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The Quality of Accruals and Earnings – The Role of Components of Accrual Estimation Errors

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Nicolas Abdo

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ABSTRACT

I investigate the quality of accrual components by employing the approach used by Dechow and Dichev (2002) to measure the quality of aggregate accruals and extending it to identifiable components of accruals. I provide some initial evidence concerning components of accruals and to what extent the quality of specific accruals components contributes to overall accrual quality. The initial results indicate that Australian firms exhibit similar aggregate accruals behaviour and characteristics to those reported by Dechow and Dichev. Relating to accrual component quality, I find that quality measures relating to receivables and supplier/employee costs generally are associated with firm characteristics, such as operating environment volatility, size, and length of operating cycle, in a manner similar to aggregate accruals quality. Other accrual component quality measures, however, do not appear systematically associated with any firm characteristics. The results also indicate that the aggregate accruals quality measure is consistently and strongly positively associated with the quality of supplier/employee-related accruals, though primarily for firms which report large magnitude working capital changes over time. Interestingly, the same firms tend to exhibit a negative association between aggregate accruals quality and receivables-related quality. Thus, for my sample of Australian firms it appears that aggregate accruals quality is largely driven by the quality of accruals for costs relating to suppliers and employees, rather than revenues.

Keywords: accruals, components of accruals, cash flows

CHAPTER 1 INTRODUCTION

In this thesis, I investigate the quality of accrual components. Using a sample of Australian companies, I employ the approach used by Dechow and Dichev (2002) (hereafter DD) to measure the quality of aggregate accruals and extend it to identifiable components of accruals.

I address three specific research questions:

1. To what extent are the different accrual component quality measures associated with the firm characteristics investigated by DD?
2. To what extent are accrual component quality measures associated with aggregate accrual quality?
3. Does the association between accrual component quality and aggregate accrual quality vary across firms systematically with firm characteristics?

My objective is to extend DD's analysis and provide some initial evidence concerning components of accruals and to what extent the quality of specific accruals components contributes to overall accrual quality.

I am motivated by the possibility that different accruals' components might exhibit different quality, and that this may vary systematically across firms that face different economic and operating environments.

DD's aggregate accrual quality metric is based on the residual variance from a regression of aggregate accruals on leading, contemporaneous, and lagged operating cash flows. It reflects the role of accruals in realigning cash flows according to periods in which underlying economic activity occurs (e.g., when a sale occurs rather than when the cash is received). To construct accrual component quality measures, I exploit disclosures mandated in Australia which require firms to report both

components of operating cash flows as well as components of accruals. In particular, Australian companies are required by accounting standard *AASB 1026: Statement of Cash Flows* to list separately the major sources and uses of cash flows from their operating activities. They also are required to provide an indirect reconciliation between net operating cash flows and reported operating profit. The indirect reconciliation provides information regarding changes in working capital and other sources of accruals. Using the approach outlined in Clinch, Sidhu and Sin (2002), I form five broad components of cash flows and associated accruals relating receivables and payables to suppliers and employees, tax, interest and other. I then replicate DD's approach to measuring aggregate accruals quality, but apply it to each of the five accrual/cash flow component pairs. These accrual component quality measures provide the basis for my investigation.

My initial results indicate that Australian firms exhibit similar aggregate accruals behaviour and characteristics to those reported by DD. Relating to accrual component quality, I find that quality measures relating to receivables and supplier/employee costs generally are associated with firm characteristics such as operating environment volatility, size, and length of operating cycle in a manner similar to aggregate accruals quality. Other accrual component quality measures, however, do not appear systematically associated with any firm characteristics.

My results also indicate that the aggregate accruals quality measure is consistently and strongly positively associated with the quality of supplier/employee-related accruals, though primarily for firms which report large-magnitude working capital changes over time. Interestingly, the same firms tend to exhibit a negative association between aggregate accruals quality and receivables-related quality. Thus, for my sample of Australian firms, it appears that aggregate accruals quality is largely driven by the quality of accruals for costs relating to suppliers and employees, rather than revenues.

The remainder of the thesis is organized as follows. Chapter 2 provides additional background and briefly reviews some related literature. I provide details of the research design in Chapter 3. Chapter 4 presents a replication of DD for aggregate accruals for a large sample of Australian firms, as well as a reduced sample of firms with hand-collected accruals component data, together with a description of these samples. Chapter 5 describes my main results. Finally, Chapter 6 contains the conclusion.

CHAPTER 2 BACKGROUND AND RELATED LITERATURE

In this chapter, I briefly review research that is directly related to DD's accrual quality metric. DD's metric has been of interest to many researchers since 2002 when the study appeared, and numerous subsequent studies have used the metric to test various economic hypotheses including the association between information quality and cost of capital, and comparing different measures of earnings quality.[1]

Earnings quality is a multidimensional concept. The choice of an earnings quality measure will depend on the research question raised and the availability of data and suitable estimation models. Some research questions call for a measure of earnings quality that is linked to investors' perceptions of earnings via, for example, an examination of the value relevance of earnings, Basu (1997), Francis and Schipper (1999), and Ecker, Francis, Kim, Olsson, and Schipper (2006). Many studies focus on defining earnings as high quality if earnings are persistent, an attribute based solely on the time-series properties of earnings. In other cases, the research question may focus on direct measures of earnings quality constructed using accounting data alone, for example, Sloan (1996), Dechow and Dichev (2002), and Francis, LaFond, Olsson, and Schipper (2005). Yet another dimension that is important for some research questions is the distinction between total, innate (non-discretionary) and discretionary earnings quality, for example, Jones (1991) and McNichols (2002).

The DD accrual quality metric defines quality in terms of the relation between accruals and cash flows. Specifically, it uses cash flows from operations (CFO) as the reference construct and measures the extent to which accruals in periods surrounding the incidence of cash flows are associated with those cash flows. A higher degree of association is viewed as reflecting higher quality accruals and thus

[1] I do not attempt to review the broad earnings quality literature. Other studies provide comprehensive analyses of earnings quality, for example, Schipper and Vincent (2003), Dechow and Skinner (2000), Dechow, Sloan and Sweeny (1995).

higher earnings. The measure is intended to reflect an underlying objective of accrual accounting: to alter the timing of recognition of cash flows to better reveal the underlying economic activities which give rise to the cash flows. It is assumed that if accruals are not closely associated with the underlying cash flows being allocated across time, they are of 'low quality'.

Specifically, the measure is based on the 'residuals' from firm-specific regressions of working capital-related accruals on previous year, present, and one-year ahead cash flows from operations (CFO). The residuals from the regressions reflect the accruals that are unrelated to cash flow realizations, and include estimation errors and their reversals. The standard deviation of these residuals is the firm specific measure of quality of accruals and earnings used by DD, where a higher standard deviation signifies lower quality.

DD 'validate' their measure by exploring the extent to which it is associated with various firm characteristics, such as length of operating cycle, loss incidence, size of the firm and the volatility of earnings and operating cash flows. In addition, they illustrate the usefulness of their analysis by exploring the relation between their measure and earnings persistence. Firms with low accrual quality have more accruals that are unrelated to cash flow realizations and so have more noise and less persistence in their earnings. A more detailed description of the regression approach employed by DD and their validation process is presented in the following chapter.

McNichols (2002), as part of her discussion of DD's study, aims to shed light on the contribution of DD's paper by characterizing its innovation and limitations, and by putting it in the context of related literature. McNichols claims that DD's approach does not distinguish the various factors that influence the relation between accruals and cash flows, such as the uncertainty in the firm's environment, the ability of management, and the extent to which accruals are manipulated. The approach

requires that the key element of accruals/earnings quality is present in the current accruals and this is a significant assumption that limits the applicability of the approach to firms with operations that are shorter term in nature. In addition, the estimation errors employed by DD are assumed to be independent of each other and of the cash flow realizations. DD focus on the behaviour of total accruals and do not separately consider how total accruals might be affected by the behaviour of discretionary accruals. Thus, McNichols concludes that the theory and evidence suggest incorporating management incentives to exercise discretion over accruals in DD's model will result in different implications than those of the present model.

Consequently, McNichols aims to link the DD analysis of earnings quality to the literature on discretionary accruals, and in particular, the Jones (1991) model. In her opinion, linking the approach taken by DD with that taken by Jones (1991) has the potential to strengthen both approaches and to calibrate the errors associated with Jones' measure of discretionary accruals and DD's measure of earnings quality. McNichols' findings confirm that, consistent with DD, accruals are significantly positively associated with previous year, current year, and subsequent year cash from operations. In addition, McNichols finds that the set of estimation results based on the Jones model indicates significant explanatory power, but substantially less than the estimation based on DD's model.

McNichols concludes that DD's metric is a useful tool for measuring earnings quality based on accruals analysis. In her view, DD's study makes two contributions. First, it provides a characterization of the relation between accruals and cash flows that captures an important element of earnings quality (the estimation error in accruals). The second contribution is that it provides an empirical analysis for this characterization and provides some evidence of its validity.

McNichols' findings indicate that researchers should consider the implications of both the DD and Jones models to develop more powerful approaches to the estimation of earnings quality and the role of management discretion in influencing earnings quality. She suggests that further modelling of the relation between accruals and cash flows could yield substantial improvements in the ability to understand the factors that influence earnings quality. This should also yield substantial improvements in the ability to test for management's exercise of discretion over accruals.

Of particular interest to this thesis is McNichols' suggestion to extend DD's study by focusing on specific accruals rather than aggregate accruals. She believes that the complexity associated with modelling the estimation errors in aggregate accruals is daunting and the construct validity associated with a proxy based on aggregate accruals seems low. She believes that focussing on specific accruals can permit a more complete characterization of the relation between accruals and cash flows, and can potentially result in a better understanding of the role played by estimation error. Such development can potentially allow better understanding of the forces shaping management's choices and their relation to the measurement error in earnings. This thesis provides an initial attempt to follow McNichols' suggestion based on component accrual and cash flow disclosures reported by Australian companies.

Other studies employ DD's metric. Specifically, Francis, La Fond, Olsson, and Shipper (2004) conduct a comprehensive investigation of a range of alternative earnings quality measures. They base their measure of accrual quality on DD's metric where they investigate the association between attributes of accounting earnings and investors' resource allocation decisions, using the cost of equity capital as a summary indicator of those decisions. They consider that 'accrual quality' that captures variation in the mapping of earnings into operating cash flows is a key element of the pay-off structure that is of interest to investors. On the whole, they

conclude that among the various attributes they employ 'accrual quality' is the dominant attribute in terms of cost of equity effect, and that is based on DD's accrual quality metric.

Other studies have questioned the validity of DD's model as being a reliable measure of accruals and earnings quality. Specifically, Wysocki (2007) argues that despite the fact that DD's model has been quickly adopted, there is insufficient evidence to date regarding the model's validity and whether it reliably captures 'accounting quality' of U.S. and international firms. The accounting quality measures that have been derived from DD's model show weak and often contradictory associations with other measures of accounting quality for U.S. and international firms. Wysocki concludes that this raises concerns about the validity and the applicability of DD's model as well as the conclusions of other research studies that use the model to capture accounting quality.

Despite the various criticisms, DD's metric remains prevalent in the literature. I aim to provide additional evidence regarding the metric's validity based on my analysis investigating a set of Australian data.

CHAPTER 3 RESEARCH DESIGN

The empirical measure of accruals quality derived by DD is based on the following model:

Model (A):

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

Where $ACCRUALS\_ST\_TA_t$ is a measure of short-term accruals in year t, and CFO_TA_t is cash flows from operations in year t. The residuals from the regression reflect accruals that are unrelated to cash flow realizations. DD estimate model (A) separately for each firm in their sample, and use the standard deviation of the regression residuals as the basis for their quality measure. The standard deviation of these residuals is a firm-level measure of accrual quality, where higher standard deviation means lower quality. All variables are deflated by average total assets.

I follow DD's procedures, but apply them to components of accruals and operating cash flows rather than to aggregate data. Specifically, I decompose accruals and cash flows using the approach taken by Clinch, Sidhu and Sin (2002). Based on Australian data, Clinch, Sidhu and Sin (2002) use the following five standardized direct components of operating cash flows that sum to the disclosed net cash flow from operations CFO_TA:

- CASHCOLL – Cash collected from customers;
- CASHSUPP – Cash paid to suppliers and employees;
- TAXPAID – Income taxes paid;
- INTPAID – Net interest paid;
- CASHOTHER – All other disclosed cash components that are not included in the above (e.g., dividends received, excise taxes paid, etc).

Using this classification scheme Clinch, Sidhu and Sin (2002) group accrual items disclosed in the indirect reconciliation according to the business transactions that generate each previously described direct cash flow component as follows:

- ACCREV – Accruals related to non-cash component of sales revenue (e.g., change in trade receivables);
- ACCSUPP – Accruals related to the non-cash components of supplier and employee expenses (e.g., change in inventories and accounts payable);
- ACCTAX – Accruals related to income tax expense (e.g., change in income taxes payable and deferred tax liabilities/assets);
- ACCINT – Accruals related to interest revenue and expenses (e.g., change in interest receivable and payable);
- ACCOTHER – Accruals related to other revenues and expenses (e.g., change in accounts relating to non-operating items such as dividends receivables);
- ACCNONCASH – Non-cash accruals (represents non-cash accruals that are associated with non-operating cash flow items such as depreciation and amortization expense).

Similarly, all above variables are deflated by average total assets. I follow the decomposition approach employed by Clinch, Sidhu and Sin (2002) and replicate the 'accrual quality' measurement approach of DD for each accruals component. Specifically, I decompose ACCRUALS_ST_TA$_t$ and CFO_TA$_t$ presented in Model (A) above as follows:

Model (B):

(B1) $$ACCREV\_TA_t = a_0 + a_1*CASHCOLL\_TA_{t-1} + a_2*CASHCOLL\_TA_t + a_3*CASHCOLL\_TA_{t+1} + \epsilon 1_t$$

(B2) $$ACCSUPP\_TA_t = b_0 + b_1*CASHSUPP\_TA_{t-1} + b_2*CASHSUPP\_TA_t + b_3*CASHSUPP\_TA_{t+1} + \epsilon 2_t$$

(B3) $$ACCTAX\_TA_t = c_0 + c_1*TAXPAID\_TA_{t-1} + c_2*TAXPAID\_TA_t + c_3*TAXPAID\_TA_{t+1} + \epsilon 3_t$$

(B4) $$ACCINT\_TA_t = d_0 + d_1*INTPAID\_TA_{t-1} + d_2*INTPAID\_TA_t + d_3*INTPAID\_TA_{t+1} + \epsilon 4_t$$

(B5) $$ACCOTHER\_TA_t = e_0 + e_1*CASHOTHER\_TA_{t-1} + e_2*CASHOTHER\_TA_t + e_3*CASHOTHER\_TA_{t+1} + \epsilon 5_t$$

Based on Model B, I produce five 'accrual component quality' metrics analogous to DD's single aggregate accruals quality metric. I use the five metrics to investigate descriptively the three specific research questions outlined in Chapter 1: (1) the extent to which each component quality measure is associated with firm characteristics studied by DD; (2) the extent to which the component quality metrics are associated with DD's aggregate metric; and (3) whether this association varies across firms systematically with firm characteristics.

For the first research question, the specific firm characteristics I investigate are: length of operating cycle, volatility of earnings, volatility of operating cash flows, size of the firm, and earnings persistence. These are the firm characteristics studied by DD.

DD identify these firm characteristics as factors likely related to the propensity to make accrual estimation errors. They expect that lower accrual quality is associated with firms with longer operating cycles because the longer operating cycles indicate more uncertainty about eventual cash flows related to current operating activities.

Large firms have more stable and predictable operations and are more diversified and thus are more likely to have fewer and smaller estimation errors. DD also expect that the greater the magnitude of volatility in sales, cash flow, accrual, and earnings, the more likely there will be lower accrual quality due to difficulties in estimating cash flow consequences of current operating activity in volatile economic environments. They also suggest that the greater the frequency of reporting negative earnings and the greater the magnitude of accruals, then the lower accruals quality. I follow the same approach employed by DD and investigate the association of the same firm characteristics with accruals quality based on the components of accruals and its corresponding cash flow items, and not just the aggregate accrual quality measure.

For the second research question, I regress the aggregate accruals quality metric on all five individual accruals component quality measures and report which, if any, provide significant explanatory power.

The third research question employs the same firm characteristics and investigates whether they are associated with the extent to which each individual accrual component quality measure varies with aggregate accrual quality.

Prior to investigating the three research questions, I replicate DD's study for the aggregate accruals quality measure based on two samples (in Chapter 4). The first sample is based on all available firm-years with usable data from Huntley's Aspect database over the period 1991 to 2005. My objective here is to confirm that a broad sample of Australian firm-years generate similar results to those reported by DD. The second, reduced, sample is based on the subset of firm-years for which hand-collected accrual and cash flow component data are available over the period. My objective is to ensure that the restricted sample exhibits similar results at the aggregate accrual level to both DD and the broad Australian sample.

CHAPTER 4 REPLICATION OF DECHOW AND DICHEV (2002)

4.1 Replication of DD Based on Large Sample of Australian Companies

DD base their analysis on a sample of 15,234 U.S. firm-year observations that are derived from 1,725 firms over the period 1987 to 1999. In this section, I follow the same procedures used by DD for a broad sample of Australian companies. My objective is to confirm that DD's aggregate accrual level results are also broadly supported in Australia for a large sample. In section 4.2 I then duplicate the analysis on the reduced sample of firm-years that have available accrual and cash flow component data. Again, my objective is to ensure that the reduced sample employed in my main analyses (Chapter 5) exhibit aggregate level results that are consistent with DD.

Table 4.1 summarizes the sample selection processes I follow. The initial sample of firm-years is based on all available data taken from the Huntley's Aspect database for the years 1991 to 2005. I restrict the sample period to years 1991 to 2005 because cash flow from operations data is only available from 1991 for Australian firms and because the adoption of International Financial Reporting Standards by Australia in 2005 may have caused material changes in the measurement and recognition of various accruals by companies subsequent to 2005. After removing non-Australian firms, this yields 17,329 firm-year observations. Unavailable working capital lead/lag cash flow from operations data results in disregarding 5,410 firm-years. I exclude from the sample 1,246 firm-years relating to financial industries such as banks, insurance, etc because their accruals are substantially different to industrial firms. Another 1,102 firm-years are excluded because they have zero change in working capital.[2] Also, I require at least eight years of data to estimate firm-specific

[2] Zero change in working capital is likely due to the database not properly recording working capital. Also, it is meaningless to include companies that have true working capital change of zero because this means they have zero accruals and so they are not suitable for inclusion in the study.

regressions and this further restriction reduces the sample by 3,070 firm-years resulting in a final sample of 6,501 firm-year observations for 583 firms.

Descriptive statistics and correlations for this sample are reported in Table 4.2. Cash flow from operations is denoted by CFO_TA. The change in working capital from year t-1 to t CHGWC_TA, is computed as ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net), where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable. Earnings after short term accruals but before long-term accruals EARN_TA is calculated as EARN_TA = CFO_TA + CHGWC_TA. PROF_TA represents reported earnings before extraordinary items, while ACCRUALS_TA is calculated as PROF_TA – CFO_TA. Since ACCRUALS_TA will include long-term accruals, such as depreciation, and DD's quality metric relates to short-term accruals only, I also define ACCRUALS_ST_TA = ACCRUALS_TA + depreciation and amortization. CHGWC_TA and ACCRUALS_ST_TA represent alternative proxies for short-term accruals. Consistent with DD, I deflate all variables by average total assets (TOTASS).

In Panel A, the mean CFO_TA, EARN_TA, and PROF_TA are each negative, -0.039, -0.036 and -0.139 respectively, while median CFO_TA, EARN_TA, and PROF_TA are 0.006, 0.025 and -0.017 respectively. This indicates that on average for the sample period, Australian firms performed relatively poorly. These results are broadly consistent with those provided in other studies, in particular, the descriptive statistics reported in Clinch, Fuller, Govendir and Wells (2010) who base their analysis on a larger sample of 12,131 firm-years over a similar period.

Mean accruals measures are -0.101 and -0.058 for ACCRUALS_TA and ACCRUALS_ST_TA respectively, while the mean change in working capital CHGWC_TA is 0.003. Similarly, the median accruals measures are also negative (-

0.048 and -0.007), while the median CHGWC_TA is positive (0.001). This is consistent with the change in working capital proxy being contaminated by non-accrual related increases in net working capital assets, perhaps due to business acquisitions. Collins and Hribar (2002) find that non-operating events or transactions, such as mergers and acquisitions, divestitures and foreign operations, can cause significant errors in accruals and cash flows from operations estimated using the indirect balance sheet approach underlying the calculation of CHGWC_TA and based on relevant assets and liabilities balances reported on firms' balance sheets. As a result, my main results (in Chapter 5) are based on employing ACCRUALS_ST_TA as the proxy for accruals, rather than CHGWC_TA.[3] As expected, mean and median ACCRUALS_ST_TA are greater than mean and median ACCRUALS_TA due to the effect of depreciation and amortization.

Pearson correlations between variables are reported in Panel B of Table 4.2. There is a strong positive contemporaneous correlation between EARN_TA and CFO_TA (0.784) and between EARN_TA and CHGWC_TA (0.538), and a small negative correlation between CFO_TA and CHGWC_TA (-0.059). I also find that ACCRUALS_ST_TA and CHGWC_TA are positively correlated (0.246), though at a moderate level, consistent with potential measurement error in the indirect estimate of accruals, CHGWC_TA.

4.1.1 Accruals Regression Results

Table 4.3 presents results from estimating Model A, the regression of working capital accruals on past, present, and future cash flows from operations, that forms the basis of DD's accrual quality metric.

[3] In this chapter, I initially replicate DD based on the change of working capital CHGWC_TA proxy as this is the proxy they use. I also replicate the DD results based on the ACCRUALS_ST_TA proxy, and base my main analysis in Chapter 5 on ACCRUALS_ST_TA

Model (A):

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

Panel A reports summary statistics for firm-level regressions because, following DD, my study is applied on a firm-level basis. However, I also present industry-specific and pooled regression results in Panels B & C.[4]

Results for the firm-specific regressions in Panel A of Table 4.3 are consistent with those reported in DD, although estimated coefficients are generally smaller in magnitude and the explanatory power is reduced. The coefficient relating accruals (CHGWC_TA) and contemporaneous operating cash flows (CFO_TA) has a mean of -0.289, more than seven standard deviations from zero, which is highly statistically significant. DD report a corresponding mean coefficient of -0.62. Mean coefficients for lagged and leading operating cash flows are 0.098 and 0.083, respectively, both of which are more than two standard deviations from zero, but lower than the corresponding estimates of 0.17 and 0.09 in DD. Similarly the average adjusted R^2 reported in Table 4.3, Panel A, is 0.183, lower than DD's 0.47. However, overall, the results exhibit the same signs as in DD and are statistically significant at conventional levels.

Results for industry-specific and pooled regressions in Panels B & C of Table 4.3 are consistent with the firm-specific results and also consistent with the results reported in DD although again somewhat weaker in magnitude and explanatory power. The mean coefficients on contemporaneous CFO_TA are -0.267 and -0.167 for the industry-specific regressions and the pooled regression respectively, both of which are more than seven standard deviations from zero. The coefficients on lagged and leading cash flows are also comparable in magnitude with the firm-specific results, and reliably different from zero at conventional significant levels. The adjusted R^2s

[4] The industries are based on two-digit codes provided in the AGSM's CRIF share price database.

are lower, with an average of 0.094 for the industry regressions and 0.021 for the pooled regression.

4.1.2 Accruals Quality and Firm Characteristics

Following DD, I use the standard deviation of residuals (SRESID) from the firm specific regressions described in Table 4.3 as a firm-specific measure of accrual quality, where a higher standard deviation signifies lower quality. I investigate the association between SRESID and a number of firm characteristics suggested by DD:

AVEOPCYCLE

I examine the relation between the firm's length of operating cycle and accruals quality based on two different measures of the operating cycle.

Operating Cycle 1 = 360/(Sales/Average Accounts Receivable) + 360/(Sales/Average Inventory).[5]
Operating Cycle 2 = 360/(Average Total Assets/Average Accounts Receivable) + 360/(Average Total Assets/Average Inventory).[6]

Following DD, I expect that the longer the operating cycle the lower is accruals quality because longer operating cycles indicate more uncertainty, resulting in more estimation underlying accruals, and potential errors in those estimations.

AVELOGTA

Larger firms likely have more stable and predictable operations and, therefore, less and smaller estimation errors underlying accruals. In addition, larger firms are more

[5] DD use Cost of Goods Sold (COGS)/Average Inventory; however, I use Sale/Average Inventory because COGS is not a required disclosure in Australia for much of the sample period.
[6] The Operating Cycle 2 measure (AVEOPCYCLE 2) assumes a constant Sales-to-Total Assets turnover across firms; and then uses Total Assets as a replacement for Sales in the definition. Sales was not a required disclosure by Australian firms in the early years of the sample period.

diversified with different portfolios across divisions and business activities which will generally reduce the effect of estimation errors. As a consequence, and following DD, I expect small firms to exhibit lower accruals quality. I use the log of total assets of a firm as the proxy for the size of the firm.

STDSALES, STDCFO, STDCHGWC & STDEARN

Firms facing a volatile operating environment are more likely to use approximations and estimations in determining operating accruals, potentially leading to lower accruals quality. Following DD, I employ four proxies for operating environment: the standard deviation of sales (STDSALES), the standard deviation of cash flow from operations (STDCFO), the standard deviation of change in working capital (STDCHGWC), and the standard deviation of earnings (STDEARN). I expect each proxy to be negatively associated with accruals quality.

FREQLOSS

Firms that frequently report negative earnings are more likely to have accruals that involve substantial estimation errors due to the fact that losses are indicative of severe negative shocks in the firm's operating environment. Thus, following DD, I expect that the greater the frequency of reporting negative earnings, the lower accruals quality.

AVEABSCHGWC

Given that more accruals indicate more estimation and errors of estimation, then following DD, I expect that the greater the magnitude of accruals, the lower accruals quality.

Panel A of Table 4.4 provides descriptive statistics for each of these variables. The mean and median coefficients of the standard deviation of the residuals SRESID are 0.121 and 0.087 respectively. The corresponding mean and median coefficients

reported by DD are 0.028 and 0.020 respectively. The higher values, reported for my sample, likely reflect the generally smaller size of the Australian firms relative to the U.S. firms. Consistent with this, the mean and median for AVELOGTA are 3.292 and 2.751 respectively which are smaller in magnitude from the corresponding results reported by DD (5.50 and 5.44 respectively).

The mean and standard deviation of AVEOPCYCLE 1 are 366.4 days and 722.6 days respectively. These estimates are substantially greater than the corresponding mean and standard deviation reported by DD: 141.1 days and 61.8 days respectively. This is likely due to a small number of very large outliers since the median for my sample, 121.0 days, is similar to DD's median of 131.5 days. This provides further motivation for employing the alternative operating cycle proxy, AVEOPCYCLE 2 which exhibits less noise.

The mean and median of STDSALES_TA and AVEABSCHGWC_TA are somewhat higher than those reported by DD, again possibly reflecting the smaller size of my sample of Australian firms. However, the mean and median for STDCFO_TA, STDEARN_TA and FREQLOSS are all slightly lower than those reported by DD. In summary, the sample of firms I employ is not markedly different than DD's sample though my firms appear somewhat smaller and more volatile.

Panel B of Table 4.4 reports Pearson correlations between SRESID and other firm characteristics. The correlation coefficients for AVEOPCYCLE 1 and AVEOPCYCLE 2 are 0.226 and -0.069 respectively, while the corresponding DD correlation coefficient for their version of AVEOPCYCLE is 0.28. AVEOPCYCLE 1 and AVEOPCYCLE 2 are negatively correlated with a correlation coefficient of -0.199 suggesting that each appears to be measuring a different underlying construct.

The correlation coefficients between SRESID and all remaining variables are similar in magnitude to those reported by DD, further suggesting that the sample of Australian firms I employ exhibits similar descriptive characteristics to the sample employed by DD.

Panel C of Table 4.4 reports results for regressions of SRESID on various combinations of these firm characteristics. My base line specification regresses SRESID on standard deviation of earnings (STDEARN_TA) with an estimated slope coefficient equals to 0.566 and adjusted R^2 of 0.697 which are both similar to the corresponding statistics reported by DD: a coefficient of 0.462 and an adjusted R^2 of 0.67. Similarly each of the other regression specifications yields results that are in line with those reported by DD. This provides further support for the conclusion that the sample of Australian firms I employ exhibits similar characteristics at the aggregate accruals level to the sample employed by DD.

4.1.3 Replication of DD Based on a Large Sample of Australian Companies - Using Alternative Proxy for Accruals (ACCRUALS_ST_TA)

As discussed above, employing change in working capital (CHGWC_TA) as a proxy for accruals introduces potential measurement error. In this section, I re-examine the DD accruals quality metric for the large sample of Australian companies based on an alternative accruals proxy calculated as reported profit less reported CFO with depreciation and amortization removed: ACCRUALS_ST_TA = PROF – CFO + (Depreciation & Amortization).

Table 4.5 presents summary statistics from estimating Model A but based on the different proxy for accruals. The results are consistent with those reported in the previous section (Table 4.3) and by DD, but with generally increased explanatory power. The coefficient relating accruals (ACCRUALS_ST_TA) and

contemporaneous operating cash flows (CFO_TA) has a mean of -0.378, more than eight standard deviations from zero, which is highly statistically significant and of greater magnitude than the corresponding value from Table 4.3, though DD report a corresponding mean coefficient of -0.62. Mean coefficients for lagged and leading operating cash flows are 0.161 and 0.090, respectively. The first is more than three standard deviations from zero, and the second is more than two standard deviations from zero and both are consistent with the corresponding estimates in DD (0.17 and 0.09). Both are also of greater magnitude than the corresponding estimates reported in Table 4.3 (0.098 and 0.083). Similarly, the average adjusted R^2 reported in Table 4.5, Panel A, is 0.263 which although lower than DD's 0.47 is higher than the R^2 reported in Table 4.3 (0.183). The results exhibit the same signs as in DD and are statistically significant at conventional levels.

Results for industry-specific and pooled regressions in Panels B & C of Table 4.5 are consistent with the firm-specific results, and also consistent with the results reported by DD and in Table 4.3.

Table 4.6 reports results for regressions of the DD accrual quality metric (SRESID); based on ACCRUALS_ST_TA as an accruals proxy, on various combinations of firm characteristics, following the analysis reported in Table 4.4 Panel C. The base line specification regresses SRESID on standard deviation of earnings (STDEARN_TA) with a coefficient equals to 0.628 which is slightly higher than the reported coefficient in the previous section (Table 4.4, Panel C) and by DD of 0.566 and 0.462 respectively. However, the adjusted R^2 is 0.386 which is lower in magnitude than the previously generated result and DD's of 0.697 and 0.67 respectively. For each of the other regressions the results are similarly consistent, though in some cases statistically weaker, than those reported by DD and in Panel C of Table 4.4.

In summary, the results are consistent with those reported in the previous section and support the conclusion that the large Australian sample generally exhibits similar results for aggregate accrual quality to those reported by DD.

4.2 Replication of DD Based on the Reduced Sample of Australian Companies – Using Alternative Proxy for Accruals (ACCRUALS_ST_TA)

My reduced sample of publicly traded Australian firms is based on the Clinch, Sidhu and Sin (2002) (CSS) sample, augmented with additional years, and firms randomly selected from ASX companies not already included in the CSS sample.

Table 4.7 summarizes the sample selection processes I follow. The CSS sample is constructed from the 100 largest companies listed on the Australian Stock Exchange (ASX), as measured by market value of equity as of June 30, 1996, together with a random sample of 250 firms selected from the remaining ASX-listed firms with market value of equity greater than A$10 million. CSS collect data from 1992 to 1997 for this sample of firms. Foreign-domiciled firms are excluded from the sample as they do not follow Australian GAAP. Firms operating in the financial services sector are also excluded because their cash flow disclosures differ from firms operating in other industries. The final CSS sample comprises 146 companies yielding 648 firm-year observations.

I augment the CSS sample by collecting additional years up to 2005 for their sample firms as well as adding an additional 84 companies randomly selected from ASX companies not already included in the Clinch, Sidhu and Sin (2002). As a result, the sample contains a total of 2,474 firm-year observations with available cash flow statement and financial statement data. Omitting firm-years with unavailable market capitalization data and with potential data errors reduces the sample to 2,262

observations.[7] Given that I require there to be at least 8 years of data to be able to estimate the DD regressions my sample is further reduced to a total of 1,164 observations for 111 firms.

The indirect cash flow data is hand collected from companies' annual reports. Market capitalization for each firm-year is extracted from the CRIF Share Price database.

Panel A of Table 4.8 presents the industry breakdown of the 2,262 firm-year observations as well as for the reduced sample of 1,164 firm-years. It reveals that the metal and mining industry constitute about 28.25% of the sample. The second biggest portion of the sample is related to the capital goods industry with 8.36% of total observations.[8] The rest of the sample firm-year observations are evenly distributed among the various industries that constitute the sample. Panel A of Table 4.8 also presents the industry breakdown of the final reduced sample of 1,164 firm-year observations. It reveals that the metal and mining industry still constitutes the majority of the sample's firm-year observations representing 29.12% of the total sample. The second biggest portion of the sample remains the capital goods industry at 9.28% of total observations.

Panel B of Table 4.8 also provides a breakdown of the 2,262 firm-year observations by each individual year from 1991 to 2005. Firm-year observations are distributed evenly among all sample years except for year 1991. This is the case because firms were required to provide direct cash flow disclosures only for financial years ending

[7] Potential data errors are identified by comparing the reported operating cash flows with cash flows calculated using the indirect method (disclosed, usually, in footnotes). If the two numbers differ by more than 5% the firm-year is removed from the sample.

[8] Unidentified industries relate to the change in industry classification scheme employed by the Australian Stock Exchange during my sample period. Prior to 2000, the ASX employed its own industry classification scheme. Beginning in 2000 this was replaced with Standard and Poor's GICS classifications. CRIF provides an industry classification that attempts to span the two, but for some firms no classification is reported. These are the unidentified firm-years included in Table 4.8.

on June 30, 1992 or after. The small number of 1991 observations in my sample is taken from prior-year comparative financial statements provided in 1992. Only a small number of firms provided such comparatives. Panel B of Table 4.8 also provides a breakdown of the final reduced sample of 1,164 firm-year observations by each individual year from 1992 to 2004. All firm-year observations are distributed evenly across the sample years.[9]

Descriptive statistics and correlations for this sample are reported in Table 4.9. In Panel A, the mean CFO_TA, EARN_TA, PROF_TA and TOTASS are 0.040, 0.050, -0.030 and 1,354.84 respectively, while median CFO_TA, EARN_TA, PROF_TA and TOTASS are 0.067, 0.078, 0.038 and 99.26 respectively. These results are slightly different from the results of the larger sample indicating that the reduced sample is mainly from larger companies in size which perform slightly better than the majority of the companies constituting the larger sample.

Mean accruals measures are -0.070 and 0.060 for ACCRUALS_TA and ACCRUALS_ST_TA respectively, compared to -0.101 and -0.058 for the larger sample. The mean change in working capital CHGWC_TA is 0.010 and 0.003 for the larger sample. Similarly, the median accruals measures are -0.041 and 0.001 respectively, while the median CHGWC_TA is 0.003; and the comparable results of the larger sample are -0.048, -0.007 and 0.001 respectively.

Pearson correlations between variables are reported in Panel B of Table 4.9. There is a strong positive contemporaneous correlation between EARN_TA and CFO_TA (0.820) and between EARN_TA and CHGWC_TA (0.540), and a small negative correlation between CFO_TA and CHGWC_TA (-0.050). These results are consistent with the results of the larger sample indicating that the composition and

[9] There are no observations for 1991 and 2005 for the reduced sample since estimation of the DD accruals quality metric requires lead and lagged cash flow items.

characteristics of my reduced sample of firm-years is consistent with those of the larger sample and consequently with those of DD's.

4.2.1 Accruals Regression Results

Model (A):

$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$

Table 4.10 presents results from estimating Model A based on the ACCRUALS_ST_TA proxy. Results for the firm-specific regressions in Panel A of Table 4.10 are consistent with those reported for the large sample and by DD. The coefficient relating accruals (ACCRUALS_ST_TA) and contemporaneous operating cash flows (CFO_TA) has a mean of -0.523, compared to -0.289 for the larger sample, and is more than eleven standard deviations from zero, which is highly statistically significant. DD report a corresponding mean coefficient of -0.62. Mean coefficients for lagged and leading operating cash flows are 0.207 and 0.064 respectively. The first is more than five standard deviations from zero and is higher than the corresponding estimate for the larger sample (0.098) and the estimate reported by DD (0.17). However, the latter is slightly more than two standard deviations from zero and is lower than both estimates reported for the larger sample (0.083) and by DD (0.09). Similarly the average adjusted R^2 reported in Table 4.10, Panel A, is 0.411 which is slightly lower than DD's (0.47) but is significantly higher than the reported adjusted R^2 for the larger sample (0.183). In general, all the results exhibit the same signs as in DD and the larger sample and are statistically significant at conventional levels. Thus, again my reduced sample of firm-year observations exhibit similar characteristics and features of the sample used by DD and my larger sample of Australian data.

Results for industry-specific and pooled regressions in Panels B & C of Table 4.10 are consistent with the firm-specific results, and also consistent with the results reported by DD although again somewhat weaker in magnitude and explanatory power. The mean coefficients on contemporaneous CFO_TA are -0.536 and -0.373 for the industry-specific regressions and the pooled regression respectively.

The coefficients on lagged and leading cash flows are also comparable in magnitude with the firm-specific results, and reliably different from zero at conventional significant levels. The adjusted R^2s are lower than DD's but higher than those reported for the larger sample, with an average of 0.323 for the industry regressions and 0.151 for the pooled regression. Corresponding adjusted R^2 reported for the larger sample are 0.094 and 0.021 respectively.

4.2.2 Accruals Quality and Firm Characteristics

Panel A of Table 4.11 provides descriptive statistics for the reduced sample. The mean and median of the standard deviation of the residuals SRESID are 0.046 and 0.027 respectively, which are smaller than the comparable statistics reported by DD but higher than those reported for the larger sample: (0.121, 0.087) and (0.028, 0.020) respectively.

Panel B of Table 4.11 reports Pearson correlations between SRESID and other firm characteristics. The correlation coefficients for AVEOPCYCLE 1 and AVEOPCYCLE 2 are 0.090 and -0.180 respectively. The correlation coefficients between SRESID and all remaining variables are similar in magnitude to those reported for the larger sample and by DD, further suggesting that the reduced sample of Australian firms I employ exhibits similar descriptive characteristics to the sample employed by DD.

Panel C of Table 4.11 reports results for regressions of SRESID on various combinations of these firm characteristics. My base line specification regresses SRESID on standard deviation of earnings (STDEARN_TA) with an estimated slope coefficient equals to 0.404 which is comparable to the reported coefficient for the larger sample and by DD of 0.566 and 0.462 respectively. However, the adjusted R^2 is 0.297 which is lower in magnitude than the generated result for the larger sample and DD's estimate of 0.697 and 0.67 respectively.

Overall, my reduced sample of Australian firms exhibits similar characteristics and features as the sample of U.S. firms employed by DD. Thus, my reduced sample serves as a fairly good representative sample of the Australian firms included in this study.

Table 4.1
Derivation of a large sample of Australian companies from Huntley's Aspect database for years from 1991 to 2005

Description	No. of Observations
Total available firm-year observations from 1991 to 2005 after removing non-Australian firms	17,329
Less: Unavailable working capital for lead/lag CFO data	5,410
Less: Firm-years in financial industries (Banks, insurance, etc)	1,246
Less: Firm-years with all zero change in working capital	1,102
Less: Firms with fewer than 'eight' years of data	3,070
Total sample (No. of firms = 583 firms)	6,501

All data is from Huntley's Aspect database

Table 4.2
Descriptive statistics and correlations for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
CFO_TA	-0.039	0.233	-0.117	0.006	0.093	6,501
CHGWC_TA	0.003	0.166	-0.041	0.001	0.044	6,501
EARN_TA	-0.036	0.286	-0.138	0.025	0.118	6,501
PROF_TA	-0.139	0.358	-0.215	-0.017	0.059	6,501
ACCRUALS_TA	-0.101	0.258	-0.139	-0.048	0.004	6,501
ACCRUALS_ST_TA	-0.058	0.255	-0.089	-0.007	0.038	6,501
TOTASS	596.10	3,641.70	5.52	19.20	96.20	6,501

Panel B: Correlations

VARIABLE	CFO_TA	CHGWC_TA	EARN_TA	PROF_TA	ACCRUALS_TA	ACCRUALS_ST_TA	TOTASS	NOB
CFO_TA	1							6501
CHGWC_TA	-0.059	1						6501
EARN_TA	0.784	0.538	1					6501
PROF_TA	0.681	0.125	0.637	1				6497
ACCRUALS_TA	0.054	0.239	0.171	0.741	1			6497
ACCRUALS_ST_TA	0.095	0.246	0.209	0.749	0.973	1		6497
TOTASS	0.096	0.001	0.079	0.083	0.029	0.032	1	6501

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net)
  where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The correlations in panel B are based on different number of observations because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables

Table 4.3
Regressions of the change in working capital (CHGWC_TA) on past, current, and future cash flow from operations for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

Panel A: Firm-Specific Regressions (583 firms)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.010	0.098	-0.289	0.083	0.183
STANDARD DEVIATION	0.004	0.040	0.039	0.028	0.015
LOW QUARTILE	-0.027	-0.191	-0.680	-0.142	-0.116
MEDIAN	0.005	0.092	-0.270	0.082	0.113
HIGH QUARTILE	0.053	0.352	0.114	0.325	0.498

Panel B: Industry-Specific Regressions (23 industries)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.005	0.147	-0.267	0.086	0.094
STANDARD DEVIATION	0.005	0.046	0.033	0.020	0.021
LOW QUARTILE	0.001	-0.006	-0.381	0.020	0.014
MEDIAN	0.012	0.133	-0.281	0.063	0.062
HIGH QUARTILE	0.020	0.220	-0.101	0.170	0.144

Panel C: Pooled Regressions (6,501 firm-year observations)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
COEFFICIENT	0.003	0.063	-0.167	0.089	0.021
STANDARD ERROR	0.002	0.012	0.015	0.010	

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The industries are based on two-digit codes provided in the AGSM's CRIF share price database
* Results are based on the (CHGWC_TA) proxy of accruals

Table 4.4

Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
SRESID	0.121	0.102	0.042	0.087	0.017	583
AVEOPCYCLE 1	366.40	722.60	76.60	121.00	282.00	532
AVEOPCYCLE 2	71.60	63.60	21.00	48.50	111.70	583
AVELOGTA	3.292	2.073	1.748	2.751	4.443	583
STDSALES_TA	0.290	0.284	0.107	0.202	0.384	502
STDCFO_TA	0.136	0.102	0.058	0.103	0.193	583
STDEARN_TA	0.183	0.147	0.068	0.141	0.258	583
FREQLOSS	0.458	0.364	0.083	0.500	0.818	583
AVEABSCHGWC_TA	0.093	0.069	0.044	0.072	0.124	583

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \epsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* The descriptive statistics in Panel A are based on different numbers of observations; because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Results are based on the (CHGWC_TA) proxy of accruals

Table 4.4

Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

Panel B: Pearson Correlation between the Standard Deviation of the Residuals (SRESID) and Selected Firm Characteristics

VARIABLE	SRESID	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOG_TA	STDSALES_TA	STDCFO_TA	STDCHGWC_TA	STDEARN_TA	FREQLOSS	AVEABSCHGWC_TA	NOB
SRESID	1										583
AVEOPCYCLE 1	0.226	1									532
AVEOPCYCLE 2	-0.069	-0.199	1								583
AVELOGTA	-0.451	-0.301	0.302	1							583
STDSALES_TA	0.204	-0.038	0.131	-0.201	1						502
STDCFO_TA	0.555	0.145	-0.202	-0.536	0.281	1					583
STDCHGWC_TA	0.931	0.253	-0.064	-0.490	0.226	0.593	1				583
STDEARN_TA	0.821	0.233	-0.216	-0.565	0.247	0.841	0.839	1			583
FREQLOSS	0.387	0.387	-0.539	-0.740	0.131	0.478	0.417	0.531	1		583
AVEABSCHGWC_TA	0.912	0.233	0.017	-0.459	0.263	0.588	0.964	0.802	0.348	1	583

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \varepsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* The correlations in Panel B are based on different numbers of observations; because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Results are based on the (CHGWC_TA) proxy of accruals

Table 4.4
Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics
for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

Panel C: Regressions where the Dependent Variable is the Standard Deviation of Residuals (SRESID) and the Independent Variables are Firm Characteristics

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.018	0.566									500	0.697
STANDARD ERROR	*0.004*	*0.017*										
(2) COEFFICIENT	-0.005		0.919	0.009							499	0.869
STANDARD ERROR	*0.003*		*0.021*	*0.019*								
(3) COEFFICIENT	-0.006	0.116	0.782								499	0.877
STANDARD ERROR	*0.003*	*0.020*	*0.029*									
(4) COEFFICIENT	-0.006				0.025	-0.011	1.312	-0.000004	-0.000075	0.001	495	0.829
STANDARD ERROR	*0.009*				*0.009*	*0.007*	*0.033*	*0.000003*	*0.000034*	*0.001*		
(5) COEFFICIENT	-0.015				0.034	-0.014	1.300	-0.000004		0.002	496	0.828
STANDARD ERROR	*0.008*				*0.008*	*0.007*	*0.033*	*0.000003*		*0.001*		
(6) COEFFICIENT	-0.006				0.022	-0.010	1.305		-0.000075	0.001	496	0.829
STANDARD ERROR	*0.009*				*0.009*	*0.007*	*0.033*		*0.000034*	*0.001*		

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (CHGWC_TA) proxy of accruals

Table 4.5

Regressions of the change in working capital (CHGWC_TA) on past, current, and future cash flow from operations for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

Panel A: Firm-Specific Regressions (583 firms)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	-0.043	0.161	-0.378	0.090	0.263
STANDARD DEVIATION	0.007	0.041	0.043	0.038	0.015
LOW QUARTILE	-0.108	-0.162	-0.896	-0.169	-0.052
MEDIAN	-0.007	0.154	-0.534	0.101	0.221
HIGH QUARTILE	0.048	0.432	-0.012	0.354	0.587

Panel B: Industry-Specific Regressions (23 industries)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	-0.039	0.154	-0.282	0.198	0.136
STANDARD DEVIATION	0.010	0.033	0.061	0.033	0.031
LOW QUARTILE	-0.079	0.023	-0.513	0.074	0.048
MEDIAN	-0.037	0.165	-0.254	0.174	0.083
HIGH QUARTILE	0.004	0.282	-0.071	0.323	0.229

Panel C: Pooled Regressions (6,501 firm-year observations)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
COEFFICIENT	-0.050	0.212	-0.220	0.186	0.057
STANDARD ERROR	0.003	0.018	0.022	0.015	

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The industries are based on two-digit codes provided in the AGSM's CRIF share price database
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 4.6

Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics for a large sample of 6,501 firm-year observations derived from Huntley's Aspect database for years from 1991 to 2005

Regressions where the Dependent Variable is the Standard Deviation of Residuals (SRESID) and the Independent Variables are Firm Characteristics

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOBS	ADJ. R^2
(1) COEFFICIENT	0.044	0.628									500	0.386
STANDARD ERROR	*0.008*	*0.035*										
(2) COEFFICIENT	0.026		0.356	0.646							499	0.425
STANDARD ERROR	*0.009*		*0.065*	*0.060*								
(3) COEFFICIENT	0.041	0.573	0.095								499	0.386
STANDARD ERROR	*0.009*	*0.066*	*0.096*									
(4) COEFFICIENT	0.091				0.166	0.067	0.524	0.000002	-0.00045	-0.009	495	0.579
STANDARD ERROR	*0.022*				*0.021*	*0.016*	*0.078*	*0.00001*	*0.00008*	*0.003*		
(5) COEFFICIENT	0.038				0.220	0.052	0.456	0.000002		-0.007	496	0.553
STANDARD ERROR	*0.020*				*0.019*	*0.016*	*0.079*	*0.00001*		*0.003*		
(6) COEFFICIENT	0.091				0.167	0.066	0.526		-0.00045	-0.009	496	0.580
STANDARD ERROR	*0.022*				*0.020*	*0.016*	*0.077*		*0.00008*	*0.003*		

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \varepsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA and STDEARN_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 4.7
Derivation of a reduced sample of Australian companies from Huntley's Aspect database for years from 1991 to 2005

Description	No. Observations
Total available firm-year observations from Clinch, Sidhu and Sin's (2002) (CSS) Sample from 1992 to 1997	648
Add: Extra firm-year observations for firms already in the CSS sample, and extra firm-years for firms randomly selected from ASX companies from 1992 to 2005 after omitting firm-years with unavailable market capitalization data	1,614
Sub-Total	*2,262*
Less: Firms with fewer than 8 years of data	1,098
Total Reduced Sample (Number of firms = 111 firms)	1,164

All data is from Huntley's Aspect Database

Table 4.8
Descriptive Statistics for a reduced sample of Australian companies from Huntley's Aspect database for years from 1991 to 2005

Panel A: Industry Sample Composition

Industry	Total Observations		Percentage of Total Observations	
	(NOB = 2,262)	(NOB = 1,164)	(NOB = 2,262)	(NOB = 1,164)
Energy	136	70	6.01%	6.01%
Materials	143	81	6.32%	6.96%
Metals and Mining	639	339	28.25%	29.12%
Capital Goods	189	108	8.36%	9.28%
Commercial Services	82	59	3.63%	5.07%
Transportation	10	9	0.44%	0.77%
Auto and Component	27	24	1.19%	2.06%
Consumer Durable	20	10	0.88%	0.86%
Consumer Services	49	30	2.17%	2.58%
Media	153	103	6.76%	8.85%
Retailing	94	65	4.16%	5.58%
Food and Drug	115	94	5.08%	8.08%
Food and Beverage	73	56	3.23%	4.81%
Health Care	46	20	2.03%	1.72%
Biotechnology	39	25	1.72%	2.15%
Diversified Finances	55	0	2.43%	0.00%
Real Estate	146	0	6.45%	0.00%
Real Estate Inv	13	0	0.57%	0.00%
Software and Services	27	11	1.19%	0.95%
Utilities	45	33	1.99%	2.84%
Not Specified	55	27	2.43%	2.32%
Not Defined	106	0	4.69%	0.00%
Total Observations	2262	1164	100.00%	100.00%

Panel B: Observations by Year

Year	Total Observations		Percentage of Total Observations	
	(NOB = 2,262)	(NOB = 1,164)	(NOB = 2,262)	(NOB = 1,164)
1991	25	0	1.11%	0.00%
1992	129	15	5.70%	1.29%
1993	159	68	7.03%	5.84%
1994	191	83	8.44%	7.13%
1995	197	104	8.71%	8.93%
1996	197	106	8.71%	9.11%
1997	191	106	8.44%	9.11%
1998	182	108	8.05%	9.28%
1999	173	106	7.65%	9.11%
2000	162	102	7.16%	8.76%
2001	147	101	6.50%	8.68%
2002	142	96	6.28%	8.25%
2003	138	93	6.10%	7.99%
2004	129	76	5.70%	6.53%
2005	100	0	4.42%	0.00%
Total Observations	2262	1164	100.00%	100.00%

All data is from Huntley's Aspect Database

Table 4.9
Descriptive statistics and correlations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
CFO_TA	0.040	0.181	-0.014	0.067	0.117	1,164
CHGWC_TA	0.010	0.140	-0.030	0.003	0.040	1,164
EARN_TA	0.050	0.220	-0.021	0.078	0.137	1,164
PROF_TA	-0.030	0.240	-0.520	0.038	0.072	1,164
ACCRUALS_TA	-0.070	0.180	-0.095	-0.041	-0.001	1,164
ACCRUALS_ST_TA	0.060	3.280	-0.037	0.001	0.036	1,164
TOTASS	1,354.84	4,425.23	20.44	99.26	835.99	1,164

Panel B: Correlations

VARIABLE	CFO_TA	CHGWC_TA	EARN_TA	PROF_TA	ACCRUALS_TA	ACCRUALS_ST_TA	TOTASS	NOB
CFO_TA	1							1164
CHGWC_TA	-0.050	1						1164
EARN_TA	0.820	0.540	1					1164
PROF_TA	0.650	0.150	0.630	1				1164
ACCRUALS_TA	-0.140	0.240	0.010	0.660	1			1164
ACCRUALS_ST_TA	-0.010	-0.050	-0.040	0.020	0.040	1		1164
TOTASS	0.170	-0.020	0.130	0.120	-0.010	-0.010	1	1164

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net)
  where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets

Table 4.10

Regressions of the change in working capital (ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

Panel A: Firm-Specific Regressions (111 firms)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.031	0.207	-0.523	0.064	0.411
STANDARD DEVIATION	0.007	0.041	0.046	0.029	0.035
LOW QUARTILE	-0.001	-0.013	-0.837	-0.077	0.098
MEDIAN	0.034	0.183	-0.567	0.063	0.502
HIGH QUARTILE	0.065	0.352	-0.285	0.211	0.726

Panel B: Industry-Specific Regressions (18 industries)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.034	0.175	-0.536	0.077	0.323
STANDARD DEVIATION	0.005	0.038	0.060	0.047	0.053
LOW QUARTILE	0.019	0.065	-0.645	0.026	0.119
MEDIAN	0.027	0.202	-0.562	0.106	0.378
HIGH QUARTILE	0.047	0.293	-0.341	0.179	0.495

Panel C: Pooled Regressions (1,164 firm-year observations)

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
COEFFICIENT	0.020	0.170	-0.373	0.091	0.151
STANDARD ERROR	0.002	0.021	0.026	0.015	

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The industries are based on two-digit codes provided in the AGSM's CRIF share price database
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 4.11

Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
SRESID	0.046	0.052	0.017	0.027	0.057	111
AVEOPCYCLE 1	319.31	1,003.12	76.82	101.67	150.93	103
AVEOPCYCLE 2	85.98	70.31	29.60	66.19	138.41	111
AVELOGTA	4.770	2.340	2.770	4.560	6.810	111
STDSALES_TA	0.254	0.281	0.098	0.153	0.295	98
STDCFO_TA	0.076	0.045	0.040	0.065	0.103	111
STDEARN_TA	0.091	0.066	0.039	0.070	0.133	111
FREQLOSS	0.268	0.350	0.001	0.100	0.417	111
AVEABSCHGWC_TA	0.055	0.029	0.032	0.051	0.068	111

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \epsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* The descriptive statistics in Panel A are based on different numbers of observations; because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 4.11

Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel B: Pearson Correlation between the Standard Deviation of the Residuals (SRESID) and Selected Firm Characteristics (111 firms)

VARIABLE	SRESID
SRESID	1
AVEOPCYCLE 1	0.090
AVEOPCYCLE 2	-0.180
AVELOGTA	-0.420
STDSALES_TA	0.080
STDCFO_TA	0.540
STDEARN_TA	0.510
FREQLOSS	0.430
AVEABSCHGWC_TA	0.430
STDCHGWC_TA	0.440

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 4.11
Descriptive statistics and the correlation between quality of working capital accruals (SRESID) and selected firm characteristics
for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel C: Regressions where the Dependent Variable is the Standard Deviation of Residuals (SRESID) and the Independent Variables are Firm Characteristics (98 firms)

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.007	0.404									98	0.297
STANDARD ERROR	*0.007*	*0.062*										
(2) COEFFICIENT	-0.011		0.206	0.565							98	0.413
STANDARD ERROR	*0.008*		*0.100*	*0.094*								
(3) COEFFICIENT	0.006	0.377	0.052								98	0.291
STANDARD ERROR	*0.008*	*0.103*	*0.157*									
(4) COEFFICIENT	0.023				0.067	-0.015	0.509	0.00001	0.00001	-0.003	98	0.317
STANDARD ERROR	*0.023*				*0.025*	*0.016*	*0.156*	*0.00001*	*0.00008*	*0.003*		
(5) COEFFICIENT	0.024				0.065	-0.015	0.510	0.00001		-0.003	98	0.325
STANDARD ERROR	*0.019*				*0.021*	*0.016*	*0.155*	*0.00001*		*0.002*		
(6) COEFFICIENT	0.024				0.058	-0.015	0.526		0.00001	-0.003	98	0.320
STANDARD ERROR	*0.023*				*0.023*	*0.016*	*0.154*		*0.00008*	*0.003*		

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

(Model A) $ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \epsilon_t$

* CFO_TA = Cash flow from operation
* CHGWC_TA = Change in working capital; being: ΔAR + ΔInventory - ΔAP - ΔTP + ΔOther Assets (Net); where ΔAR is change in accounts receivable, ΔAP is change in accounts payable, and ΔTP is change in taxes payable
* EARN_TA = Earnings before long-term accruals; being: CFO_TA + CHGWC_TA
* PROF_TA = Earnings before extraordinary items
* ACCRUALS_TA = PROF_TA - CFO_TA
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* TOTASS = Total Assets
* All variables are scaled by average total assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

CHAPTER 5 MAIN ANALYSIS

In this chapter, I investigate the quality of accrual components by employing the approach used by DD (for the quality of aggregate accruals) and extending it to identifiable components of accruals. I conduct three separate analyses:

1. I provide descriptive statistics relating to accrual and cash flow components and compare them with the sample employed by CSS. My objective is to ensure that the sample firm-years I employ exhibit characteristics that accord with CSS.

2. I then provide descriptive results relating to the quality metrics estimated for each of the accruals component. I compare these with the analogous descriptions of the aggregate accruals quality metric presented in Chapter 4 (Section 4.2).

3. Finally, I examine the extent to which the different accrual component quality measures are associated with the various firm characteristics investigated by DD. I also provide and discuss results relating to the association between the aggregate accruals quality metric and the five individual component quality metrics, and I investigate the extent to which the association between accrual component quality and aggregate accrual quality varies systematically with firm characteristics across firms in my sample.

5.1 Descriptive Statistics – Accruals and Cash Flow Components

Panel A of Table 5.1 presents summary descriptive statistics for net cash flow from operations (CFO_TA), and net accruals (ACCRUALS_ST_TA = PROF – CFO +

Depreciation + Amortization), both deflated by average total assets. It also provides descriptive statistics for the five components of CFO_TA and six components of ACCRUALS_ST_TA described in Chapter 3.

Consistent with CSS, Panel A of Table 5.1 reveals that two components – cash received from customers (CASHCOLL_TA) and cash paid to suppliers (CASHSUPP_TA) – represent by far the largest reported components of operating cash flows CFO_TA. Mean CASHCOLL_TA and CASHSUPP_TA are 0.936 and -0.870 respectively where the corresponding medians are 0.732 and -0.621. These results differ from those reported by CSS, a mean (median) of 2.025 (1.368) and -1.883 (-1.200) respectively. However, the difference is due to CSS employing market capitalization as a deflator compared with my deflation by average total assets.[10] Consistent with Table 5.1, CSS also report that CASHCOLL_TA and CASHSUPP_TA represent the major components of cash flows. The other three cash flow components – taxes paid (TAXPAID_TA), net interest paid (INTPAID_TA), and other operating cash flows (CASHOTHER_TA) have much smaller means and medians. The larger standard deviations of CASHCOLL_TA and CASHSUPP_TA in Table 5.1 (1.011 and 0.953) suggest also that these two cash flow components explain most of the total variation in net operating cash flow from operations. Again, these results are in line with the results reported by CSS.

Similarly, and consistent with CSS as well, Panel A of Table 5.1 indicates that components of ACCRUALS_ST_TA reported in the indirect reconciliation between operating income and cash flow from operations all exhibit means and medians that are relatively small. The non-cash component ACCNONCASH_TA is slightly

[10] Since total assets are generally larger than market capitalization, CSS's means and medians are higher than those reported in Table 5.1. When I use market capitalization as an alternative deflator, the descriptive results become comparable with CSS. I employ total assets as a deflator to be consistent with DD.

higher in magnitude than the other components due to it including depreciation and amortization – two major non-cash accruals.

Panel B of Table 5.1 reports Pearson correlations between variables. There is a negative correlation between CFO_TA and ACCRUALS_ST_TA (-0.150). There is also a strong positive contemporaneous correlation between ACCRUALS_ST_TA and ACCNONCASH_TA (0.790) and a smaller but still significant positive correlation between ACCRUALS_ST_TA and ACCOTHER_TA, ACCREV_TA, and ACCSUPP_TA (0.300, 0.280, 0.200) respectively. The correlation between ACCRUALS_ST_TA and ACCINT_TA is positive but smaller in magnitude (0.040) and there is a negative correlation between ACCRUALS_ST_TA and ACCTAX_TA (-0.100). This indicates that the majority of the aggregate accruals are largely explained by the various non-cash portion of accruals and the accruals related to non-cash component of sales revenue and supplier and employee expenses.

Also, there is a positive correlation between CFO_TA and CASHCOLL_TA (0.360), and a smaller correlation in magnitude with CASHOTHER_TA (0.110). CFO_TA is negatively correlated with all the other cash flow components; CASHSUPP_TA, TAXPAID_TA, INTPAID_TA, (-0.250, -0.350, -0.280) respectively. The aggregate cash flow is largely explained by the two main portions cash collected from customers and tax paid. CASHSUPP_TA and CASHCOLL_TA are almost perfectly negatively correlated (-0.990), again consistent with the results reported in CSS.

5.2 Descriptive Statistics – Quality Metrics for each Accruals Component

Table 5.2 presents results from estimating Models A and B. Results for the firm-specific regressions are reported in Panel A. As reported in Chapter 4, the coefficient relating accruals (ACCUALS_ST_TA) and contemporaneous operating cash flows (CFO_TA) has a mean of -0.523, which is more than eleven standard deviations

from zero. The corresponding mean coefficients for lagged and leading operating cash flows are 0.207 and 0.064 respectively; the first is more than five standard deviations from zero and the latter is more than two standard deviations from zero.

There are few similarities to these results for the component firm-specific regressions reported in Table 5.2, Panel A. Generally the accrual component regressions yield few significant (average) coefficients, consistent with an increase in noise in component accrual and cash flow measures. However the results do indicate that the association between each accrual component and its corresponding contemporaneous cash flow component is mostly negative. The mean coefficients for contemporaneous CASHCOLL_TA, CASHSUPP_TA, TAXPAID_TA, INTPAID_TA and CASHOTHER_TA are -0.012, -0.094, -0.961, 1.357 and -2.815 respectively, consistent with the negative sign for the estimated aggregate accrual and contemporaneous cash flow coefficient.

Also, some of the results do conform to reasonable expectations. For example, for the accruals component relating to receivables, the average coefficient on cash collections for the subsequent year is statistically significant; more than two standard deviations from zero, and is positive as expected, though the coefficient on contemporaneous cash collections is not significantly negative as might be expected.

Similarly, the regression results for tax-related accruals and cash flows exhibits a significant negative (positive) coefficient for contemporaneous (leading) cash flows, again consistent with what might be expected for an accrued/deferred expense. For accruals relating to employees and suppliers, neither lagged nor leading cash paid to suppliers and employees has a significant coefficient, perhaps reflecting that this component likely aggregates prepaid and accrued expense items, for example, relating to inventory and employee entitlements respectively.

Also, since the results in Table 5.2 Panel A aggregate across firms from likely diverse economic environments, it is possible that the results mask systematic differences in the regressions linked to the different environments. This possibility is explored further in the next section which investigates the association between quality measures based on the regressions underlying Table 5.2 and various firm characteristics.

Panel B and Panel C of Table 5.2 respectively present the industry specific and the pooled regressions of the accrual component and its corresponding contemporaneous cash flow. The results from these regressions are more consistent with the aggregate accruals results, consistent with a reduced influence of measurement error as the regressions include more observations. The accruals-cash flow components relating to receivables/cash collections, employee and supplier expenses/cash payments, and tax-related expenses/cash flows provide consistent and economically plausible results. In particular, for both receivables and tax, contemporaneous (leading) cash flows are significantly negatively (positively) associated with current accruals. In contrast, for suppliers and employees, both leading and lagged cash flows are associated with current accruals as might be expected from aggregating across prepaid and deferred expense items. The accruals and cash flows relating to interest and other appear to be substantially affected by noise and exhibit very large standard errors.

5.3 Association between Accruals Component Quality Measures and Firm Characteristics

Panel A of Table 5.3 provides descriptive statistics for the aggregate and component accrual quality metrics estimated from the firm specific regressions described above. It also describes firm characteristics employed by DD to explain variation in accrual

quality across firms.[11] All accruals components yield generally similar means and medians although the quality measures for accruals relating to tax and interest (SRESID_ACCTAX_TA, SRESID_ACCINT_TA) are somewhat lower than for the other accruals components. These are also similar to, though slightly lower than the corresponding mean and median aggregate accrual quality measures.

Panel B of Table 5.3 reports Pearson correlation coefficients between accrual quality measures for aggregate and component accruals and the firm characteristics employed by DD. The variation across correlations is consistent with the possibility that different accrual components exhibit quality that varies in different ways with firm characteristics.

Panel C of Table 5.3 reports results for regressions of each of the accrual component quality measures on various combinations of firm characteristics. My base line specifications regress aggregate accruals quality (SRESID_ACCRUALS_ST_TA) on the various firm characteristics as in DD. The results for the aggregate accrual quality regressions reported are similar to those reported for the larger sample and by DD.

The component quality results reported in Panel C of Table 5.3 show that for the uncertain operating environment measures (STDEARN_TA, STDCHGWC_TA, STDCFO_TA, STDSALES_TA and AVEABSCHGWC_TA) there is a positive association with SRESID_ACCREV_TA and SRESID_ACCSUPP_TA which measure quality relating to the revenue (receivables) related accruals and employee-supplier related accruals. Since these two accruals represent the major source of accruals for most firms, this association is not surprising given the results reported in DD (and in Chapter 4) for aggregate accruals.

[11] These results in Table 5.3 are based on the reduced sample of hand collected data. When ASPECT sourced data is used to estimate aggregate accruals quality, I obtain very similar results.

Similarly, there is a positive association between SRESID_ACCREV_TA and SRESID_ACCSUPP_TA and the second operating cycle measure AVEOPCYCLE 2, consistent with a longer operating cycle being associated with poorer quality accruals relating to receivables and employees/suppliers expenses, as might be expected. Also, there is a negative association between SRESID_ACCREV_TA and SRESID_ACCSUPP_TA and the size of the firm (AVELOGTA). Both results are in line with the aggregate accruals results and the results reported by DD.

The results for the accrual component quality measure SRESID_ACCTAX_TA indicate that there is a negative association with the second operating cycle measure AVEOPCYCLE 2; a longer operating cycle is associated with better quality tax accruals. This result is different from the results reported for the aggregate accruals and by DD. It is not clear what might be driving such an association. The reported results for the last two accrual components SRESID_ACCINT_TA and SRESID_ACCOTHER_TA do not reveal any clear and significant associations with firm characteristics.

In summary, only for the two major accrual component measures (SRESID_ACCREV_TA and SRESID_ACCSUPP_TA) are there consistent and clear associations with firm characteristics that align with the aggregate accruals quality results of DD and Chapter 4.

5.4 Association between Aggregate and Component Accrual Quality Measures

Panel A of Table 5.4 reports results for regressions of the aggregate accruals quality measure on each accrual component quality measure. I regress aggregate accruals quality measure (SRESID_ACCRUALS_ST_TA) on several different combinations of individual accruals component quality measures (SRESID_ACCREV_TA,

SRESID_ACCSUPP_TA, SRESID_ACCTAX_TA, SRESID_ACCINT_TA and SRESID_ACCOTHER_TA). To mitigate the loss of observations due to unavailable component quality measures for many firms, I set missing values to zero and include dummy variables set equal to 1 when each respective component quality measure is available and zero otherwise. As a result, slope coefficients reflect the association between aggregate accruals quality and component accruals quality only for observations with available data, and the estimated coefficient on the dummy variables reflect differences in average aggregate accruals quality between firms with available versus unavailable accrual component quality measures.[12]

The regression results in Panel A of Table 5.4 indicate that only two accrual component quality measures – SRESID_ACCSUP_TA and SRESID_ACCOTHER_TA – are significantly associated with the aggregate accruals quality metric. Interestingly, the accrual component quality metric relating to receivables (SRESID_ACCREV_TA) is negatively, though not quite significantly, associated with aggregate accruals quality.

Panel B of Table 5.4 reports results for regressions of the aggregate accruals quality measure on the three accrual component measures for ACCREV_TA, ACCSUPP_TA, and ACCOTHER_TA. The regressions also include interactions between each accrual component measure and five firm characteristic variables. The purpose of this analysis is test whether the association between aggregate accruals quality measure and the three component accruals quality measures systematically varies across firms with these five firm characteristics. The results indicate that only one firm characteristic – the average absolute change in aggregate working capital

[12] Models (1) and (2) in Panel A of Table 5.4 include/exclude the dummy variables and indicate that inclusion of the dummies has no significant impact on the other estimated slope coefficients. However the results also suggest that firms with sufficient data available to estimate the tax and other accrual related accruals quality measures exhibit lower aggregate accrual DD quality metrics – i.e. higher quality of aggregate accruals. This is consistent, perhaps, with firms with sufficient available data being larger.

(accruals) – appears to be associated with the strength of association between aggregate accruals quality and the quality of receivables and employee/supplier-related accruals. Firms with greater volatility in change in working capital exhibit a stronger positive (negative) association between aggregate accruals quality and employee/supplier (receivables) related accruals quality. This suggests that firms facing more volatile operating environments tend to exhibit aggregate accruals quality that is largely reflective of accruals relating to supplier/employee-related costs (e.g., inventory related costs) rather than revenue related accruals. The small number of firms underlying this analysis likely contributes to the general lack of statistical significance observed in the regression results for other firm characteristics.

Table 5.1
Summary descriptive statistics for cash flow from oeprations, accruals, and components of cash flows and accruals, for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004, and the indirect cash flow data is hand collected from companies' annual reports

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
CFO_TA	0.040	0.181	-0.014	0.067	0.117	1,164
ACCRUALS_ST_TA	-0.067	0.181	-0.094	-0.040	-0.001	1,164
CASHCOLL_TA	0.936	1.011	0.226	0.732	1.276	1,164
CASHSUPP_TA	-0.870	0.953	-1.147	-0.621	-0.251	1,164
TAXPAID_TA	-0.015	0.021	-0.025	-0.005	0.001	1,164
INTPAID_TA	-0.006	0.021	-0.019	-0.008	0.003	1,164
CASHOTHER_TA	-0.005	0.078	0.001	0.001	0.002	1,164
ACCREV_TA	0.012	0.056	-0.004	0.003	0.019	1,164
ACCSUPP_TA	-0.009	0.069	-0.023	-0.003	0.015	1,164
ACCTAX_TA	-0.001	0.019	-0.005	0.001	0.002	1,164
ACCINT_TA	-0.001	0.006	0.001	0.001	0.001	1,164
ACCOTHER_TA	0.011	0.089	-0.001	0.002	0.013	1,164
ACCNONCASH_TA	-0.080	0.167	-0.084	-0.047	-0.024	1,164

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* The cash flow and accrual components sum to CFO_TA and ACCRUALS_ST_TA respectively, and are as reported in the annual Statement of Cash Flows.
* All variables are scaled by average total assets (TOTASS)

Table 5.1
Summary descriptive statistics for cash flow from oeprations, accruals, and components of cash flows and accruals,
for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004,
and the indirect cash flow data is hand collected from companies' annual reports

Panel B: Correlations

VARIABLE	CFO_TA	ACCRUALS_ST_TA	CASHCOLL_TA	CASHSUPP_TA	TAXPAID_TA	INTPAID_TA	CASHOTHER_TA	ACCREV_TA	ACCSUPP_TA	ACCTAX_TA	ACCINT_TA	ACCOTHER_TA	ACCNONCASH_TA	NOB
CFO TA	1													1164
ACCRUALS ST TA	-0.150	1												1164
CASHCOLL TA	0.360	0.040	1											1164
CASHSUPP TA	-0.250	-0.060	-0.990	1										1164
TAXPAID TA	-0.280	0.001	-0.240	0.210	1									1164
INTPAID TA	-0.350	-0.140	-0.440	0.400	0.090	1								1164
CASHOTHER TA	0.110	-0.040	0.010	-0.050	-0.030	-0.010	1							1164
ACCREV TA	0.010	0.280	0.120	-0.120	-0.140	-0.010	0.030	1						1164
ACCSUPP TA	-0.080	0.200	-0.010	0.001	0.001	-0.020	-0.010	-0.330	1					1164
ACCTAX TA	-0.140	-0.100	0.030	-0.040	-0.230	0.030	0.001	-0.140	-0.010	1				1164
ACCINT TA	-0.060	0.040	0.010	-0.010	-0.010	-0.060	0.001	0.010	0.001	0.010	1			1164
ACCOTHER TA	-0.250	0.300	-0.080	0.050	0.070	0.040	-0.050	-0.020	-0.100	-0.050	0.001	1		1164
ACCNONCASH TA	0.010	0.790	0.030	-0.030	-0.090	-0.010	-0.030	0.070	-0.090	-0.180	-0.020	-0.070	1	1164

* CFO TA = Cash flow from operation
* ACCRUALS ST TA = PROF TA - CFO TA + Depreciation and Amortization
* CASHCOLL TA = Cash received from customers
* CASHSUPP TA = Cash paid to suppliers and employees
* TAXPAID TA = Taxes paid
* INTPAID TA = Net interest paid
* CASHOTHER TA = Other operating cash flows
* ACCREV TA = Accruals related to sales to customers
* ACCSUPP TA = Accruals related to supplier and employee expenses
* ACCTAX TA = Accruals relating to tax expense
* ACCINT TA = Accruals relating to net interest expense
* ACCOTHER TA = Accruals relating to other (cash related) expenses
* ACCNONCASH TA = Non-cash accruals

* The cash flow and accrual components sum to CFO_TA and ACCRUALS_ST_TA respectively, and are as reported in the annual Statement of Cash Flows.
* All variables are scaled by average total assets (TOTASS)

Table 5.2
Regressions of short term accruals (ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel A: Firm-Specific Regressions

A-1: Aggregate ACCRUALS_ST_TA and CFO_TA (111 firms)

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.031	0.207	-0.523	0.064	0.411
STANDARD DEVIATION	0.007	0.041	0.046	0.029	0.035
LOW QUARTILE	-0.001	-0.013	-0.837	-0.077	0.098
MEDIAN	0.034	0.183	-0.567	0.063	0.502
HIGH QUARTILE	0.065	0.352	-0.285	0.211	0.726

A-2: ACCREV_TA and CASHCOLL_TA (107 firms)

(Model B1)

$$ACCREV\_TAt = a0 + a1*CASHCOLL\_TAt\text{-}1 + a2*CASHCOLL\_TAt + a3*CASHCOLL\_TAt+1 + \epsilon 1t$$

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	-0.019	0.012	-0.012	0.071	0.179
STANDARD DEVIATION	0.014	0.030	0.039	0.025	0.036
LOW QUARTILE	-0.034	-0.070	-0.075	-0.002	-0.104
MEDIAN	-0.001	-0.012	-0.017	0.034	0.141
HIGH QUARTILE	0.019	0.030	0.044	0.120	0.439

A-3: ACCSUPP_TA and CASHSUPP_TA (111 firms)

(Model B2)

$$ACCSUPP\_TAt = b0 + b1*CASHSUPP\_TAt\text{-}1 + b2*CASHSUPP\_TAt + b3*CASHSUPP\_TAt+1 + \epsilon 2t$$

VARIABLE	b_0	b_1	b_2	b_3	ADJ. R^2
MEAN	-0.025	0.024	-0.094	0.001	0.170
STANDARD DEVIATION	0.013	0.020	0.031	0.026	0.033
LOW QUARTILE	-0.061	-0.035	-0.221	-0.038	-0.098
MEDIAN	-0.002	0.017	-0.089	0.029	0.173
HIGH QUARTILE	0.023	0.122	-0.004	0.111	0.410

Table 5.2 - Panel A (Continued)
A-4: ACCTAX_TA and TAXPAID_TA (76 firms)

(Model B3)

ACCTAX_TAt = c0 + c1*TAXPAID_TAt-1 + c2*TAXPAID_TAt + c3*TAXPAID_TAt+1 + ε3t

VARIABLE	c_0	c_1	c_2	c_3	ADJ. R^2
MEAN	-0.004	0.031	-0.961	0.511	0.446
STANDARD DEVIATION	0.001	0.070	0.189	0.063	0.044
LOW QUARTILE	-0.010	-0.227	-1.002	0.149	0.218
MEDIAN	-0.003	0.006	-0.778	0.473	0.503
HIGH QUARTILE	0.001	0.227	-0.471	0.774	0.759

A-5: ACCINT_TA and INTPAID_TA (43 firms)

(Model B4)

ACCINT_TAt = d0 + d1*INTPAID_TAt-1 + d2*INTPAID_TAt + d3*INTPAID_TAt+1 + ε4t

VARIABLE	d_0	d_1	d_2	d_3	ADJ. R^2
MEAN	-0.004	-9.852	1.357	-0.552	0.097
STANDARD DEVIATION	0.002	9.848	1.287	0.323	0.059
LOW QUARTILE	-0.005	-0.095	-0.131	-0.207	-0.250
MEDIAN	-0.001	0.002	-0.001	-0.015	0.161
HIGH QUARTILE	0.001	0.099	0.168	0.015	0.416

A-6: ACCOTHER_TA and CASHOTHER_TA (94 firms)

(Model B5)

ACCOTHER_TAt = e0 + e1*CASHOTHER_TAt-1 + e2*CASHOTHER_TAt + e3*CASHOTHER_TAt+1 + ε5t

VARIABLE	e_0	e_1	e_2	e_3	ADJ. R^2
MEAN	0.003	-0.787	-2.815	17.688	0.077
STANDARD DEVIATION	0.004	1.443	2.055	18.051	0.040
LOW QUARTILE	-0.001	-0.244	-0.449	-0.172	-0.223
MEDIAN	0.002	0.017	-0.019	0.022	0.027
HIGH QUARTILE	0.012	0.341	0.331	0.845	0.333

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The correlations are based on different numbers of observations because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.2
Regressions of short term accruals (ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel B: Industry-Specific Regressions

B-1: Aggregate ACCRUALS_ST_TA and CFO_TA (18 industries)

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	0.034	0.175	-0.536	0.077	0.323
STANDARD DEVIATION	0.005	0.038	0.060	0.047	0.053
LOW QUARTILE	0.019	0.065	-0.645	0.026	0.119
MEDIAN	0.027	0.202	-0.562	0.106	0.378
HIGH QUARTILE	0.047	0.293	-0.341	0.179	0.495

B-2: ACCREV_TA and CASHCOLL_TA (18 industries)

(Model B1)

$$ACCREV\_TAt = a0 + a1*CASHCOLL\_TAt\text{-}1 + a2*CASHCOLL\_TAt + a3*CASHCOLL\_TAt+1 + \epsilon 1t$$

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
MEAN	-0.005	-0.012	-0.041	0.062	0.192
STANDARD DEVIATION	0.008	0.013	0.019	0.018	0.055
LOW QUARTILE	-0.019	-0.052	-0.067	0.016	0.018
MEDIAN	0.001	-0.022	-0.019	0.045	0.131
HIGH QUARTILE	0.001	0.003	-0.007	0.087	0.291

B-3: ACCSUPP_TA and CASHSUPP_TA (18 industries)

(Model B2)

$$ACCSUPP\_TAt = b0 + b1*CASHSUPP\_TAt\text{-}1 + b2*CASHSUPP\_TAt + b3*CASHSUPP\_TAt+1 + \epsilon 2t$$

VARIABLE	b_0	b_1	b_2	b_3	ADJ. R^2
MEAN	0.009	0.032	-0.058	0.041	0.070
STANDARD DEVIATION	0.009	0.017	0.022	0.015	0.040
LOW QUARTILE	-0.009	-0.027	-0.100	0.010	-0.012
MEDIAN	0.002	0.017	-0.070	0.030	0.056
HIGH QUARTILE	0.015	0.085	-0.007	0.067	0.165

Table 5.2 Panel B (Continued)
B-4: ACCTAX_TA and TAXPAID_TA (18 industries)

(Model B3)

ACCTAX_TAt = c0 + c1*TAXPAID_TAt-1 + c2*TAXPAID_TAt + c3*TAXPAID_TAt+1 + ϵ3t

VARIABLE	c_0	c_1	c_2	c_3	ADJ. R^2
MEAN	-0.002	0.026	-0.682	0.495	0.351
STANDARD DEVIATION	0.001	0.076	0.085	0.070	0.073
LOW QUARTILE	-0.003	-0.160	-0.919	0.343	0.124
MEDIAN	-0.001	0.031	-0.755	0.461	0.439
HIGH QUARTILE	0.001	0.170	-0.361	0.634	0.588

B-5: ACCINT_TA and INTPAID_TA (14 industries)

(Model B4)

ACCINT_TAt = d0 + d1*INTPAID_TAt-1 + d2*INTPAID_TAt + d3*INTPAID_TAt+1 + ϵ4t

VARIABLE	d_0	d_1	d_2	d_3	ADJ. R^2
MEAN	-0.002	0.023	-0.033	-0.102	0.101
STANDARD DEVIATION	0.001	0.058	0.030	0.073	0.076
LOW QUARTILE	-0.004	-0.029	-0.051	-0.108	-0.078
MEDIAN	-0.001	-0.013	-0.010	-0.019	0.014
HIGH QUARTILE	0.001	0.013	0.023	-0.001	0.167

B-6: ACCOTHER_TA and CASHOTHER_TA (18 industries)

(Model B5)

ACCOTHER_TAt = e0 + e1*CASHOTHER_TAt-1 + e2*CASHOTHER_TAt + e3*CASHOTHER_TAt+1 + ϵ5t

VARIABLE	e_0	e_1	e_2	e_3	ADJ. R^2
MEAN	0.011	0.436	-1.596	0.208	0.021
STANDARD DEVIATION	0.003	0.701	1.696	0.416	0.046
LOW QUARTILE	0.003	-0.195	-0.091	-0.014	-0.069
MEDIAN	0.007	0.016	0.023	0.008	-0.015
HIGH QUARTILE	0.015	0.127	0.201	0.137	0.025

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets
* All variables are scaled by average total assets
* The correlations are based on different numbers of observations because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* The industries are based on two-digit codes provided in the AGSM's CRIF share price database
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.2
Regressions of short term accruals (ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004

Panel C: Pooled Regressions

C-1: Aggregate ACCRUALS_ST_TA and CFO_TA

(Model A)

$$ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
COEFFICIENT	0.020	0.170	-0.373	0.091	0.151
STANDARD ERROR	0.002	0.021	0.026	0.015	

C-2: ACCREV_TA and CASHCOLL_TA

(Model B1)

ACCREV_TAt = a0 + a1*CASHCOLL_TAt-1 + a2*CASHCOLL_TAt + a3*CASHCOLL_TAt+1 + ε1t

VARIABLE	a_0	a_1	a_2	a_3	ADJ. R^2
COEFFICIENT	0.004	-0.016	-0.020	0.035	0.111
STANDARD ERROR	0.002	0.005	0.006	0.003	

C-3: ACCSUPP_TA and CASHSUPP_TA

(Model B2)

ACCSUPP_TAt = b0 + b1*CASHSUPP_TAt-1 + b2*CASHSUPP_TAt + b3*CASHSUPP_TAt+1 + ε2t

VARIABLE	b_0	b_1	b_2	b_3	ADJ. R^2
COEFFICIENT	-0.004	0.013	-0.050	0.035	0.061
STANDARD ERROR	0.002	0.006	0.007	0.004	

C-4: ACCTAX_TA and TAXPAID_TA

(Model B3)

ACCTAX_TAt = c0 + c1*TAXPAID_TAt-1 + c2*TAXPAID_TAt + c3*TAXPAID_TAt+1 + ε3t

VARIABLE	c_0	c_1	c_2	c_3	ADJ. R^2
COEFFICIENT	-0.002	0.015	-0.640	0.501	0.260
STANDARD ERROR	0.001	0.034	0.038	0.028	

Table 5.2 Panel C (Continued)

C-5: ACCINT_TA and INTPAID_TA

(Model B4)

ACCINT_TAt = d0 + d1*INTPAID_TAt-1 + d2*INTPAID_TAt + d3*INTPAID_TAt+1 + ε4t

VARIABLE	d_0	d_1	d_2	d_3	ADJ. R^2
COEFFICIENT	-0.001	-0.007	0.004	-0.018	0.003
STANDARD ERROR	0.001	0.016	0.020	0.011	

C-6: ACCOTHER_TA and CASHOTHER_TA

(Model B5)

ACCOTHER_TAt = e0 + e1*CASHOTHER_TAt-1 + e2*CASHOTHER_TAt + e3*CASHOTHER_TAt+1 + ε5t

VARIABLE	e_0	e_1	e_2	e_3	ADJ. R^2
COEFFICIENT	-0.002	0.015	-0.640	0.501	0.260
STANDARD ERROR	0.001	0.034	0.038	0.028	

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets

* All variables are scaled by average total assets
* The industries are based on two-digit codes provided in the AGSM's CRIF share price database
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.3
Summary descriptive statistics and the correlation between quality of short term accruals (SRESID_ACCRUALS_ST_TA) and selected firm characteristics for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2204, and the indirect cash flow data is hand collected from companies' annual reports

Panel A: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	LOW QUARTILE	MEDIAN	HIGH QUARTILE	NOB
SRESID_ACCRUALS_ST_TA	0.046	0.052	0.017	0.027	0.057	111
SRESID_ACCREV_TA	0.030	0.029	0.009	0.018	0.038	107
SRESID_ACCSUPP_TA	0.039	0.033	0.016	0.031	0.053	111
SRESID_ACCTAX_TA	0.012	0.010	0.006	0.009	0.015	76
SRESID_ACCINT_TA	0.005	0.005	0.001	0.002	0.006	43
SRESID_ACCOTHER_TA	0.028	0.038	0.005	0.013	0.032	94
AVEOPCYCLE 1	319.31	1,003.12	76.82	101.67	150.93	103
AVEOPCYCLE 2	85.98	70.31	29.60	66.19	138.41	111
AVELOGTA	4.770	2.340	2.770	4.560	6.810	111
STDSALES_TA	0.254	0.281	0.098	0.153	0.295	98
STDCFO_TA	0.076	0.045	0.040	0.065	0.103	111
STDEARN_TA	0.091	0.066	0.039	0.070	0.133	111
FREQLOSS	0.268	0.350	0.001	0.100	0.417	111
AVEABSCHGWC_TA	0.055	0.029	0.032	0.051	0.068	111

The standard deviation of residuals (SRESID_ACCRUALS_ST_TA) is calculated based on the residuals from the following firm-specific regressions:

$$SRESID\_ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \epsilon_t$$

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* All variables are scaled by average total assets
* The descriptive statistics in Panel A are based on different numbers of observations; because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.3

Summary descriptive statistics and the correlation between quality of short term accruals (SRESID_ACCRUALS_ST_TA) and selected firm characteristics for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004, and the indirect cash flow data is hand collected from companies' annual reports

Panel B: Pearson Correlation between the Standard Deviation of the Residuals (SRESID_ACCRUALS_ST_TA) and Selected Firm Characteristics (111 firms)

VARIABLE	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	STDSALES_TA	STDCFO_TA	STDEARN_TA	FREQLOSS	AVEABSCHGWC_TA	STDCHGWC_TA
SRESID_ACCRUALS_ST_TA	0.090	-0.180	-0.420	0.080	0.540	0.510	0.430	0.430	0.440
SRESID_ACCREV_TA	-0.060	0.430	-0.320	0.310	0.240	0.150	-0.060	0.330	0.250
SRESID_ACCSUPP_TA	0.040	0.150	-0.290	0.190	0.270	0.210	0.110	0.300	0.300
SRESID_ACCTAX_TA	-0.120	-0.160	-0.210	0.090	0.400	0.500	0.200	0.350	0.370
SRESID_ACCINT_TA	0.250	-0.290	-0.430	-0.130	0.240	0.460	0.410	0.300	0.380
SRESID_ACCOTHER_TA	0.050	-0.200	-0.360	0.230	0.510	0.530	0.310	0.340	0.330

The standard deviation of residuals (SRESID_ACCRUALS_ST_TA) is calculated based on the residuals from the following firm-specific regressions:

$$SRESID\_ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \epsilon_t$$

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* All variables are scaled by average total assets
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.3
Summary descriptive statistics and the correlation between quality of short term accruals (SRESID_ACCRUALS_ST_TA) and selected firm characteristics
for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004,
and the indirect cash flow data is hand collected from companies' annual reports

Panel C: Regressions where the Dependent Variable is the Standard Deviation of Residuals (SRESID_ACCRUALS_ST_TA) and the Independent Variables are Firm Characteristics

C-1: SRESID_ACCRUALS_ST_TA (98 firms)

$$SRESID\_ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + \varepsilon_t$$

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.007	0.404									98	0.297
STANDARD ERROR	*0.007*	*0.062*										
(2) COEFFICIENT	-0.011		0.206	0.565							98	0.413
STANDARD ERROR	*0.008*		*0.160*	*0.094*								
(3) COEFFICIENT	0.006	0.377	0.052								98	0.291
STANDARD ERROR	*0.008*	*0.103*	*0.157*									
(4) COEFFICIENT	0.023				0.067	-0.015	0.509	0.00001	0.00001	-0.003	98	0.317
STANDARD ERROR	*0.023*				*0.025*	*0.016*	*0.156*	*0.00001*	*0.00008*	*0.003*		
(5) COEFFICIENT	0.024				0.065	-0.015	0.510	0.00001		-0.003	98	0.325
STANDARD ERROR	*0.019*				*0.021*	*0.016*	*0.155*	*0.00001*		*0.002*		
(6) COEFFICIENT	0.024				0.058	-0.015	0.526		0.00001	-0.003	98	0.320
STANDARD ERROR	*0.023*				*0.023*	*0.016*	*0.154*		*0.00008*	*0.003*		

Table 5.3 Panel C (Continued)
C-2: SRESID_ACCREV_TA (98 firms)

SRESID_ACCREV_TAt = a0 + a1*CASHCOLL_TAt-1 + a2*CASHCOLL_TAt + a3*CASHCOLL_TAt+1 + εit

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.025	0.061									98	0.011
STANDARD ERROR	*0.005*	*0.043*										
(2) COEFFICIENT	0.017		0.098	0.101							98	0.057
STANDARD ERROR	*0.006*		*0.073*	*0.069*								
(3) COEFFICIENT	0.019	-0.047	0.208								98	0.040
STANDARD ERROR	*0.006*	*0.069*	*0.105*									
(4) COEFFICIENT	0.028				-0.011	0.014	0.169	0.00001	0.00015	-0.004	98	0.348
STANDARD ERROR	*0.013*				*0.014*	*0.009*	*0.088*	*0.00001*	*0.00004*	*0.001*		
(5) COEFFICIENT	0.052				-0.039	0.021	0.192	0.00001		-0.006	98	0.272
STANDARD ERROR	*0.011*				*0.012*	*0.009*	*0.093*	*0.00001*		*0.001*		
(6) COEFFICIENT	0.029				-0.013	0.014	0.173		0.00015	-0.004	98	0.354
STANDARD ERROR	*0.013*				*0.013*	*0.009*	*0.087*		*0.00004*	*0.001*		

Table 5.3 Panel C (Continued)
C-3: SRESID_ACCSUPP_TA (98 firms)

SRESID_ACCSUPP_TAt = b0 + b1*CASHSUPP_TAt-1 + b2*CASHSUPP_TAt + b3*CASHSUPP_TAt+1 + e2t

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.028	0.112									98	0.074
STANDARD ERROR	*0.004*	*0.038*										
(2) COEFFICIENT	0.018		0.081	0.207							98	0.193
STANDARD ERROR	*0.005*		*0.062*	*0.058*								
(3) COEFFICIENT	0.024	0.033	0.151								98	0.089
STANDARD ERROR	*0.005*	*0.062*	*0.094*									
(4) COEFFICIENT	0.039				-0.006	0.002	0.212	0.00001	0.00008	-0.004	98	0.209
STANDARD ERROR	*0.013*				*0.014*	*0.009*	*0.089*	*0.00001*	*0.00004*	*0.001*		
(5) COEFFICIENT	0.051				-0.021	0.006	0.224	0.00001		-0.005	98	0.191
STANDARD ERROR	*0.011*				*0.012*	*0.009*	*0.090*	*0.00001*		*0.001*		
(6) COEFFICIENT	0.038				-0.004	0.002	0.208		0.00008	-0.004	98	0.217
STANDARD ERROR	*0.013*				*0.013*	*0.009*	*0.088*		*0.00004*	*0.001*		

Table 5.3 Panel C (Continued)
C-4: SRESID_ACCTAX_TA (75 firms)

SRESID_ACCTAX_TAt = c0 + c1*TAXPAID_TAt-1 + c2*TAXPAID_TAt + c3*TAXPAID_TAt+1 + e3t

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.005	0.091									75	0.247
STANDARD ERROR	*0.002*	*0.018*										
(2) COEFFICIENT	0.002		0.068	0.093							75	0.205
STANDARD ERROR	*0.002*		*0.027*	*0.034*								
(3) COEFFICIENT	0.005	0.099	-0.013								75	0.237
STANDARD ERROR	*0.002*	*0.030*	*0.040*									
(4) COEFFICIENT	0.015				0.002	0.003	0.118	0.00001	-0.00005	-0.001	75	0.167
STANDARD ERROR	*0.006*				*0.009*	*0.005*	*0.040*	*0.00001*	*0.00002*	*0.001*		
(5) COEFFICIENT	0.008				0.012	-0.001	0.105	0.00001		0.000	75	0.119
STANDARD ERROR	*0.005*				*0.009*	*0.004*	*0.041*	*0.00001*		*0.001*		
(6) COEFFICIENT	0.015				0.002	0.003	0.118		-0.00005	-0.001	75	0.176
STANDARD ERROR	*0.006*				*0.009*	*0.005*	*0.040*		*0.00002*	*0.001*		

Table 5.3 Panel C (Continued)
C-5: SRESID_ACCINT_TA (38 firms)

$$SRESID\_ACCINT\_TA_t = d0 + d1*INTPAID\_TA_{t-1} + d2*INTPAID\_TA_t + d3*INTPAID\_TA_{t+1} + \varepsilon 4t$$

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.001	0.035									38	0.142
STANDARD ERROR	*0.001*	*0.013*										
(2) COEFFICIENT	0.001		0.032	0.015							38	0.069
STANDARD ERROR	*0.002*		*0.019*	*0.021*								
(3) COEFFICIENT	0.001	0.032	0.006								38	0.119
STANDARD ERROR	*0.001*	*0.020*	*0.026*									
(4) COEFFICIENT	0.006				0.002	-0.003	0.032	0.00001	-0.00002	0.000	38	0.095
STANDARD ERROR	*0.005*				*0.005*	*0.004*	*0.028*	*0.00002*	*0.00002*	*0.000*		
(5) COEFFICIENT	0.003				0.004	-0.004	0.028	0.00001		0.000	38	0.092
STANDARD ERROR	*0.004*				*0.005*	*0.004*	*0.028*	*0.00002*		*0.000*		
(6) COEFFICIENT	0.007				0.003	-0.002	0.030		-0.00002	0.000	38	0.116
STANDARD ERROR	*0.004*				*0.005*	*0.003*	*0.027*		*0.00002*	*0.000*		

Table 5.3 Panel C (Continued)
C-6: SRESID_ACCOTHER_TA (85 firms)

SRESID_ACCOTHER_TAt = e0 + e1*CASHOTHER_TAt-1 + e2*CASHOTHER_TAt + e3*CASHOTHER_TAt+1 + e5t

VARIABLE	INTERCEPT	STDEARN_TA	STDCHGWC_TA	STDCFO_TA	FREQLOSS	STDSALES_TA	AVEABSCHGWC_TA	AVEOPCYCLE 1	AVEOPCYCLE 2	AVELOGTA	NOB	ADJ. R^2
(1) COEFFICIENT	0.001	0.281									85	0.254
STANDARD ERROR	*0.006*	*0.052*										
(2) COEFFICIENT	-0.003		0.028	0.409							85	0.273
STANDARD ERROR	*0.007*		*0.088*	*0.083*								
(3) COEFFICIENT	0.010	0.447	-0.316								85	0.297
STANDARD ERROR	*0.007*	*0.084*	*0.129*									
(4) COEFFICIENT	0.036				0.018	0.019	0.200	0.00001	-0.00011	-0.003	85	0.155
STANDARD ERROR	*0.023*				*0.025*	*0.014*	*0.144*	*0.00001*	*0.00007*	*0.002*		
(5) COEFFICIENT	0.017				0.039	0.014	0.197	0.00001		-0.002	85	0.141
STANDARD ERROR	*0.019*				*0.021*	*0.014*	*0.145*	*0.00001*		*0.002*		
(6) COEFFICIENT	0.037				0.010	0.019	0.216		-0.00011	-0.003	85	0.161
STANDARD ERROR	*0.022*				*0.022*	*0.014*	*0.142*		*0.00007*	*0.002*		

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* CASHCOLL_TA = Cash received from customers
* CASHSUPP_TA = Cash paid to suppliers and employees
* TAXPAID_TA = Taxes paid
* INTPAID_TA = Net interest paid
* CASHOTHER_TA = Other operating cash flows
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* ACCNONCASH_TA = Non-cash accruals
* TOTASS = Total Assets
* STDSALES_TA, STDCFO_TA, STDCHGWC_TA, STDEARN_TA and AVEABSCHGWC_TA are calculated at a firm level.
* All variables are scaled by average total assets
* The regressions in Panel C are based on different numbers of observations; because the maximum number of observations available for each specific variable is used, and there are missing observations for some variables
* Proportion of earnings that are negative is calculated as the number of firm-years with negative earnings divided by the total number of firm-years for each firm.
* Operating Cycle 1 = 360/(Sales/Average AR) + 360/(Sales/Average Inventory)
* Operating Cycle 2 = 360/(Average Total Assets/Average AR) + 360/(Average Total Assets/Average Inventory)
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.4

Regressions of short term accruals (SRESID_ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004, and the indirect cash flow data is hand collected from companies' annual reports

Panel A: Regressions where the Dependent Variable is the Aggregate Accruals Quality Measure and the Independent Variables are based on Combinations of the Individual Accrual Component Quality Measures (111 firms)

	(1)		(2)		(3)		(4)	
VARIABLE	COEFFICIENT	*STANDARD ERROR*	COEFFICIENT	*STANDARD ERROR*	COEFFICIENT	*STANDARD ERROR*	COEFFICIENT	*STANDARD ERROR*
INTERCEPT	0.039	*0.021*	0.004	*0.007*	0.040	*0.021*	0.041	*0.023*
DUM_REV	0.009	*0.021*			-0.002	*0.021*	-0.027	*0.024*
DUM_TAX	-0.023	*0.010*						
DUM_INT	-0.003	*0.009*						
DUM_OTHER	-0.036	*0.011*			-0.040	*0.011*		
SRESID_ACCREV_TA	-0.254	*0.161*	-0.227	*0.170*	-0.259	*0.160*	-0.044	*0.184*
SRESID_ACCSUPP_TA	0.802	*0.138*	0.869	*0.145*	0.838	*0.136*	0.839	*0.161*
SRESID_ACCTAX_TA	0.681	*0.453*	-0.022	*0.406*				
SRESID_ACCINT_TA	0.877	*1.155*	0.546	*1.017*				
SRESID_ACCOTHER_TA	0.623	*0.115*	0.577	*0.111*	0.699	*0.110*		
NOB	111		111		111		111	
ADJ. R^2	0.456		0.376		0.448		0.232	

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

$$SRESID\_ACCRUALS\_ST\_TA_t = a_0 + a_1*CFO\_TA_{t-1} + a_2*CFO\_TA_t + a_3*CFO\_TA_{t+1} + \epsilon_t$$

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* DUM_REV = Control for missing quality measures for Revenue components
* DUM_TAX = Control for missing quality measures for Tax components
* DUM_INT = Control for missing quality measures for Interest components
* DUM_OTHER = Control for missing quality measures for Other Accruals components
* ACCREV_STDEARN_TA, ACCSUPP_STDEARN_TA, ACCOTHER_STDEARN_TA, ACCREV_AVELOGTA, ACCSUPP_AVELOGTA, ACCOTHER_AVELOGTA, ACCREV_AVEOPCYCLE 2, ACCSUPP_AVEOPCYCLE 2, ACCOTHER_AVEOPCYCLE 2, ACCREV_FREQLOSS, ACCSUPP_FREQLOSS, ACCOTHER_FREQLOSS, ACCREV_AVEABSCHGWC_TA, ACCSUPP_AVEABSCHGWC_TA, and ACCOTHER_AVEABSCHGWC_TA are calculated at a firm level.
* All variables are scaled by average total assets
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

Table 5.4
Regressions of short term accruals (SRESID_ACCRUALS_ST_TA) on past, current, and future cash flow from operations for a reduced sample of 1,164 firm-year observations derived from Huntley's Aspect database for years from 1992 to 2004, and the indirect cash flow data is hand collected from companies' annual reports

Panel B: Regressions where the Dependent Variable is the Aggregate Accruals Quality Measure and the Independent Variables are based on Combinations of the Individual Accrual Component Quality Measures and various Firm Characteristic Variables (111 firms)

	(1)		(2)	
VARIABLE	COEFFICIENT	*STANDARD ERROR*	COEFFICIENT	*STANDARD ERROR*
INTERCEPT	0.042	*0.020*	0.041	*0.019*
DUM_REV	-0.005	*0.019*	-0.016	*0.020*
DUM_TAX				
DUM_INT				
DUM_OTHER	-0.021	*0.011*		
SRESID_ACCREV_TA	-0.365	*1.246*	-0.816	*1.336*
SRESID_ACCSUPP_TA	0.322	*1.330*	0.601	*1.362*
SRESID_ACCTAX_TA				
SRESID_ACCINT_TA				
SRESID_ACCOTHER_TA	-0.284	*0.896*		
SRESID_ACCREV_STDEARN_TA	1.409	*4.179*	10.443	*3.670*
SRESID_ACCSUPP_STDEARN_TA	0.043	*2.992*	-2.869	*2.779*
SRESID_ACCOTHER_STDEARN_TA	2.492	*2.679*		
SRESID_ACCREV_AVELOGTA	0.096	*0.155*	0.062	*0.163*
SRESID_ACCSUPP_AVELOGTA	-0.110	*0.138*	-0.103	*0.145*
SRESID_ACCOTHER_AVELOGTA	0.016	*0.106*		
SRESID_ACCREV_AVEOPCYCLE 2	0.006	*0.004*	0.010	*0.005*
SRESID_ACCSUPP_AVEOPCYCLE 2	-0.007	*0.004*	-0.009	*0.004*
SRESID_ACCOTHER_AVEOPCYCLE 2	0.006	*0.003*		
SRESID_ACCREV_FREQLOSS	0.960	*1.166*	0.681	*1.146*
SRESID_ACCSUPP_FREQLOSS	-0.088	*0.906*	-0.031	*0.946*
SRESID_ACCOTHER_FREQLOSS	0.409	*0.608*		
SRESID_ACCREV_AVEABSCHGWC_TA	-16.550	*8.419*	-23.009	*8.826*
SRESID_ACCSUPP_AVEABSCHGWC_TA	18.952	*6.571*	20.655	*6.846*
SRESID_ACCOTHER_AVEABSCHGWC_TA	-3.039	*6.195*		
NOB	111		111	
ADJ. R^2	0.583		0.493	

The standard deviation of residuals (SRESID) is calculated based on the residuals from the following firm-specific regressions:

$$SRESID\_ACCRUALS\_ST\_TA_t = a_0 + a_1 * CFO\_TA_{t-1} + a_2 * CFO\_TA_t + a_3 * CFO\_TA_{t+1} + e_t$$

* CFO_TA = Cash flow from operation
* ACCRUALS_ST_TA = PROF_TA - CFO_TA + Depreciation and Amortization
* ACCREV_TA = Accruals related to sales to customers
* ACCSUPP_TA = Accruals related to supplier and employee expenses
* ACCTAX_TA = Accruals relating to tax expense
* ACCINT_TA = Accruals relating to net interest expense
* ACCOTHER_TA = Accruals relating to other (cash related) expenses
* DUM_REV = Control for missing quality measures for Revenue components
* DUM_TAX = Control for missing quality measures for Tax components
* DUM_INT = Control for missing quality measures for Interest components
* DUM_OTHER = Control for missing quality measures for Other Accruals components
* ACCREV_STDEARN_TA, ACCSUPP_STDEARN_TA, ACCOTHER_STDEARN_TA, ACCREV_AVELOGTA, ACCSUPP_AVELOGTA, ACCOTHER_AVELOGTA, ACCREV_AVEOPCYCLE 2, ACCSUPP_AVEOPCYCLE 2, ACCOTHER_AVEOPCYCLE 2, ACCREV_FREQLOSS, ACCSUPP_FREQLOSS, ACCOTHER_FREQLOSS, ACCREV_AVEABSCHGWC_TA, ACCSUPP_AVEABSCHGWC_TA, and ACCOTHER_AVEABSCHGWC_TA are calculated at a firm level.
* All variables are scaled by average total assets
* Results are based on the (ACCRUALS_ST_TA) proxy of accruals

CHAPTER 6 CONCLUSION

Employing the approach used by Dechow and Dichev (2002), I measure the quality of aggregate accruals and extend it to identifiable components of accruals. I investigate three primary questions relating to quality of accrual components. First, to what extent are the different accrual component quality measures associated with various firm characteristics? Second, to what extent are accrual component quality measures associated with aggregate accrual quality? Third, does the association between accrual component quality and aggregate accrual quality vary across firms systematically with the investigated firm characteristics? I am motivated by the possibility that different accruals' components might exhibit different quality, and that this may vary systematically across firms that face different economic and operating environments.

I base my analysis on a sample of 1,164 firm-year observations for companies listed on the Australian Stock Exchange. Since Australian firms are required to report cash and accrual information relating to major accrual components, Australia represents a unique setting within which to conduct my analysis.

My initial results indicate that Australian firms exhibit similar aggregate accruals behaviour and characteristics to those reported by Dechow and Dichev (2002). Moreover, quality measures relating to receivables and supplier/employee costs generally are associated with firm characteristics, such as operating environment volatility, size, and length of operating cycle, in a manner similar to aggregate accruals quality. Other accrual component quality measures, however, do not appear systematically associated with any firm characteristics. This may, to some extent, reflect experimental noise due to small sample sizes and unavailable data. Finally, the results also indicate that the aggregate accruals quality measure is strongly positively associated with the quality of supplier/employee-related accruals, though

primarily for firms which report large magnitude working capital changes over time. Interestingly, the same firms tend to exhibit a negative association between aggregate accruals quality and receivables-related quality. Thus for my sample of Australian firms it appears that aggregate accruals quality is largely driven by the quality of costs relating to suppliers and employees, rather than revenues.

The results suggest several potential future research directions. First, my research represents an initial exploratory investigation of accrual component quality across a broad sample of firms. Future work might consider more carefully the likely role of accruals quality in specific operating environments to develop and test context-specific predictions. For example, accruals quality relating to inventory is likely more relevant in industries that face repeated risks of product obsolescence (e.g., electronics and consumer products). Similarly, accruals quality relating to payables may be more important when a firm has market power over suppliers. Future research could further develop these stories to generate and test implications for the quality of accruals components and how they vary across firms. A second potential direction for future research might be to investigate whether the quality of accruals components is reflected in their association with share prices. Prior research indicates that aggregate accruals quality is reflected in share prices (e.g., Francis, La Fond, Olsson, and Schipper (2005)). It would be interesting to investigate whether this finding extends to accruals components. Finally, the adoption of IFRS by Australian firms in 2005 may have altered the properties of various accruals. Future research might investigate whether any changes in the quality of accruals occurred for different accruals components.

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