (-1.136)	5.022 (0.603)
<i>FEMALE_CIO</i>	?						-4.667 (-1.472)	-2.294 (-0.789)
<i>FINANCE_Qual_CIO</i>	+						2.694 (0.670)	1.606 (0.467)
<i>TENURE_CIO</i>	+						-0.069 (-0.139)	-0.217 (-0.541)
<i>Ln_TA<sub>t-1</sub></i>	+		3.331* (1.914)	4.428*** (2.658)		4.990*** (3.027)		5.028*** (2.830)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.036* (1.847)	5.487* (1.769)		5.700* (1.916)		5.778** (1.998)
<i>PRS_AGE<sub>t-1</sub></i>	?		-36.165* (-1.845)	-4.296 (-0.220)		-0.718 (-0.038)		4.275 (0.205)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.197	0.000	0.000	0.00795	0.000	0.000	0.000
Log likelihood		-266.9	-242.8	-231.6	-255.9	-231.1	-250.1	-230.5
Pseudo R2		0.0142	0.103	0.144	0.0545	0.146	0.0762	0.149

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med4* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components). The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.); *GOV\_INDEX\_med4\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med4* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.11C: Salary, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		12.457*** (137.693)	10.256*** (31.401)	10.135*** (25.177)	12.690*** (55.692)	9.579*** (17.829)	12.377*** (54.732)	10.053*** (19.022)
<i>EXCESS_ROA</i>	+	0.108 (1.642)	0.065 (1.092)	0.119 (1.123)	0.194* (1.738)	0.132 (1.304)	0.148 (1.233)	0.095 (0.904)
<i>GOV_INDEX_med4</i>	-	0.034 (0.288)	0.007 (0.070)	0.025 (0.257)	0.038 (0.367)	0.014 (0.156)	0.054 (0.545)	0.012 (0.130)
<i>GOV_INDEX_med4*EXCESS_ROA</i>	+	0.072 (0.762)	0.078 (0.950)	0.045 (0.578)	0.045 (0.509)	0.036 (0.548)	0.024 (0.315)	0.033 (0.569)
<i>BSIZE_med1</i>	-			0.076 (0.631)	-0.187 (-1.517)	0.098 (0.839)	-0.168* (-1.727)	0.018 (0.166)
<i>BSIZE_med1*EXCESS_ROA</i>	+			-0.058 (-0.559)	-0.137 (-1.044)	-0.090 (-0.884)	-0.146 (-1.145)	-0.104 (-0.987)
<i>%OUTSOURCED</i>	-				-0.257 (-0.792)	0.368 (1.315)	-0.243 (-0.852)	0.258 (0.974)
<i>FEMALE_CIO</i>	?						-0.192 (-1.249)	-0.159 (-1.080)
<i>FINANCE_Qual_CIO</i>	+						0.036 (0.326)	0.003 (0.029)
<i>TENURE_CIO</i>	+						0.053*** (4.023)	0.037*** (3.027)
<i>Ln_TA<sub>t-1</sub></i>	+		0.260*** (5.086)	0.261*** (4.627)		0.292*** (4.892)		0.229*** (4.327)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.132 (-1.507)	-0.127 (-1.471)		-0.109 (-1.370)		-0.041 (-0.437)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.008* (2.007)	1.218** (2.069)		1.365** (2.354)		0.770 (1.368)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0542	0.000	0.000	0.0123	0.000	0.000	0.000
Adjusted R-squared		0.0801	0.396	0.394	0.139	0.408	0.360	0.486

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX\_med4* is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components). The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $\geq$  the 50<sup>th</sup> percentile; (v) *FINANCIAL*  $\geq$  the 50<sup>th</sup> percentile; (vi) *EXPERIENCE*  $\geq$  the 50<sup>th</sup> percentile; and (vii) *TENURE*  $\leq$  the 50<sup>th</sup> percentile.; *GOV\_INDEX\_med4\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX\_med4* and *EXCESS\_ROA*; *BSIZE\_med1* is an indicator variable set equal to 1 if *BSIZE*  $\leq$  the 50<sup>th</sup> percentile; *BSIZE\_med1\*EXCESS\_ROA* is an interaction term between *BSIZE\_med1* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.12A: Total compensation, ROA and governance practices**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.520*** (64.446)	8.592*** (12.133)	7.813*** (9.319)	12.785*** (23.448)	7.554*** (7.797)	11.676*** (15.986)	8.546*** (8.999)
<i>ROA</i>	+	0.022 (1.040)	0.080 (1.180)	0.110 (1.433)	0.047 (1.185)	0.105 (1.428)	0.126** (2.105)	0.063 (0.989)
<i>GOV_INDEX_med4</i>	-	-0.250 (-0.618)	-0.413 (-1.122)	-0.275 (-0.895)	-0.200 (-0.543)	-0.294 (-0.966)	-0.169 (-0.606)	-0.331 (-1.172)
<i>GOV_INDEX_med4*ROA</i>	+	0.044 (0.940)	0.053 (1.350)	0.039 (1.244)	0.038 (0.895)	0.041 (1.316)	0.030 (0.972)	0.043 (1.540)
<i>BSIZE_med1</i>	-			0.405 (1.040)	0.163 (0.339)	0.430 (1.094)	0.257 (0.643)	0.402 (1.092)
<i>BSIZE_med1*ROA</i>	+			-0.021 (-0.501)	-0.039 (-0.756)	-0.023 (-0.538)	-0.050 (-1.084)	-0.031 (-0.759)
<i>%OUTSOURCED</i>	-				-0.725 (-1.415)	0.201 (0.593)	-0.781* (-1.934)	0.061 (0.194)
<i>FEMALE_CIO</i>	?						-0.380** (-2.343)	-0.315** (-2.301)
<i>FINANCE_Qual_CIO</i>	+						0.088 (0.592)	0.022 (0.174)
<i>TENURE_CIO</i>	+						0.052*** (2.839)	0.028 (1.694)
<i>Ln_TA<sub>t-1</sub></i>	+		0.378*** (4.736)	0.404*** (4.940)		0.423*** (5.087)		0.361*** (4.583)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.102 (-0.923)	-0.108 (-1.046)		-0.100 (-0.985)		-0.045 (-0.410)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.912 (1.137)	1.581* (1.817)		1.661* (1.871)		1.135 (1.295)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.207	0.000	0.000	0.147	0.000	0.000	0.000
Adjusted R-squared		0.0285	0.476	0.495	0.0935	0.495	0.345	0.558

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med4 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\geq$  the 50<sup>th</sup> percentile; (v) FINANCIAL  $\geq$  the 50<sup>th</sup> percentile; (vi) EXPERIENCE  $\geq$  the 50<sup>th</sup> percentile; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med4\*ROA is an interaction term between GOV\_INDEX\_med4 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.12B: Cash bonus, ROA and governance practices**

This table provides evidence on the association between CIOs cash bonus, ROA, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-15.479** (-1.979)	-57.853*** (-2.764)	-86.456*** (-3.896)	-22.617* (-1.681)	-92.071*** (-4.124)	-46.630** (-2.594)	-93.140*** (-3.952)
<i>ROA</i>	+	1.402* (1.899)	1.738 (1.038)	2.650* (1.837)	2.382** (2.598)	2.486* (1.742)	4.586*** (2.710)	2.592* (1.858)
<i>GOV_INDEX_med4</i>	-	6.835 (0.762)	1.166 (0.149)	4.041 (0.522)	10.425 (1.184)	3.572 (0.476)	9.042 (1.095)	3.044 (0.403)
<i>GOV_INDEX_med4*ROA</i>	+	-0.454 (-0.486)	-0.132 (-0.172)	-0.395 (-0.513)	-0.820 (-0.937)	-0.338 (-0.466)	-0.899 (-1.062)	-0.369 (-0.519)
<i>BSIZE_med1</i>	-			14.506** (2.044)	17.391** (2.332)	14.785** (2.031)	17.199*** (2.674)	14.379** (2.037)
<i>BSIZE_med1*ROA</i>	+			-0.489 (-0.741)	-1.015 (-1.497)	-0.512 (-0.769)	-0.955 (-1.459)	-0.441 (-0.702)
<i>%OUTSOURCED</i>	-				-11.511 (-1.090)	4.102 (0.523)	-12.820 (-1.346)	3.946 (0.492)
<i>FEMALE_CIO</i>	?						-5.546* (-1.781)	-3.194 (-1.112)
<i>FINANCE_Qual_CIO</i>	+						3.217 (0.764)	1.708 (0.477)
<i>TENURE_CIO</i>	+						-0.120 (-0.246)	-0.275 (-0.682)
<i>Ln_TA<sub>t-1</sub></i>	+		3.331* (1.913)	4.732*** (2.843)		5.205*** (3.016)		5.174*** (2.847)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		7.076* (1.860)	4.894 (1.468)		5.012 (1.563)		5.172* (1.705)
<i>PRS_AGE<sub>t-1</sub></i>	?		-35.912* (-1.819)	-4.661 (-0.230)		-1.824 (-0.093)		3.405 (0.161)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.0247	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-267.3	-242.8	-232.5	-257.7	-232.2	-250.2	-231.2
Pseudo R2		0.0125	0.103	0.141	0.0479	0.142	0.0758	0.146

The Tobit regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med4 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\geq$  the 50<sup>th</sup> percentile; (v) FINANCIAL  $\geq$  the 50<sup>th</sup> percentile; (vi) EXPERIENCE  $\geq$  the 50<sup>th</sup> percentile; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med4\*ROA is an interaction term between GOV\_INDEX\_med4 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A2.12C: Salary, ROA and governance practices**

This table provides evidence on the association between CIOs salary, ROA, governance practices and investment outsourcing.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		12.362*** (86.020)	9.383*** (17.247)	9.112*** (12.435)	12.532*** (28.694)	8.677*** (9.905)	11.659*** (19.060)	9.607*** (11.138)
<i>ROA</i>	+	0.012 (0.696)	0.077 (1.548)	0.091 (1.381)	0.025 (0.721)	0.081 (1.331)	0.076 (1.385)	0.038 (0.691)
<i>GOV_INDEX_med4</i>	-	-0.282 (-0.828)	-0.346 (-1.141)	-0.292 (-1.185)	-0.299 (-1.017)	-0.324 (-1.303)	-0.245 (-1.120)	-0.339 (-1.509)
<i>GOV_INDEX_med4*ROA</i>	+	0.045 (1.104)	0.048 (1.378)	0.042 (1.496)	0.046 (1.308)	0.045 (1.606)	0.038 (1.493)	0.045* (1.831)
<i>BSIZE_med1</i>	-			0.174 (0.451)	0.000 (0.000)	0.216 (0.568)	0.087 (0.231)	0.190 (0.519)
<i>BSIZE_med1*ROA</i>	+			-0.013 (-0.306)	-0.027 (-0.547)	-0.016 (-0.377)	-0.036 (-0.795)	-0.023 (-0.565)
<i>%OUTSOURCED</i>	-				-0.296 (-0.824)	0.339 (1.228)	-0.323 (-1.217)	0.217 (0.877)
<i>FEMALE_CIO</i>	?						-0.219 (-1.503)	-0.179 (-1.314)
<i>FINANCE_Qual_CIO</i>	+						0.062 (0.558)	0.022 (0.210)
<i>TENURE_CIO</i>	+						0.052*** (3.838)	0.035*** (2.893)
<i>Ln_TA<sub>t-1</sub></i>	+		0.260*** (5.146)	0.267*** (5.169)		0.300*** (5.019)		0.236*** (4.241)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.123 (-1.453)	-0.126 (-1.502)		-0.112 (-1.477)		-0.044 (-0.483)
<i>PRS_AGE<sub>t-1</sub></i>	?		1.031* (2.022)	1.238** (2.096)		1.372** (2.350)		0.817 (1.437)
Observations		147	147	147	147	147	147	147
Year FE		No	Yes	Yes	No	Yes	Yes	Yes
Prob.		0.281	0.000	0.000	0.158	0.000	0.000	0.000
Adjusted R-squared		0.0328	0.404	0.400	0.0764	0.411	0.355	0.491

The OLS regression is estimated using the full sample of 147 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX\_med4 is an indicator variable set equal to 1 if the governance index  $\geq$  the 50<sup>th</sup> percentile (the governance index is composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR  $\geq$  the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR  $\geq$  the 50<sup>th</sup> percentile; (iv) BUSY\_DIR  $\geq$  the 50<sup>th</sup> percentile; (v) FINANCIAL  $\geq$  the 50<sup>th</sup> percentile; (vi) EXPERIENCE  $\geq$  the 50<sup>th</sup> percentile; and (vii) TENURE  $\leq$  the 50<sup>th</sup> percentile.); GOV\_INDEX\_med4\*ROA is an interaction term between GOV\_INDEX\_med4 and ROA; BSIZE\_med1 is an indicator variable set equal to 1 if BSIZE  $\leq$  the 50<sup>th</sup> percentile; BSIZE\_med1\*ROA is an interaction term between BSIZE\_med1 and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A3 Including asset allocations

**Table A3.1A: Total compensation, *EXCESS\_ROA*, governance practices and asset allocations**

This table provides evidence on the association between CIOs total compensation, *EXCESS\_ROA*, governance practices and investment outsourcing at the fund-level.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		9.557*** (21.274)	10.142*** (16.920)	9.623*** (14.442)	10.213*** (14.771)	9.353*** (18.007)	9.906*** (16.277)	9.744*** (15.180)
<i>EXCESS_ROA</i>	+	-0.136 (-0.858)	-0.100 (-0.558)	-0.074 (-0.453)	-0.138 (-0.778)	-0.175 (-0.943)	-0.123 (-0.665)	-0.085 (-0.511)
<i>GOV_INDEX</i>	-	0.018 (0.502)	0.013 (0.326)	0.006 (0.153)	0.009 (0.206)	-0.007 (-0.159)	0.003 (0.069)	0.010 (0.246)
<i>GOV_INDEX*EXCESS_ROA</i>	+	-0.034 (-1.097)	-0.026 (-0.709)	-0.025 (-0.685)	-0.022 (-0.587)	-0.025 (-0.719)	-0.023 (-0.609)	-0.029 (-0.788)
<i>BSIZE</i>	+	-0.059** (-2.696)	-0.064** (-2.116)	-0.061** (-2.132)	-0.062** (-2.073)	-0.069** (-2.456)	-0.065** (-2.046)	-0.068** (-2.228)
<i>BSIZE*EXCESS_ROA</i>	-	0.034 (1.301)	0.029 (0.985)	0.026 (0.944)	0.030 (1.094)	0.032 (1.122)	0.028 (0.986)	0.028 (0.976)
<i>%OUTSOURCED</i>	-	0.047 (0.194)	-0.130 (-0.418)	0.022 (0.069)	-0.084 (-0.265)	-0.013 (-0.044)	-0.070 (-0.220)	-0.017 (-0.052)
<i>FEMALE_CIO</i>	?	-0.316** (-2.122)	-0.282* (-1.845)	-0.281* (-1.825)	-0.309* (-1.967)	-0.324** (-2.073)	-0.303* (-1.876)	-0.296* (-1.854)
<i>FINANCE_Qual_CIO</i>	+	0.164 (1.335)	0.060 (0.473)	0.027 (0.220)	0.046 (0.389)	0.105 (0.775)	0.031 (0.263)	0.042 (0.349)
<i>TENURE_CIO</i>	+	0.042* (2.014)	0.024 (1.281)	0.027 (1.590)	0.028 (1.595)	0.039* (1.965)	0.027 (1.537)	0.025 (1.419)
<i>Ln_TA<sub>t-1</sub></i>	+	0.325*** (3.345)	0.342*** (3.765)	0.369*** (3.835)	0.361*** (3.830)	0.334*** (3.518)	0.352*** (3.498)	0.376*** (3.773)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.064 (0.417)	-0.038 (-0.300)	-0.055 (-0.419)	-0.047 (-0.399)	0.070 (0.483)	-0.027 (-0.218)	-0.046 (-0.376)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.812** (2.127)	1.523 (1.613)	1.224 (1.293)	1.254 (1.384)	1.718* (1.938)	1.318 (1.433)	1.394 (1.485)
<i>%CASH</i>	?	-0.965 (-0.834)	-1.175 (-0.985)					
<i>%FIXED_INC</i>	?	1.261 (1.461)		1.131 (1.026)				
<i>%EQUITY</i>	?	-1.091*** (-2.771)			-0.647 (-1.445)			
<i>%PROPERTY</i>	?	5.705** (2.628)				4.250* (1.997)		
<i>%INFRASTRUCTURE</i>	?	-1.017 (-0.655)					0.799 (0.444)	
<i>%COMMODITIES</i>	?	9.802 (0.564)						29.460 (1.093)
Observations		147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.604	0.569	0.571	0.570	0.589	0.565	0.569

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR*  $>$  the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR*  $<$  the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE*  $<$  the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.1B: Cash bonus compensation, *EXCESS\_ROA*, governance practices and asset allocations**

This table provides evidence on the association between CIOs cash bonus, *EXCESS\_ROA*, governance practices and investment outsourcing at the fund-level.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		-41.170** (-2.506)	-48.957** (-2.348)	-36.286* (-1.829)	-23.280 (-1.149)	-38.682* (-1.957)	-36.688* (-1.775)	-37.435* (-1.819)
<i>EXCESS_ROA</i>	+	3.230 (0.661)	4.682 (0.888)	4.587 (0.874)	4.244 (0.811)	4.182 (0.760)	4.596 (0.859)	4.638 (0.854)
<i>GOV_INDEX</i>	-	-0.055 (-0.059)	-0.451 (-0.472)	-0.246 (-0.250)	0.072 (0.077)	-0.296 (-0.309)	-0.236 (-0.241)	-0.219 (-0.223)
<i>GOV_INDEX*EXCESS_ROA</i>	+	-0.875 (-1.164)	-0.792 (-1.062)	-0.814 (-1.076)	-0.787 (-1.044)	-0.835 (-1.137)	-0.827 (-1.119)	-0.839 (-1.105)
<i>BSIZE</i>	+	-2.822*** (-4.116)	-3.289*** (-4.386)	-3.227*** (-4.348)	-2.976*** (-3.985)	-3.223*** (-4.237)	-3.213*** (-4.194)	-3.218*** (-4.200)
<i>BSIZE*EXCESS_ROA</i>	-	0.094 (0.180)	-0.048 (-0.086)	-0.023 (-0.040)	0.002 (0.003)	0.009 (0.016)	-0.021 (-0.037)	-0.014 (-0.024)
<i>%OUTSOURCED</i>	-	4.493 (0.632)	3.716 (0.464)	0.000 (0.000)	-1.247 (-0.142)	0.162 (0.019)	0.125 (0.014)	0.453 (0.050)
<i>FEMALE_CIO</i>	?	-4.906 (-1.601)	-3.544 (-1.303)	-3.299 (-1.258)	-3.707 (-1.462)	-3.245 (-1.226)	-3.321 (-1.240)	-3.495 (-1.254)
<i>FINANCE_Qual_CIO</i>	+	3.279 (1.088)	2.066 (0.619)	2.778 (0.846)	3.562 (1.114)	2.922 (0.903)	2.725 (0.856)	2.830 (0.854)
<i>TENURE_CIO</i>	+	-0.097 (-0.209)	-0.443 (-1.116)	-0.486 (-1.271)	-0.440 (-1.164)	-0.391 (-0.995)	-0.474 (-1.261)	-0.484 (-1.290)
<i>Ln_TA<sub>t-1</sub></i>	+	6.613*** (3.299)	7.555*** (3.557)	6.372*** (2.952)	6.125*** (2.932)	6.086*** (2.828)	6.275*** (2.771)	6.342*** (2.963)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	4.522* (1.778)	3.519 (1.312)	4.132 (1.489)	3.759 (1.425)	4.596 (1.636)	4.260 (1.531)	4.233 (1.494)
<i>PRS_AGE<sub>t-1</sub></i>	?	-11.982 (-0.557)	-0.303 (-0.014)	7.984 (0.397)	2.871 (0.148)	9.177 (0.477)	7.732 (0.388)	8.584 (0.411)
<i>%CASH</i>	?	63.995** (2.231)	43.947 (1.426)					
<i>%FIXED_INC</i>	?	26.217 (0.923)		-2.776 (-0.100)				
<i>%EQUITY</i>	?	-40.640*** (-3.767)			-24.923** (-2.429)			
<i>%PROPERTY</i>	?	57.754 (1.240)				29.685 (0.613)		
<i>%INFRASTRUCTURE</i>	?	22.323 (0.585)					5.584 (0.153)	
<i>%COMMODITIES</i>	?	355.180 (0.726)						268.924 (0.589)
Observations		147	147	147	147	147	147	147
Year FE		Yes						
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-218	-224.3	-225.7	-222.8	-225.4	-225.7	-225.7
Pseudo R2		0.195	0.171	0.166	0.177	0.167	0.166	0.166

The Tobit regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.1C: Salary compensation, *EXCESS\_ROA*, governance practices and asset allocations**

This table provides evidence on the association between CIOs salary, *EXCESS\_ROA*, governance practices and investment outsourcing at the fund-level.

VARIABLES	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		9.940*** (29.221)	10.427*** (25.237)	9.944*** (24.873)	10.367*** (21.949)	9.898*** (23.309)	10.214*** (25.119)	10.048*** (25.199)
<i>EXCESS_ROA</i>	+	-0.190 (-1.260)	-0.193 (-1.162)	-0.168 (-1.074)	-0.221 (-1.345)	-0.242 (-1.395)	-0.214 (-1.252)	-0.176 (-1.143)
<i>GOV_INDEX</i>	-	0.010 (0.343)	0.005 (0.146)	-0.001 (-0.036)	-0.002 (-0.051)	-0.010 (-0.281)	-0.004 (-0.119)	0.003 (0.087)
<i>GOV_INDEX*EXCESS_ROA</i>	+	-0.018 (-0.563)	-0.011 (-0.320)	-0.010 (-0.301)	-0.007 (-0.206)	-0.009 (-0.257)	-0.008 (-0.234)	-0.015 (-0.405)
<i>BSIZE</i>	+	-0.004 (-0.199)	-0.009 (-0.326)	-0.006 (-0.230)	-0.008 (-0.290)	-0.012 (-0.444)	-0.009 (-0.326)	-0.012 (-0.453)
<i>BSIZE*EXCESS_ROA</i>	-	0.033 (1.172)	0.031 (1.035)	0.029 (1.002)	0.032 (1.104)	0.033 (1.095)	0.031 (1.035)	0.031 (1.026)
<i>%OUTSOURCED</i>	-	0.312 (1.656)	0.152 (0.700)	0.294 (1.332)	0.201 (0.911)	0.240 (1.097)	0.206 (0.943)	0.260 (1.148)
<i>FEMALE_CIO</i>	?	-0.173 (-1.146)	-0.151 (-0.998)	-0.150 (-0.980)	-0.171 (-1.100)	-0.180 (-1.166)	-0.172 (-1.089)	-0.164 (-1.052)
<i>FINANCE_Qual_CIO</i>	+	0.082 (0.784)	0.040 (0.396)	0.009 (0.094)	0.023 (0.235)	0.055 (0.498)	0.012 (0.127)	0.023 (0.239)
<i>TENURE_CIO</i>	+	0.045** (2.561)	0.035** (2.356)	0.038** (2.730)	0.038** (2.708)	0.044** (2.691)	0.038** (2.723)	0.036** (2.602)
<i>Ln_TA<sub>t-1</sub></i>	+	0.195*** (2.931)	0.199*** (3.192)	0.224*** (3.448)	0.218*** (3.344)	0.202*** (2.942)	0.205*** (3.102)	0.231*** (3.550)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.042 (0.306)	-0.011 (-0.101)	-0.027 (-0.242)	-0.017 (-0.164)	0.048 (0.367)	0.002 (0.023)	-0.019 (-0.184)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.098* (1.873)	1.047* (1.747)	0.769 (1.358)	0.827 (1.462)	1.082* (1.865)	0.856 (1.528)	0.933 (1.619)
<i>%CASH</i>	?	-0.565 (-0.540)	-1.082 (-1.053)					
<i>%FIXED_INC</i>	?	1.056 (1.493)		1.063 (1.396)				
<i>%EQUITY</i>	?	-0.635* (-1.997)			-0.346 (-1.213)			
<i>%PROPERTY</i>	?	2.900 (1.518)				2.346 (1.374)		
<i>%INFRASTRUCTURE</i>	?	0.098 (0.083)					0.947 (0.767)	
<i>%COMMODITIES</i>	?	16.390 (1.140)						29.553 (1.440)
Observations		147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.504	0.492	0.495	0.488	0.497	0.488	0.493

The OLS regression is estimated using the full sample of 147 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.2A: Total compensation, ROA, governance practices and asset allocations**

This table provides evidence on the association between CIOs total compensation, ROA, governance practices and investment outsourcing at the fund-level.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		8.904*** (16.652)	9.436*** (11.016)	8.720*** (12.431)	9.752*** (9.595)	9.105*** (10.815)	9.366*** (10.160)	9.003*** (11.164)
<i>ROA</i>	+	0.052 (0.693)	0.060 (0.755)	0.085 (1.207)	0.033 (0.397)	0.016 (0.188)	0.045 (0.527)	0.067 (0.937)
<i>GOV_INDEX</i>	-	0.112 (1.060)	0.092 (0.805)	0.099 (0.882)	0.081 (0.698)	0.073 (0.642)	0.083 (0.706)	0.108 (0.955)
<i>GOV_INDEX*ROA</i>	+	-0.014 (-1.055)	-0.012 (-0.862)	-0.014 (-0.976)	-0.011 (-0.795)	-0.012 (-0.863)	-0.012 (-0.853)	-0.014 (-1.072)
<i>BSIZE</i>	+	-0.113 (-1.363)	-0.112 (-1.244)	-0.102 (-1.183)	-0.123 (-1.414)	-0.124 (-1.438)	-0.116 (-1.270)	-0.118 (-1.362)
<i>BSIZE*ROA</i>	-	0.008 (0.741)	0.007 (0.658)	0.006 (0.581)	0.009 (0.874)	0.008 (0.772)	0.007 (0.705)	0.007 (0.729)
<i>%OUTSOURCED</i>	-	0.036 (0.155)	-0.149 (-0.489)	-0.001 (-0.002)	-0.111 (-0.355)	-0.044 (-0.149)	-0.096 (-0.307)	-0.038 (-0.121)
<i>FEMALE_CIO</i>	?	-0.350** (-2.605)	-0.311** (-2.247)	-0.307** (-2.242)	-0.337** (-2.361)	-0.352** (-2.473)	-0.329** (-2.249)	-0.326** (-2.254)
<i>FINANCE_Qual_CIO</i>	+	0.154 (1.219)	0.059 (0.473)	0.028 (0.228)	0.050 (0.424)	0.105 (0.774)	0.035 (0.289)	0.041 (0.349)
<i>TENURE_CIO</i>	+	0.036* (1.911)	0.020 (1.123)	0.023 (1.444)	0.024 (1.425)	0.034* (1.865)	0.023 (1.377)	0.020 (1.226)
<i>Ln_TA<sub>t-1</sub></i>	+	0.354*** (3.900)	0.363*** (4.234)	0.386*** (4.282)	0.379*** (4.250)	0.355*** (3.990)	0.371*** (3.835)	0.394*** (4.156)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	0.014 (0.106)	-0.073 (-0.667)	-0.089 (-0.782)	-0.080 (-0.779)	0.028 (0.223)	-0.062 (-0.571)	-0.082 (-0.769)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.763* (2.017)	1.522 (1.636)	1.244 (1.312)	1.280 (1.419)	1.727* (1.908)	1.345 (1.459)	1.411 (1.509)
<i>%CASH</i>	?	-0.755 (-0.627)	-1.065 (-0.852)					
<i>%FIXED_INC</i>	?	1.307 (1.429)		1.162 (1.018)				
<i>%EQUITY</i>	?	-1.075** (-2.585)			-0.655 (-1.460)			
<i>%PROPERTY</i>	?	5.447** (2.617)				4.076* (1.970)		
<i>%INFRASTRUCTURE</i>	?	-0.954 (-0.606)					0.722 (0.398)	
<i>%COMMODITIES</i>	?	11.935 (0.652)						30.697 (1.098)
Observations		147	147	147	147	147	147	147
Year FE		Yes						
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.599	0.567	0.570	0.569	0.586	0.564	0.568

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.2B: Cash bonus compensation, *ROA*, governance practices and asset allocations**

This table provides evidence on the association between CIOs cash bonus, *ROA*, governance practices and investment outsourcing at the fund-level.

VARIABLES	Pred. sign	(1) Coeff (t-stats)	(2) Coeff (t-stats)	(3) Coeff (t-stats)	(4) Coeff (t-stats)	(5) Coeff (t-stats)	(6) Coeff (t-stats)	(7) Coeff (t-stats)
<i>Constant</i>		-45.687** (-2.347)	-65.673*** (-2.920)	-51.068*** (-2.779)	-31.497 (-1.441)	-53.701** (-2.571)	-53.270** (-2.559)	-54.213** (-2.552)
<i>ROA</i>	+	0.562 (0.280)	1.916 (0.855)	1.836 (0.837)	1.002 (0.467)	1.801 (0.777)	1.981 (0.869)	2.001 (0.879)
<i>GOV_INDEX</i>	-	1.439 (0.638)	1.570 (0.672)	1.276 (0.507)	0.956 (0.402)	1.305 (0.541)	1.364 (0.558)	1.375 (0.564)
<i>GOV_INDEX*ROA</i>	+	-0.242 (-0.930)	-0.299 (-1.164)	-0.235 (-0.865)	-0.156 (-0.595)	-0.246 (-0.922)	-0.245 (-0.925)	-0.245 (-0.929)
<i>BSIZE</i>	+	-3.733** (-2.380)	-3.640** (-2.145)	-3.469** (-2.218)	-3.627** (-2.221)	-3.376* (-1.973)	-3.357* (-1.899)	-3.392** (-1.983)
<i>BSIZE*ROA</i>	-	0.141 (1.109)	0.066 (0.453)	0.052 (0.378)	0.108 (0.793)	0.042 (0.279)	0.041 (0.263)	0.045 (0.301)
<i>%OUTSOURCED</i>	-	4.314 (0.643)	3.761 (0.505)	-0.411 (-0.049)	-1.489 (-0.179)	-0.042 (-0.005)	-0.072 (-0.008)	0.211 (0.025)
<i>FEMALE_CIO</i>	?	-5.552* (-1.810)	-4.121 (-1.470)	-3.878 (-1.423)	-4.305 (-1.643)	-3.814 (-1.386)	-3.884 (-1.398)	-4.019 (-1.401)
<i>FINANCE_Qual_CIO</i>	+	2.673 (0.887)	1.381 (0.420)	2.098 (0.647)	2.887 (0.924)	2.285 (0.704)	2.060 (0.649)	2.140 (0.653)
<i>TENURE_CIO</i>	+	-0.124 (-0.287)	-0.457 (-1.189)	-0.513 (-1.426)	-0.451 (-1.239)	-0.414 (-1.107)	-0.496 (-1.352)	-0.506 (-1.384)
<i>Ln_TA<sub>t-1</sub></i>	+	6.595*** (3.394)	7.454*** (3.532)	6.228*** (2.950)	5.935*** (2.923)	5.966*** (2.859)	6.144*** (2.717)	6.212*** (2.964)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	4.387 (1.652)	3.459 (1.262)	4.050 (1.475)	3.782 (1.427)	4.514 (1.611)	4.173 (1.474)	4.138 (1.469)
<i>PRS_AGE<sub>t-1</sub></i>	?	-15.546 (-0.700)	-3.297 (-0.155)	5.071 (0.246)	-0.552 (-0.028)	6.324 (0.318)	4.773 (0.233)	5.437 (0.256)
<i>%CASH</i>	?	67.758** (2.378)	47.031 (1.548)					
<i>%FIXED_INC</i>	?	24.323 (0.867)		-5.013 (-0.182)				
<i>%EQUITY</i>	?	-41.390*** (-3.841)			-25.700** (-2.552)			
<i>%PROPERTY</i>	?	58.156 (1.323)				30.278 (0.641)		
<i>%INFRASTRUCTURE</i>	?	20.278 (0.538)					4.820 (0.129)	
<i>%COMMODITIES</i>	?	308.523 (0.679)						209.624 (0.475)
Observations		147	147	147	147	147	147	147
Year FE		Yes						
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood		-218.3	-224.7	-226.3	-223.4	-226	-226.3	-226.3
Pseudo R2		0.194	0.170	0.164	0.175	0.165	0.164	0.164

The Tobit regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A3.2C: Salary compensation, *ROA*, governance practices and asset allocations**

This table provides evidence on the association between CIOs salary, *ROA*, governance practices and investment outsourcing at the fund-level.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		9.425*** (18.390)	10.053*** (14.208)	9.365*** (16.079)	10.177*** (12.355)	9.836*** (13.158)	9.991*** (12.753)	9.611*** (14.963)
<i>ROA</i>	+	0.037 (0.581)	0.023 (0.358)	0.047 (0.782)	0.002 (0.029)	-0.007 (-0.100)	0.008 (0.123)	0.031 (0.539)
<i>GOV_INDEX</i>	-	0.065 (0.580)	0.037 (0.324)	0.043 (0.384)	0.026 (0.221)	0.021 (0.182)	0.029 (0.250)	0.054 (0.461)
<i>GOV_INDEX*ROA</i>	+	-0.008 (-0.620)	-0.005 (-0.392)	-0.007 (-0.500)	-0.005 (-0.340)	-0.005 (-0.373)	-0.005 (-0.391)	-0.008 (-0.571)
<i>BSIZE</i>	+	-0.049 (-0.539)	-0.056 (-0.593)	-0.046 (-0.511)	-0.064 (-0.703)	-0.065 (-0.709)	-0.058 (-0.617)	-0.061 (-0.677)
<i>BSIZE*ROA</i>	-	0.006 (0.572)	0.006 (0.601)	0.005 (0.530)	0.008 (0.750)	0.007 (0.698)	0.007 (0.632)	0.007 (0.665)
<i>%OUTSOURCED</i>	-	0.295 (1.590)	0.123 (0.553)	0.266 (1.232)	0.167 (0.743)	0.203 (0.909)	0.173 (0.774)	0.233 (1.046)
<i>FEMALE_CIO</i>	?	-0.197 (-1.500)	-0.171 (-1.293)	-0.167 (-1.269)	-0.190 (-1.388)	-0.198 (-1.453)	-0.190 (-1.370)	-0.186 (-1.363)
<i>FINANCE_Qual_CIO</i>	+	0.079 (0.732)	0.046 (0.468)	0.017 (0.168)	0.033 (0.340)	0.062 (0.560)	0.022 (0.224)	0.030 (0.307)
<i>TENURE_CIO</i>	+	0.040** (2.592)	0.031** (2.350)	0.035*** (2.834)	0.035** (2.734)	0.041*** (2.831)	0.035*** (2.787)	0.032** (2.605)
<i>Ln_TA<sub>t-1</sub></i>	+	0.221*** (3.672)	0.218*** (3.728)	0.241*** (4.008)	0.235*** (3.816)	0.222*** (3.497)	0.224*** (3.558)	0.250*** (4.052)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+	-0.004 (-0.038)	-0.045 (-0.491)	-0.061 (-0.631)	-0.049 (-0.551)	0.009 (0.078)	-0.031 (-0.340)	-0.054 (-0.610)
<i>PRS_AGE<sub>t-1</sub></i>	?	1.082 (1.688)	1.077* (1.729)	0.809 (1.346)	0.875 (1.472)	1.113* (1.781)	0.904 (1.510)	0.974 (1.600)
<i>%CASH</i>	?	-0.407 (-0.367)	-1.028 (-0.922)					
<i>%FIXED_INC</i>	?	1.112 (1.506)		1.116 (1.377)				
<i>%EQUITY</i>	?	-0.609* (-1.930)			-0.343 (-1.238)			
<i>%PROPERTY</i>	?	2.640 (1.453)				2.170 (1.324)		
<i>%INFRASTRUCTURE</i>	?	0.185 (0.151)					0.885 (0.706)	
<i>%COMMODITIES</i>	?	19.367 (1.276)						31.821 (1.486)
Observations		147	147	147	147	147	147	147
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob.		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared		0.492	0.483	0.486	0.479	0.487	0.479	0.486

The OLS regression is estimated using the full sample of 147 CIO observations. *ROA* is measured as net earnings after tax divided by total assets; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*ROA* is an interaction term between *GOV\_INDEX* and *ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*ROA* is an interaction term between *BSIZE* and *ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. *%CASH* is the percentage of investments in cash; *%FIXED\_INC* is the percentage of investments in fixed income; *%EQUITY* is the percentage of investments in equity; *%PROPERTY* is the percentage of investments in property; *%INFRASTRUCTURE* is the percentage of investments in infrastructure; *%COMMODITIES* is the percentage of investments in commodities. All continuous variables are winsorized at the top and bottom 5 percent.

## Appendix A4 CIO turnover

**Table A4.1A: CIO turnover, *EXCESS\_ROA* and governance practices**

This table provides evidence on the association between CIOs turnover, *EXCESS\_ROA* and governance practices.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-1.249*** (-9.924)	-2.914** (-2.151)	-1.774*** (-4.720)	-3.254** (-2.439)	-3.645*** (-2.817)	-2.615*** (-3.434)	-2.643** (-2.125)	-3.554*** (-2.937)	-4.596*** (-3.423)
<i>EXCESS_ROA</i>	+	-0.076 (-0.522)	-0.166 (-0.947)	-0.133 (-0.410)	-0.105 (-0.273)	0.233 (0.418)	0.091 (0.130)	0.307 (0.475)	0.062 (0.122)	-0.023 (-0.044)
<i>GOV_INDEX</i>	-			0.136 (1.618)	0.157 (1.546)	0.111 (1.036)	0.107 (1.277)	0.134 (1.224)	0.159 (1.162)	0.058 (0.423)
<i>GOV_INDEX*EXCESS_ROA</i>	+			0.016 (0.222)	-0.013 (-0.172)	0.017 (0.181)	0.043 (0.478)	0.008 (0.089)	0.046 (0.465)	0.096 (1.002)
<i>BSIZE</i>	+					0.174** (2.199)	0.123** (2.283)	0.173** (2.240)	0.175** (2.393)	0.218** (2.509)
<i>BSIZE*EXCESS_ROA</i>	-					-0.047 (-0.650)	-0.032 (-0.405)	-0.050 (-0.659)	-0.024 (-0.389)	-0.042 (-0.573)
<i>%OUTSOURCED</i>	-						-0.536 (-0.748)	-0.784 (-1.140)	0.101 (0.098)	0.593 (0.786)
<i>FEMALE_CEO</i>	?								0.664* (1.899)	0.712* (1.668)
<i>FINANCE_Qual_CIO</i>	+								-1.231*** (-3.641)	-1.530*** (-4.371)
<i>TENURE_CIO</i>	+								-0.008 (-0.199)	0.002 (0.055)
<i>Ln_TA<sub>t-1</sub></i>	+		0.166 (0.967)		0.137 (0.747)	0.063 (0.299)		-0.001 (-0.005)		0.237 (0.984)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.065 (-0.209)		-0.086 (-0.271)	-0.126 (-0.392)		-0.159 (-0.489)		-0.195 (-0.447)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.873 (0.683)		1.076 (0.734)	-0.558 (-0.302)		-0.643 (-0.334)		-2.974 (-1.620)
Observations		141	141	141	141	141	141	141	141	141
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Obs.		141	141	141	141	141	141	141	141	141
Chi-square		0.273	10.81	3.365	10.68	22.43	17.43	20.82	46.17	145.4
Adjusted R-squared		0.00317	0.111	0.0175	0.125	0.165	0.0581	0.172	0.282	0.310

The Probit regression is estimated using the sub-sample of 141 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR*  $\geq$  the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced; *FEMALE\_CIO* is an indicator variable equal to 1 if a CIO is female, 0 otherwise; *FINANCE\_Qual\_CIO* is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; *TENURE\_CIO* is the total number of CIOs have been employed in a fund; *Ln\_TA<sub>t-1</sub>* is the natural logarithm of *TA<sub>t-1</sub>*; *Ln\_INV\_OPTIONS<sub>t-1</sub>* is the natural logarithm of *INV\_OPTIONS<sub>t-1</sub>*; *PRS\_AGE<sub>t-1</sub>* is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.1B: CIO turnover, *EXCESS\_ROA* and each governance variable**

This table provides evidence on the association between CIOs turnover, *EXCESS\_ROA* and governance variables.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-5.201*** (-3.412)	-4.443*** (-3.325)	-5.530*** (-2.947)	-2.952* (-1.833)	-4.613*** (-3.386)	-4.237*** (-3.380)	-5.337*** (-3.577)	-4.038*** (-2.753)	-4.604*** (-2.988)
<i>EXCESS_ROA</i>	+	0.226 (0.424)	0.142 (0.258)	0.141 (0.258)	0.223 (0.428)	0.034 (0.064)	0.047 (0.083)	-0.209 (-0.303)	0.340 (0.590)	0.785 (0.731)
<i>IND_DIR</i>	-	2.637* (1.651)								
<i>IND_DIR*EXCESS_ROA</i>	+	-1.465 (-1.593)								
<i>IND_DIR_33%</i>	-		0.170 (0.299)							
<i>IND_DIR_33%*EXCESS_ROA</i>	+		-0.844* (-1.769)							
<i>IND_CHAIR</i>	-			0.730 (1.599)						
<i>IND_CHAIR*EXCESS_ROA</i>	+			0.163 (0.529)						
<i>FEMALE_DIR</i>	-				2.733* (1.761)					
<i>FEMALE_DIR*EXCESS_ROA</i>	+				-0.673 (-0.627)					
<i>BUSY_DIR</i>	+					0.196 (0.163)				
<i>BUSY_DIR*EXCESS_ROA</i>	-					-1.386* (-1.864)				
<i>FINANCIAL1</i>	-						-1.259 (-1.623)			
<i>FINANCIAL1*EXCESS_ROA</i>	+						0.100 (0.132)			
<i>EXPERIENCE</i>	-							0.127 (0.306)		
<i>EXPERIENCE*EXCESS_ROA</i>	+							0.737** (2.032)		
<i>EXPERIENCE1</i>	-								2.579*** (2.977)	
<i>EXPERIENCE1*EXCESS_ROA</i>	+								2.012 (1.633)	
<i>TENURE</i>	+									0.024 (0.313)
<i>TENURE*EXCESS_ROA</i>	-									-0.048 (-0.846)
<i>BSIZE</i>	+	0.240*** (2.791)	0.240** (2.424)	0.200** (1.990)	0.107 (1.067)	0.221** (2.351)	0.268*** (2.862)	0.211** (2.182)	0.199* (1.898)	0.238** (2.554)
<i>BSIZE*EXCESS_ROA</i>	-	-0.013 (-0.230)	-0.019 (-0.336)	-0.034 (-0.568)	-0.015 (-0.237)	0.009 (0.171)	-0.017 (-0.284)	-0.047 (-0.712)	-0.068 (-1.039)	-0.056 (-0.713)
<i>%OUTSOURCED</i>	-	0.831 (1.111)	0.811 (0.943)	0.886 (1.175)	0.030 (0.036)	0.601 (0.799)	0.616 (0.718)	0.954 (1.265)	0.488 (0.686)	0.528 (0.665)
Observations		141	141	141	141	141	141	141	141	141
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.		141	141	141	141	141	141	141	141	141
Chi-square		100.4	156.3	148.8	137.2	85.97	212.7	142.5	181.5	129.5
Adjusted R-squared		0.323	0.312	0.334	0.331	0.323	0.315	0.328	0.365	0.306

The Probit regression is estimated using the sub-sample of 141 CIO observations. *EXCESS\_ROA* is the difference between the superannuation fund's *ROA* and the median *ROA* for each year; *GOV\_INDEX* is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) *IND\_DIR* ≥ the 33<sup>rd</sup> percentile; (ii) *IND\_CHAIR* = 1; (iii) *FEMALE\_DIR* > the 50<sup>th</sup> percentile; (iv) *BUSY\_DIR* < the 50<sup>th</sup> percentile; (v) *FINANCIAL1* = 1; (vi) *EXPERIENCE* = 1; and (vii) *TENURE* < the 50<sup>th</sup> percentile. *GOV\_INDEX\*EXCESS\_ROA* is an interaction term between *GOV\_INDEX* and *EXCESS\_ROA*; *IND\_DIR* is the percentage of independent directors on the board; *IND\_DIR\*EXCESS\_ROA* is the interaction term between *IND\_DIR* and *EXCESS\_ROA*; *IND\_DIR\_33%* is an indicator variable set equal to 1 if *IND\_DIR* ≥ the 33<sup>rd</sup> percentile, 0 otherwise; *IND\_DIR\_33%\*EXCESS\_ROA* is the interaction term between *IND\_DIR\_33%* and *EXCESS\_ROA*; *IND\_CHAIR* is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; *IND\_CHAIR\*EXCESS\_ROA* is the interaction term between *IND\_CHAIR* and *EXCESS\_ROA*; *FEMALE\_DIR* is the percentage of female directors on the board; *FEMALE\_DIR\*EXCESS\_ROA* is the interaction term between *FEMALE\_DIR* and *EXCESS\_ROA*; *BUSY\_DIR* is the average number of outside directorships on the ASX-listed companies held by directors; *BUSY\_DIR\*EXCESS\_ROA* is the interaction term between *BUSY\_DIR* and *EXCESS\_ROA*; *FINANCIAL1* is the percentage of directors with financial qualification on the board; *FINANCIAL1\*EXCESS\_ROA* is the interaction term between *FINANCIAL1* and *EXCESS\_ROA*; *EXPERIENCE* is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; *EXPERIENCE\*EXCESS\_ROA* is the interaction term between *EXPERIENCE* and *EXCESS\_ROA*; *EXPERIENCE1* is the percentage of directors with prior superannuation fund industry experience; *EXPERIENCE1\*EXCESS\_ROA* is the interaction term between *EXPERIENCE1* and *EXCESS\_ROA*; *TENURE* is the average director tenure; *TENURE\*EXCESS\_ROA* is the interaction term between *TENURE* and *EXCESS\_ROA*; *BSIZE* is the total number of directors on the board; *BSIZE\*EXCESS\_ROA* is an interaction term between *BSIZE* and *EXCESS\_ROA*; *%OUTSOURCED* is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.2A: CIO turnover, ROA and governance practices**

This table provides evidence on the association between CIOs turnover, ROA and governance practices.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
<i>Constant</i>		-0.477 (-1.111)	-1.241 (-0.797)	-1.555 (-1.192)	-2.314 (-0.985)	-1.570 (-0.731)	-1.934 (-1.118)	-0.736 (-0.332)	-4.093 (-1.385)	-4.429 (-1.427)
<i>ROA</i>	+	-0.110* (-1.906)	-0.166 (-0.947)	-0.026 (-0.167)	-0.066 (-0.251)	-0.222 (-0.847)	-0.135 (-0.638)	-0.195 (-0.743)	0.057 (0.189)	0.018 (0.057)
<i>GOV_INDEX</i>	-			0.266 (0.876)	0.310 (0.932)	0.312 (0.986)	0.285 (0.986)	0.365 (1.159)	0.458 (1.240)	0.325 (0.842)
<i>GOV_INDEX*ROA</i>	+			-0.020 (-0.533)	-0.022 (-0.578)	-0.027 (-0.737)	-0.025 (-0.713)	-0.031 (-0.857)	-0.044 (-1.071)	-0.032 (-0.761)
<i>BSIZE</i>	+					0.074 (0.400)	0.062 (0.375)	0.078 (0.423)	0.090 (0.444)	0.159 (0.758)
<i>BSIZE*ROA</i>	-					0.017 (0.798)	0.012 (0.553)	0.016 (0.775)	0.014 (0.556)	0.008 (0.335)
<i>%OUTSOURCED</i>	-						-0.488 (-0.671)	-0.830 (-1.177)	0.100 (0.107)	0.536 (0.793)
<i>FEMALE_CEO</i>	?								0.596* (1.816)	0.684* (1.701)
<i>FINANCE_Qual_CIO</i>	+								-1.252*** (-3.632)	-1.513*** (-4.221)
<i>TENURE_CIO</i>	+								-0.017 (-0.435)	-0.002 (-0.048)
<i>Ln_TA<sub>t-1</sub></i>	+		0.166 (0.967)		0.138 (0.765)	0.005 (0.026)		-0.062 (-0.314)		0.172 (0.821)
<i>Ln_INV_OPTIONS<sub>t-1</sub></i>	+		-0.065 (-0.209)		-0.092 (-0.290)	-0.054 (-0.182)		-0.096 (-0.319)		-0.126 (-0.309)
<i>PRS_AGE<sub>t-1</sub></i>	?		0.873 (0.683)		1.127 (0.755)	-0.296 (-0.155)		-0.410 (-0.204)		-2.717 (-1.404)
Observations		141	141	141	141	141	141	141	141	141
Year FE		No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Obs.		141	141	141	141	141	141	141	141	141
Chi-square		3.633	10.81	6.661	13.06	50.24	21.43	40.01	38.03	118.6
Adjusted R-squared		0.0453	0.111	0.0580	0.127	0.169	0.106	0.177	0.288	0.309

The Probit regression is estimated using the sub-sample of 141 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. GOV\_INDEX\*ROA is an interaction term between GOV\_INDEX and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced; FEMALE\_CIO is an indicator variable equal to 1 if a CIO is female, 0 otherwise; FINANCE\_Qual\_CIO is an indicator variable equal to 1 if a CIO has a finance and/or an investment qualification, 0 otherwise; TENURE\_CIO is the total number of CIOs have been employed in a fund; Ln\_TA<sub>t-1</sub> is the natural logarithm of TA<sub>t-1</sub>; Ln\_INV\_OPTIONS<sub>t-1</sub> is the natural logarithm of INV\_OPTIONS<sub>t-1</sub>; PRS\_AGE<sub>t-1</sub> is the percentage of members who are aged 50 or over in the previous year. All continuous variables are winsorized at the top and bottom 5 percent.

**Table A4.2B: CIO turnover, ROA and each governance variable**

This table provides evidence on the association between CIOs turnover, ROA and governance variables.

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pred. sign	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)	Coeff (t-stats)
Constant		-5.974* (-1.692)	-4.436 (-1.596)	-4.778 (-1.440)	-1.780 (-0.754)	-3.195 (-1.252)	-2.620 (-1.238)	-2.753 (-1.042)	-3.958 (-1.436)	-1.554 (-0.535)
ROA	+	0.174 (0.493)	0.018 (0.060)	-0.071 (-0.217)	-0.093 (-0.365)	-0.142 (-0.490)	-0.199 (-0.809)	-0.223 (-0.819)	0.029 (0.096)	-0.477 (-1.204)
IND_DIR	-	6.843* (1.872)								
IND_DIR*ROA	+	-0.740* (-1.721)								
IND_DIR_33%	-		4.249** (2.015)							
IND_DIR_33%*ROA	+		-1.229** (-2.179)							
IND_CHAIR	-			1.223 (1.248)						
IND_CHAIR*ROA	+			-0.079 (-0.629)						
FEMALE_DIR	-				-0.736 (-0.282)					
FEMALE_DIR*ROA	+				0.630** (2.090)					
BUSY_DIR	+					0.395 (0.167)				
BUSY_DIR*ROA	-					0.001 (0.003)				
FINANCIAL1	-						-3.918* (-1.773)			
FINANCIAL1*ROA	+						0.384 (1.341)			
EXPERIENCE	-							-0.466 (-0.513)		
EXPERIENCE*ROA	+							0.082 (0.728)		
EXPERIENCE1	-								1.149 (0.474)	
EXPERIENCE1*ROA	+								0.127 (0.452)	
TENURE	+									-0.142 (-0.820)
TENURE*ROA	-									0.029 (1.309)
BSIZE	+	0.332 (1.592)	0.274 (1.358)	0.181 (0.835)	0.221 (1.044)	0.187 (1.028)	0.282 (1.606)	0.165 (0.872)	0.219 (1.092)	0.095 (0.480)
BSIZE*ROA	-	-0.011 (-0.469)	-0.004 (-0.189)	0.004 (0.180)	-0.021 (-0.850)	0.005 (0.263)	-0.003 (-0.166)	0.009 (0.439)	0.001 (0.036)	0.020 (0.788)
%OUTSOURCED	-	0.721 (0.962)	0.858 (1.018)	0.903 (1.297)	-0.031 (-0.039)	0.661 (0.902)	0.647 (0.884)	0.699 (1.043)	0.340 (0.484)	0.520 (0.734)
Observations		141	141	141	141	141	141	141	141	141
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.		141	141	141	141	141	141	141	141	141
Chi-square		102	100.4	106.8	123.1	129.6	201.2	147.4	229.9	132.7
Adjusted R-squared		0.326	0.322	0.335	0.340	0.303	0.324	0.305	0.342	0.312

The Probit regression is estimated using the sub-sample of 141 CIO observations. ROA is measured as net earnings after tax divided by total assets; GOV\_INDEX is a governance index composed of the sum of seven individual components. The following variables are aggregated and coded as 1 if: (i) IND\_DIR ≥ the 33<sup>rd</sup> percentile; (ii) IND\_CHAIR = 1; (iii) FEMALE\_DIR > the 50<sup>th</sup> percentile; (iv) BUSY\_DIR < the 50<sup>th</sup> percentile; (v) FINANCIAL = 1; (vi) EXPERIENCE = 1; and (vii) TENURE < the 50<sup>th</sup> percentile. IND\_DIR is the percentage of independent directors on the board; IND\_DIR\*ROA is the interaction term between IND\_DIR and ROA; IND\_DIR\_33% is an indicator variable set equal to 1 if IND\_DIR ≥ the 33<sup>rd</sup> percentile, 0 otherwise; IND\_DIR\_33%\*ROA is the interaction term between IND\_DIR\_33% and ROA; IND\_CHAIR is an indicator variable equal to 1 if a fund has an independent chairperson, 0 otherwise; IND\_CHAIR\*ROA is the interaction term between IND\_CHAIR and ROA; FEMALE\_DIR is the percentage of female directors on the board; FEMALE\_DIR\*ROA is the interaction term between FEMALE\_DIR and ROA; BUSY\_DIR is the average number of outside directorships on the ASX-listed companies held by directors; BUSY\_DIR\*ROA is the interaction term between BUSY\_DIR and ROA; FINANCIAL1 is the percentage of directors with financial qualification on the board; FINANCIAL1\*ROA is the interaction term between FINANCIAL1 and ROA; EXPERIENCE is an indicator variable equal to 1 if a fund has at least one director with superannuation industry experience, 0 otherwise; EXPERIENCE\*ROA is the interaction term between EXPERIENCE and ROA; EXPERIENCE1 is the percentage of directors with prior superannuation fund industry experience; EXPERIENCE1\*ROA is the interaction term between EXPERIENCE1 and ROA; TENURE is the average director tenure; TENURE\*ROA is the interaction term between TENURE and ROA; BSIZE is the total number of directors on the board; BSIZE\*ROA is an interaction term between BSIZE and ROA; %OUTSOURCED is the percentage of investments outsourced. All continuous variables are winsorized at the top and bottom 5 percent.

## **CHAPTER 4 - Conclusion**

This thesis examines the effectiveness of governance practices on fund performance, fees and CIO pay. Chapter 2 examines the influence of governance practices on performance and fees of retail and industry superannuation funds. Chapter 3 investigates the association between governance practices and the pay-performance relationship of industry superannuation fund CIOs.

Chapter 2 develops and tests two hypotheses. The first hypothesis investigates whether there is a positive association between governance practices and superannuation fund performance. The evidence supports the first hypothesis for retail superannuation funds but not for industry superannuation funds. The second hypothesis examines whether there is a negative association between governance practices and superannuation fund fees. Based on the full sample of retail superannuation funds and industry superannuation funds, there is no evidence that governance practices reduce fees of superannuation funds. Furthermore, the results in Chapter 2 document that individual governance practices, such as independent directors and busy directors, are associated with better outcomes (a higher excess return on assets and lower fees) for industry superannuation funds. In contrast, for retail superannuation funds, there is some evidence that retail superannuation funds with directors who have financial qualifications and prior superannuation fund experience are associated with a higher excess return on assets, and busy directors and directors with prior superannuation funds are associated with higher fees.

In addition to the effect of governance practices on fund performance and fees, Chapter 3 explores whether governance practices influence CIO pay and specifically the pay-performance relationship. Three hypotheses are developed and tested. The first hypothesis examines whether CIOs' pay is linked to fund performance. The second hypothesis examines whether good governance practices strengthen the pay-performance relationship of CIOs. The third hypothesis examines whether investment outsourcing reduces CIOs' pay. Based on a sample of 147 CIOs of industry superannuation funds over the period 2014–2018, the findings in Chapter 3 document some evidence that CIOs' pay is positively associated with fund performance. However, the results show no evidence that good governance practices strengthen the pay-performance relationship of CIOs. Moreover, the findings in Chapter 3 illustrate some evidence that CIOs receive a lower cash bonus

when investments are outsourced. Overall, the results are generally robust to the alternate measures of performance and governance index.

The findings of this thesis provide several implications for regulators, policy-makers and academics. First, the evidence of this thesis has implications for regulators and policy-makers by examining the governance practices recommended and discussed by the Cooper Review (2010) and the Murray Inquiry (2014). The evidence in this thesis (both in Chapter 2 and 3) shows limited evidence that good governance practices enhance fund outcomes (fund performance and fees) and strengthen the pay-performance relationship of CIOs. Some evidence on individual governance practices suggests that some of the governance practices are more appropriate and suitable for specific types of superannuation funds. In particular, the evidence on the impact of independent directors provides evidence relevant to the current debate on the current board structure and the equal representation model of industry superannuation funds. The findings of this thesis are consistent with independent directors on the board increasing fund performance and decreasing fees of industry superannuation funds, supporting the recommendations provided by the Cooper Review (2010) and the Murray Inquiry (2014).

Second, the evidence of this thesis has implications for academics. Despite the sheer size of the superannuation fund industry and the important role of superannuation funds in the Australian financial system, the literature and empirical evidence on governance practices of superannuation fund is scant (Liu, 2014; Tan and Cam, 2015; Liu and Ooi, 2016; Liu and Ooi, 2019). This thesis builds on and extends prior literature on the governance and executive compensation of Australian superannuation funds. In particular, this study sheds light on the operation of the superannuation fund system and advances knowledge on the operation of this sector, which is important for maintaining the living standards of Australians during their retirement period.

There are several recommendations which can be made based on the findings of this thesis. First, there is no one system of governance practices that are suitable for all Australian superannuation funds as there are differences between retail and industry superannuation funds. Based on the results in this thesis, board independence and busy directors on the board enhance the outcome of industry superannuation funds, whilst directors with prior superannuation fund experience enhance the performance of retail superannuation funds. This suggests that an appropriate appointment and

renewal process, and framework for conflicts of interest should be employed which are suitable for retail superannuation funds and industry superannuation funds. This should help to ensure that directors have adequate level of skills, knowledge and experience to manage superannuation funds well. Furthermore, the findings in Chapter 3 show that there is a lack of board monitoring on CIOs pay and CIOs pay does not reflect their efforts. These findings suggest that the board should be comprised of directors with the expertise, time and incentives to design an appropriate compensation structure for senior executives to ensure that they perform their responsibilities and duties in the best interests of members.

The findings in this thesis are subject to a number of limitations. While the governance index (*GOV\_INDEX*) is used to measure the quality of superannuation funds, the interpretation of the results of the governance variables within the governance index are subjective. The findings of the governance index presented in this thesis are based on the discussions and recommendations from the reviews such as the Cooper Review (2010) and the Murray Inquiry (2014). Moreover, although retail and industry superannuation funds have different operational and board structure, the governance variables included in the index are assumed to be equally important. Some governance variables could be more important and effective for retail funds than industry funds, and vice versa. Further, the findings in Chapter 3 based on industry superannuation funds may not be generalisable to other superannuation funds due to the small sample size and short period.

This thesis provides a number of suggestions for future research. First, a larger sample size and longer sample periods can be used to increase the generalisability of the evidence. This may involve including other superannuation funds such as corporate and public sector superannuation funds. Second, there are concerns about a disengagement of members and low transparency of the Australian superannuation fund system (Productivity Commission, 2018). Despite the important role of disclosure for members to make informed decisions, the literature on disclosure of Australian superannuation funds is minimal. Future research can examine the disclosure quality of Australian superannuation funds to provide evidence for regulators and policy-makers, which will in turn allow the introduction of evidence-based disclosure requirements.

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