

The Impact of Institutional Ownership: a Study of the Australian Equity Market

by

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A thesis

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Certificate

I certify that this thesis has not previously been submitted for a degree nor has it been submitted as part of the requirement for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract

Institutional investors are now the predominant type of investor in global financial markets. Institutional investors now own more than 64% of the equity in the US stock markets (Federal Reserve Board 2011). In Australia, institutional investors own approximately 60% of the stock market. They are also responsible for the majority of the trades (96% of all trades) in US markets. Yet there still remain many unanswered questions about the impact of institutional investors. The most basic and obvious of these questions is whether institutional investors possess superior investments skills. Given that institutional investors controlled trillions of dollars of funds under delegated management, it seems incongruous that there is still no consensus in the literature about whether they possess superior investments skills. The increase in size has also given institutional investors significant influence. This prompts the question of how these large investors choose to utilise their influence. Whether institutional investors' presence and activities improve the efficiency of the financial markets, and what role institutional investors play in important corporate decisions.

Using a unique set of daily institutional ownership data, we present four empirical studies on the Australian stock market that aims to provide greater understanding of the impact of institutional ownership. Study 1 examines the question of whether institutional investors possess superior skills. The empirical findings suggest that institutional trading as measured by institutional ownership flows prove to be a good gauge of stock returns. The firms that experience the greatest inflow in institutional ownership exhibited superior performance throughout the 12-month period. Consistent with literature, we showed that institutional investors exhibited superior judgement in their trading in stocks of particular characteristics including small, large stocks, growth stocks and value stocks.

In the second study, we turn our attention to an evaluation of the impact of institutional investors in IPOs. In spite of the plethora of studies in the Initial public offerings (IPOs) literature, there have been few studies on the impact of institutional ownership in IPOs. Our results suggest that institutional ownership plays an important role in explaining the two anomalies of IPO underpricing and the long-run underperformance of issuers. Consistent with previous studies, we found large underpricing which was greatest in those issuers with the highest initial institutional ownership levels. Yet these issuers experienced the worst long-run underperformance. The findings are consistent with overreactions driven by informational cascade in the IPO market. High level of initial institutional interests generates informational herding that drives these issuers' prices beyond the fundamental. Over time, market correction leads to the long-run underperformance of issuers. The findings suggest that Institutional investors' presence in IPO may lead to greater mispricing in process already beset with uncertainty.

Study 3 of the thesis examine whether there is any evidence that institutional investors fulfil the very important role as monitors of corporate managers' actions. Many have hoped that the large equity stakes that institutional investors owned in corporations will give them sufficient incentives to act as an important source of corporate governance (see Black 1992; Kahn & Minton 1998). In so doing, institutional investors can help to reduce the agency problem that arise as the result of the separation of ownership and management. We test whether institutional investors fulfil this key role as monitors in a sample of Australian mergers and acquisitions. We found limited support for institutional monitoring. While the market have more favourable reactions to the takeover announcements made by bidders with high levels of institutional ownership, these bidders did not exhibit superior stock market performance in the long-run. Rather than performing the very important role as monitor, our results suggest that institutional investors may have a preference for following the *Wall Street Rule* and vote

with their feet. Institutional trading (as measured by changes in institutional ownership) immediately prior to the takeover announcement provided a good indication of the long term performance of the bidder.

In the final study, we examined whether institutional investors' activities contribute to the turn-of-the year effect in the Australia. We do so with the view that the results may be a reflection of the impact of institutional investors on market efficiency more generally. The Turn-of-the-year effect refers to the abnormally high returns for small stock in the month of January (and July for countries like Australia). The anomalous seasonality in returns is one of the most enduring anomalies in global financial markets. For both the December/January and the June/July period, we examine the institutional investors' flows to determine whether there is a link with institutional investors' action and the turn-of-the-year effects. Our results are consistent with institutional investors conducting window dressing trades in the December/January period. It is important to note that Australia's financial year ends in June, so there are incentives for institutions to conduct both window dressing and tax-related selling in the June/July period. We found strong evidence that institutional investors conduct tax-related transactions and that these trades significantly impact on the stock returns in the June–July period. We come to the conclusion that institutional investors put greater importance on tax related selling than window-dressing in the June July period.

These four empirical studies have served to enhance our understanding of the impact of Institutional Investors who are an ever-growing influence on global financial markets.

1 Chapter 1 – Introduction

1.1 Objectives of the dissertation

This dissertation contains four essays that examine a common theme – the impact of institutional investors on the stock market. Despite the increasing dominance of institutional investors in global markets, many questions remain about the effect that institutions have on financial markets. These questions include whether institutional investors are superior investors, whether institutional investors' presence and activities improve the efficiency of the financial markets, and what role institutional investors play in important corporate decisions.

Each essay aims to offer unique insights to the impact of institutional investors on the Australian stock market. The papers contain original research on the effect of institutional investors via the use of timely and accurate institutional ownership data.

The ultimate objective of this dissertation is to shed light on whether the presence of institutional investors is beneficial – for their own stakeholders through superior investment performance; for the firm through effective monitoring and thus reducing value decreasing corporate decision; and for the market through the elimination of market inefficiency.

1.2 Motivation of the dissertation

The increasing presence of institutional investors has fuelled calls for research into their impact on their stakeholders, on the financial markets and ultimately, on the economy. A good example of the early concerns about the growth institutional investors can be found in the Special Study of Securities Markets of the Securities and Exchange Commission that was tabled in the US Congress in 1963. Although the Special Study was a comprehensive report on the securities markets, it singled out the growth of institutional investment and warned that “such participation presents special problems ... in relation to public interests and protection of the

investors. In view of the growing importance of institutional transaction and the probability that needs and problems associated with them will not remain static ...”(Securities Exchange Commission 1963, p.870).

The level of institutional participation at the time was minute in comparison to the current level, so the statement really serves as an urgent and sage reminder of the issues raised by the dominance of institutional investors in the global market today. Institutional investors are now the predominant type of investor in most global markets. This dramatic growth of institutional ownership has variously been described as an “explosion”, a “key feature” and a “phenomenon” of the global markets in the last 40 years. Irrespective of the adjective used to describe this dramatic growth, it is undeniable that institutions wield significant power and influence on global markets. Institutional investors now own in excess of 64% of the stocks in the US stock markets¹ (Federal Reserve Board 2011). Institutions are also responsible for most of the trade in stocks with non-retail trade accounting for over 96% of all trade on the New York Stock Exchange (Boehmer & Kelley, 2006). Moreover the growth in institutional ownership has followed an exponential path and had grown from \$253million in 1980 to \$16trillion by the end of 2011 (Federal Reserve Board 2011). This growth has been mirrored in other markets around the world. The International Monetary Fund estimated that in 2005 institutional investors controlled more than US\$45 trillion in assets worldwide, of which \$20 trillion are invested in global equities markets. In countries such as Japan and Australia, institutions controlled more than 50% in 2010.² Moreover the growth of institutional investment has not been confined to developed countries. Khorana et al. (2005) show that

¹ Federal Reserve Board (2011) “Flow of funds account of the United States”. Available at: <http://www.federalreserve.gov/releases/z1/Current/>. Accessed on 23 January 2012.

² Black and Kirkwood (2010) reports that Australian institutional investors own approximately 40% of the Australian stock market. Foreign investors have also increase in ownership to more than 40% of the market. If even a fraction of these foreign investors are institutions, then the level of institutional investors in the Australian market would be well over 50% by 2010.

institutional investors such as mutual funds have experienced significant growth in developing countries.

In view of the size and rapid growth of institutional investment, it is not surprising that much research has been devoted to examining the impact of institutional ownership. Some studies have concentrated on the evaluation of institutional investors' performance (see Gompers & Metrick 2001; Ovtcharova 2003; Osagie et al 2005; Yan & Zhang 2009). Others have focused on the impact of institutional investors on corporate decisions (see Black 1992; Wahal 1996; Chowdhury 2005; Almazan et al. 2005; Gallaher et al. 2005), on the operational efficiency of financial markets (Hamilton 1978; Jennings et al. 1997; Fehle 2004), and on market anomalies (Athanasakos 1992; Kamara 1997; Gompers & Metrick 2001; Bohl et al. 2006; Haugen & Lakonishok 1988; He et al. 2004; Cremers & Pareek 2010). Yet many questions remain unresolved. A good example is the ongoing debate over the role of institutional investors in many apparent anomalies in financial markets. Some researchers have given credit to institutional investors for the disappearance of some market anomalies including the size effect (Gompers & Metrick 2001), the January effect (Bohl et al. 2006) and the Monday seasonal effect (Kamara 1997; Chan et al. 2004). However, others have argued that institutional investors' actions are directly responsible for many of the anomalies on the financial markets, including the January effect through window dressing activities (Haugen & Lakonishok 1988; Athanasakos 1992; He et al. 2004) and market momentum (Woolley & Vayanos 2010; Cremers & Pareek 2010).

More importantly, these questions remain at a time when the growth of institutional investors is no longer purely of interest to market participants, investment professionals and academics. The growth of institutional investors has also led to a significant increase in the breadth and reach of their stakeholders. In the past, the performance of institutional investors may have influenced only the wealth of those who were actively involved in financial markets such as

investors, investment professionals and speculators. This is no longer the case. The growth of institutional investment is the result of a significantly boarder proportion of the population becoming stakeholders in institutions. And conversely, the growth of institutional investment has resulted in more of the population becoming stakeholders in institutions. In Australia, for instance, the performance of institutional investors directly impacts the wealth and economic wellbeing of the majority of the population. Compulsory superannuation has fuelled the growth of institutional investment in Australia.³ Since the advent of compulsory superannuation in Australia in the early 1990s, most members of the Australian community have become stakeholders of institutions through their superannuation savings. Yet it is not only the institutions' investment performance that will affect the lives and wellbeing of many Australians. Australian superannuation funds now boost funds under management that is equivalent to 102% of the Australian equities market (i.e. the Australian Stock Exchange)⁴, and so the institutions' investment decisions also have a major bearing on the allocation of resources to industries, and to sectors of the economy. Ultimately, this affects the economic wellbeing of the country.

It is the Australian market which is the focus of our four studies on institutional investors. In spite of the aforementioned importance of institutional investors in Australia, few Australian studies have investigated them. In the existing literature, most studies examine the performance of sub-group of institutional investors, namely fund managers (see Foster et al. 2004; Chan et al. 2008) and superannuation funds (see Bird et al. 1983; Drew & Stanford 2000; Bilson et al. 2004; Bilson et al. 2005). We take a different approach and examine the impact of Institutional investors as a group in the Australian share market. In so doing, we are able to

³ It is important to note that Australia is not the only country that has seen contribution of superannuation savings fuelling growth of institutional investments. Bohl and Brzeszczynski (2005) have documented similar growth in institutional investment as results of changes to laws in relation to retirement savings.

⁴ The information is drawn from The Association of *Superannuation* Funds of Australia. www.superannuation.asn.au/resources/superannuation-statistics Accessed 1 December 2012.

look beyond just the institutional investor's performance; we also examine their impact on issues such as corporate governance and their impact on the financial markets. Stapledon (1996a), Stapledon (1996b) and Gallagher et al. (2005) are amongst the few studies that have studied the impact of institutional investors from a corporate governance perspective. Stapledon (1996b) highlighted that there are significant legal, economic and practical barriers that deters institutional investors from activism in Australian companies. He highlighted the legal barriers in corporation law and declared that it was the primary barriers to institutional shareholders activisms in Australia. He argued that " a loose grouping of institutional investors" may be covered by the terms "settlement", "relevant interests" and associate" under the broad definition of Corporations Law. As a results, Institutional investors who attempts to act as a group may be in breach of "provisions governing disclosure of substantial holdings" (Stapledon 1996b, p.154). Stapledon's comments highlights the institutional differences across different countries may play a significant role on the impact of institutional investors in corporate governance and the impact of institutional investors in general. Our final study in chapter 7 provides another good example of institutional differences across international boundaries that may offer us valuable insights into the impact of institutional investors. The January effect is the coined to describe the phenomenon abnormally high stocks for small firms in month of January. Researcher has attempted to explain this anomaly for over 30 years with Institutional window-dressing and tax loss selling being the two most common explanations. Unfortunately both explanations make the same empirical prediction that investors sell poorly performing stocks in December. However the tax loss selling explanation is not valid for Australian because it has a financial year that ends in the month of June. So if institutional investors' trading is linked to the January effect in Australia, then window dressing is a likely explanation. We hope that the studies on the Australia market in this dissertation will contribute to a more comprehensive picture of the impact of institutional ownership.

1.3 Structure and contents of the dissertation

The dissertation consists of four studies that examine the impact of institutional investors. Chapter 2 reviews the existing literature on institutional investors' performance and their impact in corporate decision making and on the market. Chapter 3 describes the data and outlines the methodology employed in the analysis. Chapter 4 examines whether institutions exhibit superior performance in their investments. Chapter 5 and Chapter 6 look at the role of institutions in major corporate decisions. Chapter 5 examines the well-known anomalies of underpricing and underperformance associated with initial public offerings. Chapter 6 investigates the role that institutional investors play in the contentious decisions regarding mergers and acquisitions. Given the overwhelming evidence that mergers and acquisitions are wealth destroying transactions, the study examines whether institutional investors act as an effective monitor to deter management from making poor acquisitions. If institutional investors fulfil a vital monitoring role, then bidders with a high level of institutional ownership should experience superior long-term price and accounting performance. The main research questions are whether the presence of institutional investors leads to more correct pricing in Initial Public Offerings (IPOs). Through a study of the level of institutional ownership and institutional trading at time of listing, the question examined is whether institutional investment influences the level of underpricing, and the long term performance of IPOs. In chapter 7, the final study of this thesis examines the contribution that institutional investors make to the efficiency of markets. The specific market anomaly investigated is the January effect. This study examines the extent to which the January effect is impacted by institutional investors.

2 Chapter 2: Literature review of the impact of institutions

2.1 Are institutional investors superior investors

Now more than ever, the success of institutional investors impacts on the wealth of a broad section of the community through retirement savings invested in pension funds and other superannuation vehicles. As a consequence the investment performance of institutional investors is of special importance. Over the past 25 years or so, researchers have attempted to provide insights into the performance of these investments. Much of the literature has been devoted to examining the performance of various types of institutional investors – mutual funds, hedge funds, banks, pension/superannuation funds and insurance companies. Of these groups, mutual funds have received the greatest coverage with a vast amount of literature devoted to subjects such as fund performance (see Jensen 1968; Grinblatt et al. 1995; Wermers 2000 amongst many others), methodology to assess performance (Daniel et al. 1997; Wermers 2006; Cremers & Petajesto 2009) and determination of manager skills (Barras et al. 2010; Kosowski et al. 2006; Tuzov & Viens 2011). In spite of the large number of studies, there is conflicting evidence over the investment performance and investment skills of these fund managers. Chen et al. (2000), Wermers (2000) Barras et al. (2010) and Kosowski et al. (2006) are amongst the studies that conclude some fund managers exhibit superior investment skills. On the other hand, others have not found any evidence that fund managers are able to yield superior returns (Jensen 1968). Indeed research on other types of institutional investors (including pension/superannuation funds, insurance companies and financial firms) has also failed to reach any consensus on whether institutional investors display superior skills.

Studies into the level and flow of institutional ownership in firms are the ones whose methodologies bear the closest resemblance to the methodology used in this dissertation (Gompers & Metrick 2001; Ovtcharova 2003; Osagie et al. 2005; Yan & Zhang 2009 and many

others). Some of these studies show that firms with higher levels of institutional ownership yield greater returns (Gompers & Metrick 1999; Ovtcharova 2003; Osagie et al. 2005). Yet others have found that stocks with a high institutional ownership fail to deliver superior returns (Chen et al. 2000). Other researchers have concentrated on analysing the success of institutional trading rather than the investment performance of institutions (Wermers 1999; Nofsinger & Sias 1999; Grffin et al. 2003; Forster et al. 2004; Sias et al. 2006). The rationale behind these studies is that trading provides a better gauge of investment expertise than does looking at the final consequences of investment decisions. A number of studies have shown that institutional trading can have a positive impact on returns (Lakonishok et al. 1992; Wermers 1999; Nofsinger & Sias 1999; Forster et al. 2004; Grffin et al. 2003; Sias et al. 2006). However it is important to differentiate between the impacts that institutional investors may have on contemporaneous returns and the ability to predict future returns. By the sheer size of their trades, institutional investors can move prices (Sias et al. 2001; Chiyachantana et al. 2004). The price impact may occur simply as a result of inventory or liquidity constraints in the market (Grossman & Miller 1988). Alternatively, the positive correlation between institutional trading and contemporaneous returns could arise because institutional investors are trading on private information and such trade increases the speed of price adjustment (Sias et al. 2001). Sias et al. (2001) show that institutional trading leads to permanent changes in stock prices and conclude that the price impact is driven by information motivated trades.

Irrespective of the cause of the price impact, a better gauge of institutional investment skills lies in the ability of institutional investors to forecast future returns. The question is whether institutional investors are more informed in their trading than other investors. There is a body of empirical evidence to support the notion that institutional investors are better informed than the average investor (Almanagar et al. 1999; Bartov et al. 2000; Ke & Petroni 2004). Studies have shown that institutional investors can use their informational advantage to

enable them to obtain higher returns (Amihud & Li 2002) or to avoid losses ahead of corporate announcements (Ke & Pertoni 2004). There is also evidence that firms with a high level of institutional ownership display less reaction to corporate announcements or smaller drift following these announcements. The implication is that institutional investors have foreknowledge and profit from trading prior to the news becoming public (Bartov et al. 2000; Alangar et al. 1999).

Grinblatt et al. (1995), Nofsinger and Sias (1999), Chen et al. (2000), Sias et al. (2006) and Yan and Zhang (2009) are amongst the studies which show that institutional investors are able to use their information advantage to forecast returns. Moreover, there is strong evidence to support the conclusion that an information advantage plays a strong role in their success, with both Wermers (1999) and Bennet et al. (2003) emphasising that institutional investors have the greatest success in their trading of the stock of small firms. The inference is that there is less public information on small stocks, so institutional investors have a greater edge and opportunity to profit.

We are a fair way from achieving closure on the issue of the ability of institutional investors. Some writers have found that only subsets of institutional investors, such as short term investors, realise superior investment returns (Bennet et al. 2003; Yan and Zhang 2009). Others question whether institutional investors are truly superior investors (Cai & Zheng 2004; Watkins 2006). Cai and Zheng show that while institutional investors buy winners but these winners do not continue to outperform. In fact, many of the stocks purchased by institutional investors are subject to reversals (Watkins 2006; Dasgupta et al. 2010). Rather than relying on any superior information advantage, the evidence is consistent with institutions adopting a positive feedback trading strategy or momentum strategy (Grinblatt et al. 1995; Nofsinger & Sias 1999; Badrinth & Wahal 2002). Still, there is also evidence that raises the question of whether individual institutional investors possess any informational advantage at all. Dasgupta

et al. (2010) and Sias (2004) show that institutional investors have a tendency to trade in the same direction as other institutions.

So it is clear that there is no consensus on the question of whether institutional investors can yield a higher return for their shareholders/stakeholders. In chapter 4, we present our study of the investment performance of Australian institutional investors. Using a comprehensive database that allows us to examine stock ownership on a daily basis, we provide greater clarity on the question of whether institutional investors are superior.

2.2 Do institutional investors use their influence for “good”?

An overriding theme of this dissertation is that institutional investors are now the dominant investor in the financial market. Concomitant with this dominance is the increase in their power and influence in financial markets. The key question is whether these institutions recognise that their decisions have wide reaching impacts on firms, on financial markets and ultimately on the economy.

2.2.1 Corporations, agency problems and the role of institutional investors

One area where institutional investors' involvement may be beneficial is in ameliorating the problems caused by the separation of ownership and management. The separation of ownership and management is a fact of life in large companies. The role of management is to act as an agent for the shareholders with the aim of maximising their returns. There are obvious benefits from this arrangement; shareholders can share in the economic benefits of the business venture without management and entrepreneurial skills needed to run the business, and managers are able to capitalise on their skills and knowledge without the risk of injecting a large amount of their capital. Unfortunately this principal-agent relationship is

tenuous and is highly susceptible to conflicts of interest. The agent, that is, the company management, has an incentive to maximise their own financial and non-pecuniary benefits rather than maximise shareholders' wealth. Black (1992, p.815) succinctly sums up the agency problem when he states that the "product, capital, labour and corporate control market constraints are imperfect" and that the actions of managers need to be monitored. This forms the nucleus of the agency problem which is inherent in corporate structure.

Thus although there are advantages in separating management and ownership, corporate structures also lead to substantial agency costs which are the costs that arise due to the potential for the agency problem. Agency costs encompass the costs of monitoring the agents' actions, bonding costs and any residual loss that results from a misalignment between the shareholders and the agents' interests. One method of effectively reducing the agency problem is through effective monitoring of management's actions. Unfortunately the diverse nature of ownership in large businesses means most shareholders' ownership stake would not be of sufficient size to justify the costs incurred in monitoring the management. In fact, the fractional ownership structure of many large corporations encourages passive share ownership and exacerbates the agency problem. This is not the case for large shareholders such as institutional investors whose larger stakes provide them with greater incentives to monitor management's actions. Black (1992) argues that there are sufficient incentives for large institutions to overcome the "passivity created by fractional ownership" (Black 1992, p. 813). With the increasing dominance of institutional investors in the equity markets, there are also greater expectations that institutional investors can fulfil a vital role in corporate governance.

The synergy of information advantage, investment expertise and greater incentives should make institutional investors tailor made for the monitoring role. Black (1992), Kahn and Minton (1998), and Almazan et al. (2005) are amongst those theoretical and empirical studies that find support for institutional monitoring. In his 1992 *UCLA Law Journal* article, Black

argues strongly for institutional and legal changes to encourage institutional investors to take a greater role in corporate governance. After recognising that the system of corporate governance “is and will continue to be imperfect”, Black strongly advocates a greater role for institutional investors in the monitoring process and suggests that institutional investors “form a valuable strand in that web to discipline corporate manager and can serve as a partial alternative to relying on takeovers to discipline corporate managers” (Black 1992, p.887).

Concerns remain as to the effectiveness of institutional monitoring. Chief amongst these concerns is the fear that institutional investors may choose to manage firms for their own gain rather than for the benefits of all stakeholders. The most extreme possibility is that institutional investors may direct funds to themselves rather than to other shareholders. However, abuse of voting power may involve more subtle means of seeking private benefits. For example, fund managers may place pressure on management to increase dividend payouts to suit the income goals of the funds. There are also a number of other factors that reduce the motivation and effectiveness of institutional monitoring. Institutions may have ongoing business relationships with the company that will reduce their propensity to scrutinise the managers’ actions. This is particularly relevant for financial institutions such as banks who would not wish to jeopardise their relationships with large clients (Brickley et al. 1988).

Of course, many types of institutional investors are agents themselves and have the potential to suffer from the same agency problem that is faced by corporate managers. Institutional investment typically involves investors or beneficiaries (i.e. principals) using fund managers (first tier agents) to manage funds on their behalf. In this light, institutional monitoring is effectively a case of first tier agents monitoring second tier agents (corporate managers) (Lumpkin 2003). Thus the problem becomes the need to provide incentives for fund managers, to monitor the activities of corporate managers. This can be problematic because the fund managers may have personal interests which conflict with the interests of the principals.

Finally, Shliefer and Vishny (1986) highlight that the free-rider problem associated with the private costs of monitoring is as relevant amongst institutional investors as it is amongst retail investors. The knowledge that other investors can and will benefit from the costly monitoring of a single investor is a major disincentive, even for the larger investors.

That monitoring is carried out at substantial cost is a notion explored by Kahn and Winton's (1998) model. Their study highlights that each institutional investor must make a decision about whether to undertake costly monitoring. The alternative is to follow the Wall Street rule: "cut and run" and sell out of poorly managed firms. For the institutional owner, the decision to monitor is one of economics rather than an altruistic attempt to improve corporate management. If the institutional investors choose to undertake costly monitoring, then they do so in the hope that their influence can eradicate poor management practices and thus turn around the fortunes of the company. The institutional investors will benefit from increases in the value of their own holdings or which they might expand prior to the company's improvement being recognised by the market. An institutional investor must compare the benefits of monitoring against an approach where they could simply save the monitoring costs and sell out of a poorly managed corporation. Kahn and Winton (1998) argue that institutional investors' payoffs from participating in corporate governance are made more complicated because that payoff is dependent on how the market perceives the fortunes of the firm. They argue that an institutional investor's payoff from participating in corporate governance is inversely related to the market's perception of the company prior to intervention. If the market has a relatively poor perception of the firm prior to the institutional investor's intervention, then the firm's share price would be undervalued, which will boost the trading profit that the institution gains from its intervention. On the other hand, if the market has a good perception of the firm prior to institutional monitoring, then the institutional investors would be better off selling their stake prior to the firm's problem reaching the public domain.

From the discussion above, it becomes obvious that institutional monitoring is not a straightforward matter. Not only are there concerns about whether institutions are effective at monitoring, but there are also concerns about whether they are willing to undertake the monitoring role in the first place. The empirical evidence on institutional monitoring is far from conclusive. Kahn and Minton (1998), Del Guercio and Hawkins (1999) and Noe (2002) and are among the empirical studies that provide support for the role that institutional investors play in corporate governance. The Kahn and Minton study shows that institutional intervention can increase a firm's value but only if the institutional investor's role in corporate governance increases its informational advantage over other investors. The inference is that institutional investors are only willing to intervene if they can derive a positive payoff. Guercio and Hawkins (1999) find that activism by institutions (i.e. large funds) increases the propensity for significant changes in target firms such as asset sales, restructurings and layoffs.

Other studies fail to find any substantial benefits from institutional participation in the corporate governance process (Wahal 1996; Karpoff 1996; Chowdhury 2005; Gallagher et al. 2005). Some of these studies fail to find any significant benefits to operating performance or higher returns from institutional involvement in the corporate process (Wahal 1996; Karpoff 1996). In the Australian market, Gallagher et al. (2005) find that institutional ownership fails to provide any checks and balances on management remuneration. In fact, they find that institutional ownership tends to increase management compensation and reduce the pay for performance sensitivity.

In chapter 6 of this dissertation, we aim to shed further light on institutional investors' role in corporate management by examining whether the presence of institutional investors improves merger and acquisition decisions. The study benefits from the use of comprehensive and thorough Australian institutional ownership data which is available on a daily basis.

2.2.2 Institutional investors and their impact on the market

Choices that are made by institutional investors to garner higher returns (i.e. profits) can have a drastic and sometimes detrimental impact on the economy. One good example is the allocation of resources in initial public offerings. If institutions use their expertise and knowledge to provide funds to those companies with the greatest potential for success, then everyone can benefit from the increase in wealth across the economy. However the ability of institutional investors to achieve their goal of maximising returns is not necessarily dependent on allocating funds to the companies with most potential for success in the long run. In the case of an initial public offering (IPO), institutional investors can garner exorbitant profits from a very short term investment because most IPOs are issued at heavily discounted prices (Reilly 1973; Ibbotson 1974; Ritter 1987; Loughran & Ritter 1995). Moreover, institutional investors can use their relationship with the underwriter to secure allocation in the most under-priced listing (Hanley & Wilhelm 1995; Aggarwal et al. 2002; Boehmer et al. 2005). The combination of these factors means institutional investors are able to subscribe to IPOs and quickly resell the stocks in the market in the days after listing (in a practice known as flipping). In so doing, institutional investors can yield very high profits from their IPO investments without any consideration for the long term prospects (performance) of the firm and by inference, for the optimal long term allocation of resources. In chapter 5 of this dissertation, we will examine institutional investor's impact on the initial public offering process and more specifically, the dual anomalies of underpricing and long run underperformance.

More generally, the asset allocation decision which involves investment in the optimal mix of assets that best reflects the goals of the fund (i.e. the optimal combination of risks and returns) can have far reaching effects on the distribution of resources across the domestic and global economies. For example, the increasing activity of institutional investors in emerging market economies may help the growth of these developing economies. However, this growth

may come at the expense of stability. Aitken (1998) found evidence that institutional investment increase auto-correlation in stock returns and creates price distortion. In so doing, institutional investment is a possible catalyst for the boom and bust cycle that has been evident in many developing economies. In a recent paper, Bhattacharya et al. (2011) show that the financial institutions' operating decisions (i.e. leverage and portfolio choices) can exacerbate the booms and busts of the business cycle. Other studies show that institutional investors contribute to the formation and bust of asset price bubbles (Shiller 2000; Griffin, et al. 2011). A thorough evaluation of the impact of institutional ownership on the wider economy is beyond the scope of this thesis. Rather, we focus on the impact of institutions on the equity market and more specifically on whether institutional investors' participation leads to more efficient financial markets and the elimination of market inefficiency.

2.2.3 Do institutional investors improve the efficiency of financial markets?

It is difficult to succinctly define market efficiency. We will examine the evidence for whether institutional investors add to the attributes of an efficient market – speed of price discovery and liquidity. By using their private information, institutional investors can help increase the speed with which information is impounded in the market price (Cohen et al. 2002; Gibson & Safieddine 2003; Boehmer & Kelley 2009). Yet institutional investors' trades can also cause distortions to prices. Since institutional investors require large holdings of stocks, the physical act of buying and selling such a large portion of a firm's holdings can trigger a temporary liquidity constraints in the market and lead to temporary mispricing (Sias et al. 2001; Bohl & Brzeszczynski 2006). Of greater concern is research that suggests that institutional investors trade in the same direction as other institutional investors which is commonly coined as herding (Nofsinger & Sias 1999; Sias et al. 2005; Dasgupta et al. 2010). Institutional herding tends to have greater impact than the herding of retail investors (Nofsinger & Sias 1999) and can lead to a prolonged period of price distortion (Dasgupta et al. 2010). Dasgupta et al. (2010)

shows that the stocks that are most sold due to institutional herding tend to underperform for a period of two years before there is a reversal in returns.

Some have argued that institutional investors are beneficial for the market because they are a vital source of liquidity. Hamilton (1978), Jennings, et al. (1997) and Fehle (2004) are among the studies which find that institutional ownership reduces the bid ask spread. Moreover Jennings et al. show that the results are not driven by institutional investors' preferences for liquid securities. On the contrary, Grainger causality analysis indicates in their study that it was the increase in institutional ownership that increased liquidity. Fehle (2004) also find that institutional ownership reduces the bid ask spreads. However he cautions that this negative relationship only holds for some types of institutional investors which leave open the possibility that other institutions could increase the bid ask spread. Still others have shown that institutional investors have a negative or no impact on liquidity (Glosten & Milgrom 1985; Chiang & Venkatesh 1988).

2.2.4 Institutional investors and market anomalies

The empirical evidence on the relationship between the presence of institutional investors and the micro-workings of financial markets appears to be inconclusive. Next we turn our attention to whether institutional investors can benefit the market as a whole by eliminating some of the known market anomalies. It should be noted that we are not proposing that institutional investors altruistically attempt to rid the market of anomalies. Rather, we examine whether institutional investors' trading eliminates some types of inefficiencies or constraints that cause anomalies. For their part, institutions often derive significant profits from exploiting the mispricing. For example, it has been said that the size effect has been eliminated by the investment activities of the small cap funds.⁵ Perhaps an equally valid measure of institutional

⁵ It should be noted that many studies still document the presence of a size effect, including Gharghori et al. (2009) for the Australian stock market.

investors' ability to eliminate market inefficiency arises in situations where there are constraints imposed on institutional investments. Han and Wang (2005) state that institutional investment constraints can take many forms including the size of the firms, limitations to exposure based on style or industry and restrictions to portfolio turnover. Irrespective of the source of the constraints, Han and Wang (2005) found that where there were constraints to institutional investments, firms tend to have longer post-earnings announcement drift and stronger momentum. On a similar theme, Phalippou (2007) argues that the absence of institutional investment may be responsible for the value premium anomaly apparent in many markets. He observes that the value premium is only present in stocks where there is an absence (or inadequate level) of institutional investment. Phalippou shows that the level of liquidity is strongly inversely proportional to the level of institutional ownership and argues that these stocks will carry significantly higher costs of arbitrage. He argues that it is the resulting higher transaction costs that perpetuate the mispricing that creates the value premium phenomenon. Phalippou shows that the value premium decreases monotonically for the decile of stocks with the lowest institutional ownership. They attract an average monthly premium of 1.8% compared to 0.1% for stocks with high institutional ownership.

A number of studies have shown that institutional investors are effective in the eliminating market anomalies (Kamara 1997; Gompers & Metrick 2001; Chan et al. 2004; Bohl et al. 2006). Although the focus of their study is on the characteristics of institutional investors' demand and its price implication for those stocks, Gompers and Metrick (2001) attribute the disappearance of the size anomalies to the increasing dominance of institutional investors in the equity market. Gompers and Metrick show that the annualised returns for small stock between 1980 and 1996 was 13.3% p.a. in comparison to the returns of large stocks which reached 15.9% p.a. They argue that as institutional investors have increased their stakes in the US equity market, so has institutional investors' appetite for large stock increases. In fact, they

show that over 50% of the increase in the relative price of large stocks can be attributed to institutional demand. They therefore conclude that the disappearance of the size anomalies was driven by institutional investment.

Both Kamara (1997) and Chan et al. (2004) give credit to institutional investors for the disappearance of the Monday seasonal effect. Kamara (1997) argues that constraint to arbitrage is the cause of the Monday seasonal effect. Since institutional investors have significantly lower transaction costs, they are able to exploit mispricing, and trade away the arbitrage profit and by inference, the Monday seasonal anomaly. Kamara reasons that institutional investors' ability to make such arbitrage trades is the reason that there was no longer a Monday seasonal effect in the S&P500 returns in the 1982 to 1993 period. His conclusion is supported by the evidence that the decline in the Monday seasonal in the period from 1962 to 1993 was positively related to the proportion of institutional trade to individual trades. Using institutional holdings data, Chan et al. (2004) also find that institutional investors play a part in the elimination of the Monday seasonal effect. They show that the Monday seasonal effect only exists in stocks with low levels of institutional ownership. They found that amongst the stocks with high institutional holdings, mean returns on Monday were similar to the rest of the week.

Elsewhere Bohl et al. (2006) studied the Polish market and found that there is evidence that the influx of pension funds eliminated the January effect. This result contrasts with the proposition put forward in other studies that institutional window dressing is one of the main explanations for the existence of the January effect. Haugen and Lakonishok (1988), Athanassakos (1992) and He et al. (2004) are amongst the studies that attribute the January anomaly to the window dressing activities of institutional investors. Bohl et al. found that the January effect was not present amongst a set of stocks that was actively traded by overseas institutions. Unfortunately their study suffered from significant methodological issues. In

particular, they failed to acknowledge that the January effect is a manifestation of the size premium (Roll 1987). So the fact that there is no evidence of higher returns amongst a small subset of stocks within the Polish market is not sufficient proof to show that the January effect has been eliminated. An equally valid explanation is that the developing Polish market has become more sophisticated.

Still others suggest that institutional investors may be responsible for some of the anomalies in the capital markets (Haugen & Lakonishok 1988; Athanassakos 1992; He et al. 2004; Woolley & Vayanos 2011; Cremers & Pareek 2010). Both Cremers and Pareek (2010) and Woolley and Vayanos (2011) attribute the momentum in the financial markets to the short-termism displayed by institutional investors. Cremers and Pareek (2010) found significantly higher momentum returns and price reversals for stocks with high ownership of short term institutional investors. According to Cremers and Pareek (2010) there is some evidence to suggest that institutional investors are responsible for the long term underperformance associated with corporate issuance.

Perhaps the most significant overriding theme in this literature review is the lack of consensus over whether institutional investors are of benefit; to their stakeholders, to firms through improvement in corporate decision making and to the reliable functioning of the stock market. There is certainly conflicting evidence over all the questions that we pose – including whether institutional investors are good for their shareholders, their stakeholders and the market. These are important questions for which there are currently no clear answers. In the meantime, the level of institutional ownership continues to grow and so the impact of institutional investors becomes ever more important. In the following chapters, we present analyses that we hope will bring greater clarity to some of these questions.

3 Chapter 3 Data and methodology

3.1 The data

3.1.1 The dataset

This thesis examines data from the Australian Stock Exchange (ASX) from December 1995 to December 2005. The study makes use of stock returns data, stock indices data, financial data (such as size and book-to-market ratios) but most importantly a set of unique share ownership data (see discussion below). Company accounting data was acquired from several sources: the Aspect database through the FinAnalysis and the Thomson Financial-DataStream. Information on stock returns and stock indices were retrieved from Thomson Financial-DataStream. In the sample construction process, we took special care to minimise the potential survivorship bias. All financial and stock returns data were compiled by combining the DataStream research lists for active stocks, FAUS and the research list for delisted stocks, DEAUDAU. Finally, the share ownership data was provided by the Securities Industry Research Centre of Asia-Pacific (SIRCA). Prior to a more detailed discussion on the data used, it is necessary provide a brief discussion of the ownership data which originated from the ASX CHESS system.

3.1.2 The ASX CHESS system and ownership data

This thesis utilised a unique set of ownership data known as CHESS (or the Clearing House Electronic Sub-register System) from the Australian Stock Exchange. CHESS is an electronic settlement and ownership transfer system that is administered by the ASX Settlement and Transfer Corporation (ASX CHESS Brochure). The electronic register system provides market participants with a fast and effective way to settle trades and transfer ownership of shares for companies registered on the ASX. Investors who wish to buy shares on the ASX can contact a CHESS sponsor (usually the broker) who can open a CHESS account on the investor's behalf. Once established, the account provides the investor with a record of his/her shareholdings in

ASX-listed companies. CHESS maintains a register of the shareholdings for each company on the ASX. Thus CHESS data provides a reliable representation of shareholdings in the companies listed on the Australian Stock exchange.

However it is important to note CHESS does not provide a full record for all shareholdings in a company. As alternative investors may choose to register their shareholdings through an issuer-sponsored register which all ASX registered companies are required to maintain an issuer-sponsored register (Comerton-Forde & Rydge 2006). Comerton-Forde and Rydge (2006) found that almost half the shares issued in Australia are registered through an issuer-sponsored register. Obviously our reliance on CHESS to obtain ownership data means we cannot detect the transactions of investors whose holdings are registered through the issuer-sponsored register. Fortunately we do not believe that this presents a major problem for our analysis because the investors who choose to use an issuer-sponsored register are likely to be long term investors such as family holdings, shares owned by management/venture capitalists or private equity holdings. The shareholdings of these investors are often strategic holdings which may be rarely traded (Comerton-Forde & Rydge 2006). The actions of these strategic investors are not the focus of our studies. Rather, this thesis will focus on the activities of active institutional investors who form opinions on the stocks and trade accordingly; fortunately these are the trading activities that can be detected by CHESS holdings.

CHESS ownership data are provided as aggregate data to protect the identity of the owners because institutional ownership information is highly sensitive and confidential. For each firm, the ownership data set provides the total percentage of the shareholdings owned by institutions and the total percentage of the shareholdings owned by individuals. The level of institutional ownership is calculated based on the sum of all shares held by the following investors: banks, other deposit taking institutions, nominees, insurance companies, superannuation funds, trusts, governments and incorporated companies. Put simply, we are

examining the impact of the actions of all institutional investors across the economy. On the other hand, individual holdings are the total shareholdings in a company that are not owned by institutions. Ownership levels are calculated as a ratio of total institutional (or individual) shareholdings over the total number of shares issued by the company that are registered in CHESS.

Moreover, the CHESS ownership data is provided on a daily basis. We believed that our use of daily ownership data represents a major advantage over previous studies. This is especially true for our event research on the impact of institutional ownership in mergers and acquisition and initial public offerings. We highlight the benefits of using daily ownership data through a discussion of the perspective of the Mergers and Acquisition.⁶ Previous studies (such as Ashraf & Jayaraman 2007; Harford et al. 2007; Qiu 2006) suffered from a major shortcoming, the reliance on 13F filings⁷ as the source for institutional ownership data. Although 13F filings by institutions can divulge a comprehensive picture of the ownership structure of the acquirers, institutions are only required to make 13F filings at the end of each quarter. For the purpose of an events study (such as a merger announcement), any 13F-deduced institutional ownership lacks precision. In most circumstances, the data will allow the researcher to detect and examine institutional ownership trading in the periods immediately prior and after the announcement. For example, Chen et al. (2006) examine changes in institutional holdings in the quarter prior to merger announcements. A real disadvantage of this data source is that the researcher can only make an inference rather than a direct conclusion about the institutional investors' behaviour. In this study, do not have this problem because the ASX-CHESS

⁶ Obviously the use of daily data also confers significant advantages in the study of IPOs.

⁷ Since 1978, the Securities Exchange Commission requires all institutions with greater than \$100 million in securities under management to report their portfolio holdings (Gompers and Metrick 2001). Institutions report their holdings by completing the Securities Exchange Commission's 13F forms.

institutional data is updated daily and provides a more detailed analysis of the trading activity around the merger announcement period.

3.1.3 Data selection and filtering

We included in the final sample all firms for which we have institutional ownership data. We were provided with the institutional holdings of the constituents of the S&P ASX500 (also known as the All Ordinaries Index) – an index that contains the largest 500 firms trading in the ASX⁸ – for the period November 1995 to March 2006. One benefit of studying of evaluating Stocks within the ASX500 is that it increased the probability that the sample contained only stocks that are sufficiently large and liquid to attract interest from institutional investors. To be included in the sample, the stocks must have records of institutional ownership, returns, market capitalisation and other firm characteristics (such as market-to-book value ratio, price-to-earnings ratio and price-to-book value ratio). The summary statistics of the final sample are reported in table 3.1.

⁸ It is important to note that a significant change occurred in the ASX index methodology in 2000 (Comerton-Forde & Rydge, 2006). Before April 2000, the composition of the All Ordinaries Index was determined by a set of criteria that considered both market capitalisation and liquidity. From April 2000, inclusion in the All Ordinaries Index became based solely on the market capitalisation of a company. The Index was expanded to include the largest 500 companies in the ASX and the resultant index captured 99% of the market cap of the ASX. Consistent with previous studies that make use of CHES data, we applied the current index structure for the entire sampling period.

Table 3-1 Summary Statistics of the Sample, 1996–2005

Year	Number of Firms	Average level of institutional ownership (%)	Median level of institutional ownership (%)	Av. market capitalisation (\$millions)	Median market capitalisation (\$millions)
1995	237	86.94	90.85	736.85	129.76
1996	289	85.21	89.43	863.03	146.84
1997	315	83.16	88.01	971.11	149.55
1998	339	80.64	86.14	1378.51	136.12
1999	377	78.22	83.49	1450.95	144.35
2000	436	75.98	80.07	1275.14	115.28
2001	442	74.26	77.44	1373.22	128.17
2002	473	73.14	76.36	1230.05	120.94
2003	476	74.18	77.41	1408.19	173.19
2004	476	74.85	77.86	1857.41	221.05
2005	464	75.13	78.10	2199.66	225.50
2006	490	75.43	77.97	2178.27	231.72

From Table 3.1 we can see that the sample contained 237 stocks at the beginning of our sample period in 1995. By the end of the sampling period, however, our sample had coverage of practically all the firms in the S&P ASX500. The table shows that the average level of market capitalisation has increased almost threefold from \$736 million to \$2.17 billion over the ten-year period. Yet the median market capitalisation of the firms in the sample only experienced a relatively small increase from \$129 million to \$231 million in the same period. The moderate increase suggests that the firms that were added to the sample were small firms. An examination of Table 3.1 also reveals an important fact that bears comment: the level of Institutional ownership has decreased over the period from 86.94% to 75.43%.⁹

⁹ At first glance, this decrease is inconsistent with the evidence of a general increase in institutional ownership in global financial markets. Previous studies including Gompers and Metrick (2001) and Boehmer and Kelley (2005) have shown that the level of institutional ownership has risen in the US market. Similarly Koh (2003) notes an increase in the level of institutional ownership in Australia. So why has there being an apparent decrease in the level of institutional ownership in our sample? We believe that a bias in data coverage is responsible this anomalous result. Remember in the early part of the sample, the data coverage was just a portion of the total number of shares in the All Ordinaries Index. Since the stocks that are least likely to be covered are the smallest stocks that are less attractive for the institutional investors, the resultant average institutional ownership level is likely to be subject to an upward bias. As the data coverage widens for the latter period of our sample, more small firms entered the sample which had the effect of reducing the average level of institutional ownership.

For each of the four studies in the thesis, we draw an appropriate subsample of firms from our primary sample. For example, we study the initial public offerings from newly listed issuers from the above sample. Similarly the mergers and acquisitions study examined the performance of the acquirers from the above sample of firms over the sample period.

3.2 Methodology

Due to the very different nature of the studies that are discussed in the following chapters, we delay a more in-depth description of the various techniques until the appropriate place in the relevant chapters. In the following section, we provide a brief introduction to the main methodologies employed in the studies.

3.2.1 Portfolio formation

The thesis employed several different methods of portfolio construction.

Monthly portfolio construction: Employing a method similar to Jegadeesch and Titman (1993), we constructed a portfolio with overlapping holding periods. At the end of each month, the firms were ranked according to a particular characteristic (in most circumstances, the level of institutional ownership or changes in the level of institutional ownership). Based on these rankings, we partitioned the sample into different batches (e.g. terciles, quartiles or quintiles). We gauged the performance of the various groups by estimating the buy and hold returns over a certain holding period (e.g. 12 months). For each month, the portfolio consists of the portfolio selected for that month as well as the portfolios selected in the previous $(J - 1)$ months. So the portfolio returns for a particular month will be the average return of all the portfolios formed over the past J periods (i.e. 12 months). In so doing, we are effectively employing a trading strategy that involves selling $1/12$ of the portfolio every month and replacing these stocks with the portfolio chosen in this month.

Event day portfolio construction: As detailed in the introduction, chapters 5 and 6 of the thesis involve event studies that examine the impact of institutional ownership on important corporate events, namely initial public offerings and mergers and acquisitions. For these studies, we adopted a different portfolio formation strategy. First, we estimated the returns with reference to the event date (absolute and excess returns) across the entire sample. Then the firms (initial public offering issuers or bidders) were ranked in accordance to their level of institutional ownership (or changes in the level of institutional ownership) as at the event date. Based on these rankings, we partitioned the sample into different batches (e.g. terciles, quartiles or quintiles). The returns for each portfolio are the average cumulative returns of the firms within the portfolio for the duration of the event window.

3.3 Risks, risks adjustment and abnormal returns

In order to determine whether risks played a role in the determination of the abnormal returns, we used a number of methods including the Carhart four-factor model to control for the risks inherent in the portfolios. As stated in the previous section, all excess returns were calculated after adjustment for the market returns. Depending on the suitability of the methodology to the particular studies, we have also estimated excess returns after accounting for size, book-to-market ratio and momentum. Ultimately our aim is to eliminate the possibility of risks-based explanations impacting on the results of our studies.

The Carhart four-factor model was one method that was employed to control for risks. Consistent with the methodology employed by Carhart (1997), we incorporated a momentum factor into the Fama French three-factor regression model. In Fama and French (1992) and Fama and French (1996), the authors propose that additional factors (namely the performance of small stocks relative to large stocks, SML and performance of value stocks relative to growth

stocks, HMB) should be imposed onto the traditional Capital Asset Pricing Model (CAPM) to take into account the risks associated with holding small and value stocks. However we favoured the utilisation of the Carhart four-factor model rather than the three-factor model. One of the aims of this dissertation is to determine whether institutional investors are superior investors, so it is in our interests to minimise the possibility that positive feedback trading (or momentum strategy) may be responsible for the abnormal returns¹⁰. Controlling for momentum is especially important when building portfolios on the basis of institutional ownership flows because of the potential effect that herding and the concomitant price pressure impact may play on the returns of the institutions.

The Carhart (1997) 4 factor model is as follows:

$$(R_{it} - RF_t) = \alpha_{it} + b_{it}(R_{mt} - RF_t) + s_{it}SMB_t + h_{it}HML_t + p_{it}PY1YR_t + e_{it}$$

Where:

$R_{it} - RF_t$ is the excess returns of the portfolio over the risk free rate

$R_{mt} - RF_t$ is the value-weighted excess return of the market portfolio

α_{it} is the alpha of the Carhart four-factor model

SMB_t is the difference between average returns of the small portfolios and the average returns of the large portfolios

HML_t is the difference between average returns of the high book-to-market portfolios and the average returns of the low book-to-market portfolios

$PY1YR_t$ is the difference in cumulative returns between a portfolio of past winners and past losers

e_{it} is the error term

¹⁰ This is especially important for evaluating the performance of the portfolios built on the basis of institutional ownership levels and institutional ownership flows in chapter 4.

The dependent variable $R_{it} - RF_t$ is the excess returns of the portfolios in excess of the risk free rate. Turning our attention to the factors included in the model, the market factor is represented by the excess market return $R_{mt} - RF_t$, where the market return R_{mt} is the average of the returns of the six portfolios. The risk-free rate RF_t is the one-month Treasury bill rate. The other three factors account for the performance of the small stocks relative to the large stocks (SMB), the performance of the high book-to-market relative to the low book-to-market firms (HML) and the performance of the high momentum stocks relative to the low momentum stocks, “losers” (PY1YR). The four factors of the Carhart model were computed according the framework and method proposed by Carhart (1997).

4 Chapter 4 – Are institutional investors superior investors?

4.1 Introduction

The question of whether institutional investors are more skilful has become increasingly important as institutional investment has grown in size and reach. Institutional investors now own more than 50% the equity in the stock markets in the United States, Japan and Australia. More importantly these large investors are responsible for more than 70% of the trade on the American stock market (Schwartz & Shapiro 1992). In Australia, the reach and influence of institutional investors was aided and abetted by the introduction of compulsory superannuation in the early 1990s. Thus it seems appropriate to examine the issue of whether Australian institutional owners are superior investors.

The aim of this chapter is to further explore the performance of institutional owners. We believe that our study will contribute to current research from two perspectives. Firstly, to our knowledge this is the first comprehensive study of the performance of institutional investors in the Australian stock market. Previous Australian research has concentrated on a rather small subsection of the institutional investors (namely fund managers). Our study also differs in methodology to prior studies. Many of these studies have concentrated on the performance of a particular group of institutional investors. Grinblatt, Titman and Wermers (1995), for instance, examined the performance of fund managers. Foster et al. (2004) used a regression technique to examine the relationship between changes in institutional ownership and future returns. Other studies such as Ovtcharova (2003) have made a direct comparison between the performances of high institutional ownership firms to similar firms with lower levels of institutional ownership (i.e. they used a matching firm strategy). Our aim is to examine the performance of these institutional investors from a portfolio perspective. We build a portfolio based on the levels of ownership and ownership flow and examine whether institutional

ownership levels (and flows) have a significant impact on portfolio performances. Finally we will use this portfolio approach to determine whether Australian institutional investors exhibit greater skills in the selection of stocks with particular characteristics.

4.2 Literature review

4.2.1 Institutional investors and informational advantage

Conventional wisdom suggests that institutional investors represent the smart money in equity markets. With their vast financial resources and access to financial experts, institutional investors should be able to profit from generating private information and trading on it to earn superior returns. Proponents of institutional investment suggest that institutions can take advantage of economies of scale in the gathering and processing of information, thus they are able to buy stocks that outperform the market. There is ample empirical evidence to support the notion that institutional investors are better informed and are able to profit from their informational advantage (Almanagar et al. 1999; Bartov et al. 2000; Ke & Petroni 2004; Amihud & Li 2006). For example, Ke and Petroni (2004) found superior information allows active institutional investors to predict breaks in consecutive earnings increases. In so doing, these institutions are able to circumvent any negative stock price reaction to earnings announcements. Similarly Amihud and Li (2006) show that institutional investors are able to take advantage of their superior information prior to dividend announcements. These informed investors have a tendency to buy stocks prior to dividend increases and sell them afterwards. Others have shown that institutional investors are able to generate profit from informational advantage in initial public offerings. This raises the question of whether institutional investors' informational edge in various corporate events results in overall higher returns for their stakeholders.

4.2.2 The investment performance of institutional investors

A solid body of literature is devoted to the performance of institutional investors. Much of this research has been devoted to the analysis of the performance of various types of Institutional investors such as superannuation funds, insurance companies, banks and of course, mutual funds.

4.2.2.1 Superannuation and pension funds

In recent years, mandatory retirement savings requirements have put the spotlight on the performance of superannuation/pension funds. Yet the relative scarcity of data means that there have been few US studies on the performance of superannuation/pension funds. Unlike US mutual funds, pension funds are not subject to stringent reporting requirements such as the record of quarterly holdings in 13F forms. Many of the available studies relied on holdings on a managed account level which makes it very difficult to elicit the performance of the specific funds (Bauer et al. 2010) overcame this problem through the use of the CEM Benchmarking Incorporated dataset, which reports not only fund returns but also importantly the funds' benchmarks. They show that on average, funds are able to generate small benchmark-adjusted alphas of 45 basis points per annum. It is interesting that Bauer et al. highlight the performance of small funds and small cap fund managers as stand-out performers amongst the cohort of pension fund managers.

In contrast to the scarcity of US literature, there is a well developed body of literature on superannuation funds in Australia (Bird et al. 1983; Drew & Stanford 2000; Bilson et al. 2004; Bilson et al. 2005). Bird et al. (1983) was one of the first studies to examine superannuation funds performance in Australia. They found that most of the funds in their sample underperformed against a market benchmark. Several decades on, a number of studies including Drew and Nolan (2000), Drew and Standford (2001a) and Drew and Stanford (2001b) found that Australian superannuation funds continue to generate negative alphas after

controlling for risk factors. Bilson et al. (2004) also fail to find any evidence of superior returns amongst retail super funds but they do find that some managers, namely small and growth managers were able to achieve superior performance. Consistent with evidence of international studies on performance persistence, however, Drew et al. (2003) and Bilson et al. (2005) show that it is difficult for fund managers to maintain superior performance.

4.2.2.2 Insurance companies' performance

The insurance industry has long recognised that investment income can have a significant impact on the premium charged but more importantly on the yield to their stakeholders (Herron 1968; Ferrari 1968; Smith 1989). Both Herron (1968) and Ferrari (1968) lamented that there was a separation between the investment department and insurance side of the business. Herron goes on to explain that effective investment management can improve the competitiveness, increase the market share (i.e. premium volume) and the profitability of the insurer. More than 30 years later, however, Calandro and Lane (2002) argue that the insurance industry still fails to include investment performance as an overall measure of operational performance. So it is not surprising that the investment performance of insurance companies remain a much under-researched topic. Of the scarce research available, Schlarbaum (1974) showed that the portfolios of property liability insurance managers substantially underperform compared to a random portfolio of common stocks of equivalent risk. A study by Bogle and Twardowski (1980) presents an interesting comparison between the returns of various classes of institutional investors including insurers. The authors found that insurers' investment performance compared poorly with both mutual funds and investment counsellors.¹¹ Kleiman and Sahu (1991) show that after risks adjustment, the portfolio of life insurance companies registered similar performance levels to the market in general. More recently, Cooper and Smith (2009) present evidence to show that insurance companies invested less than 3% of the

¹¹ Considering the bulk of the mutual fund literature indicates that mutual funds underperform in comparison to the market as a whole, Bogle and Twardowski's findings reflect very poorly on the insurance sector's investment performance.

net assets in common stocks in the period between 2002 and 2008. Moreover the total gross returns from these investments underperformed against the S&P 500 index in four out of five years (Cooper and Smith 2009).

4.2.2.3 Mutual funds' performance

Finally we discuss the institutional investments that have received most attention from scholars: mutual funds. The first literature on mutual fund performance dates back to over 50 years ago. Jensen (1968) conducted one of the foundation studies in mutual fund performance. He examined the performance of 115 mutual funds in the 1945–64 period and found no evidence that mutual fund managers possess any ability to forecast returns. In a damning critique of the fund managers' skills, Jensen concludes that there is no evidence to suggest that managers were "able to do significantly better than that which was expected from mere chance" (Jensen 1968, p. 415). Jensen's comment was to set the tone of an ongoing debate over fund managers' performances. Over the next 50 years, much research has been devoted to fund performance in the US, the United Kingdom, Australia and elsewhere. Notwithstanding the numerous disagreements and controversy about risk adjustments in relation to the measurement of performance, methodology, survivorship bias and quality of datasets (especially in early studies), there is still no agreement on whether fund managers exhibit greater skills than the average investor. On a fund returns level, the balance of evidence suggests that mutual funds generally underperform compared to the market. Wermers (2000), Barras et al. (2010) and Kosowski et al. (2006) are amongst the many studies that show the average managers do not exhibit any superior skills. In fact, all of these studies showed that the fund managers underperform after adjustment for risks. For example, Wermers (2000) shows that on average, US equity manager underperformed against its market, size, book-to-market and momentum benchmarks by 1.2% p.a. Both Barras et al. (2008) and Kosowski et al. (2006) found that the underperformance is of a smaller magnitude, in the region of minus 0.5% p.a.

Lest we lead the reader to believe that all fund managers underperform, it is necessary to point out that a number of studies have shown that a sub-section of managers are truly skilful (Grinblatt & Titman 1993; Chen et al. 2000; Wermers 2000; Wermers 2003; Kosowoki et al. 2005; Barras et al. 2010). Wermers (2000), for instance, found that high turnover managers exhibit significantly higher returns than their low turnover counterparts. He shows that at least some of the superior investment performance can be attributed to superior investment skills. In his 2003 study, Wermers identifies another sub-group of managers, funds that show a large diversion from their benchmark, are able to outperform funds that take on smaller “bets”.

4.2.3 Methodology and the advantages of using Australian data

The variety of methods that have been used may provide at least a partial explanation for the mixed findings. Let’s examine this issue from the view of the research into mutual funds. A risk-adjusted alpha may not be a true indication on the institutional investors’ investment skills. Fund returns do not only reflect the yield from investment: they can also be affected by other factors including fund expenses (such as advertising, rebalancing and managers fees), level of cash holdings for liquidity purposes and yields from other investments. Wermers (2000) highlights the importance of these “other factors” in the determination of fund returns. He shows that in spite of the aforementioned overall fund underperformance, the stocks held by funds actually outperformed the Center for Research in Security Prices, CRSP index by 1.3%. Poorer returns from the funds’ holdings of other assets accounts for 0.6% of the overall underperformance of the managers. Wermers argues that the substantial transaction costs and fund expenses account for 1.6% of the difference between fund returns and holdings returns. Cuthbertson et al. (2005) also point out that the average total expense ratio of approximately 50 basis points is of similar dimensions to the fund underperformance documented in many studies. The implication is that in the absence of such a measure, the average fund performance would be similar to market returns.

In order to determine whether institutional investors are truly skilful, it is necessary to adjust for operational costs of the funds. One method of circumventing this problem is to examine the holdings of the portfolio manager.¹² In his comprehensive 2006 survey papers, Wermers underlines the benefits of analysing fund performance through a holdings-based approach which include avoiding the benchmark-error problem, increasing the benchmark accuracy, improving the ability to identify the source of value added and of course, the ability to assess the managers' performance before fees. Using a holdings-based approach, Daniel et al. (1997), Chen et al. (2000), Wermers (2000) and Avramov and Wermers (2006) are amongst the US studies which show that stocks held by institutional investors can generate higher returns. In Australia, Pinnick (2003) studied the monthly portfolio holdings of 35 Australian active equity fund managers and found evidence consistent with managers possessing superior investment skills.

Another method of circumventing the issue of transaction costs is to examine the performance of the stocks that have attracted the highest level of institutional ownership and the firms that have attracted the greatest institutional trading. This method essentially examines the performance of all the sub-groups of institutional investors as a whole across the economy. It is this method that we employ in this chapter. It is important to reiterate that there is no consensus on whether institutional investors possess any superior investment skills compared to any other group of investors. That is one of our prime motivations for conducting research in this area. We will now turn our attention to the literature that examines institutional investors' skills by examining institutional ownership levels and institutional ownership flows.

¹² Wermers (2006) provide a thorough decomposition of the benefits, challenges and methodologies involved in the examination the stockholdings of fund managers.

4.2.4 Does greater institutional investment in a company lead to greater stock returns?

A number of studies have shown that firms with high levels of institutional ownership outperform firms that have low levels of institutional ownership. Gompers and Metrick (2001), Ovtcharova (2003), Osagie et al. (2005) and Yan and Zhang (2009) show that institutional ownership levels can predict future returns. Ovtcharova (2003) found that large firms with high levels of institutional ownership outperformed their low institutional ownership counterparts by 0.6% per month. Interestingly she argues that as institutional ownership does not change dramatically over time, her findings can be regarded as support for the notion that firms with higher levels of institutional ownership yield higher returns. It is noteworthy that Ovtcharova's study only found an "institutional ownership-level effect" amongst the largest stocks. She argues that the "institutional ownership-level effect" is confined to large firms because the returns of small firms are subject to mispricing due to illiquidity and survival bias, both of which may put an upward bias on stock returns. This argument remains unconvincing. If an institutional ownership-level effect exists, it seems logical that it would be present for small firms as well as large firms. Indeed some would argue that institutional investors should have greater informational advantage in small stocks. For example, Nofsinger and Sias (1999) show that institutional investors are able to exploit the greater information asymmetry of small stocks to generate superior returns. Moreover institutional investors are less likely to invest in smaller firms (due to illiquidity). They are only likely to invest in the small firms for which they can see the greatest opportunity for profit. So firms with a high level of institutional investors should earn a higher return regardless of the firm's size.

It is interesting that Gompers and Metrick (2001) also found that the stocks with more institutional investors yield earned higher returns. Yet these researchers found a very different reason for institutional ownership's success at predicting future returns. Rather than being

smarter investors, Gompers and Metrick claim that the higher returns can be directly attributed to the increase in institutional ownership in the stock market. In their sampling period of 1980 to 1996, institutional investors' stake in the stock market ballooned from 19% to 37.1%. The authors argue that it is this composition (of stake in the stock market) effect and the associated demand for stocks that has driven the subsequent increase in stock prices and thus the higher stock returns. Since institutions have a preference for stocks of certain characteristics (i.e. large and liquid firms), they estimate the composition shift can account for 50% of the price increase of large stocks relative to small stocks over the period. This increase is equivalent to 2.3% excess return per annum over the sample period.

It is important to note that the evidence of the positive relationship between institutional ownership and stock returns is by no means conclusive. For instance, Chen et al. (2000) did not find any evidence that firms with higher levels of institutional ownership earn higher returns than stocks with lower levels of fractional holdings in institutional ownership. Although the main thrust of Cai and Zheng's 2003 paper is concerned with momentum in the stock market, they also found a positive relationship between institutional holdings and contemporaneous stock returns. Cai and Zheng note that the relationship between institutional ownership flow (i.e. trading) and contemporaneous stock returns is stronger than the correlation between institutional ownership levels and stock returns. This is unsurprising because trading should have a greater impact on stock returns than the passive act of holding a stock. As Chen, et al. (2000) note, investors may decide to maintain holdings of a stock for reasons that are not related to performance. For example, an investor may hold on to a stock for a strategic motive such as maintaining a toehold for a potential takeover. On the other hand, the decision to buy and sell stock requires an investor to form a clear opinion of the firm's future. So there should be a much stronger relationship between stock flows and returns. Lakonishok et al. (1992), Wermers (1999), Nofsinger and Sias (1999), Forster, et al. (2004), Griffin et al. (2003) and Sias

et al. (2006) are amongst the studies that have documented a strong contemporaneous relationship between changes in institutional ownership and stock returns. Moreover, the impact of institutional ownership flow can be very dramatic. Using quarterly data, Wermers (1999) also found strong evidence of a strong relationship between changes in institutional ownership and contemporaneous returns for a subsection of institutional investors, namely mutual funds.

Now it is important to point out that there are a number of possible causes for the strong correlation between institutional ownership flows and contemporaneous stock returns. The most obvious is that institutional investors are better informed and possess the necessary investment skills to buy stocks that yield higher returns in the short run. However there exist alternative explanations for this relationship between institutional ownership flows and contemporaneous returns. Institutional investors may conduct positive feedback trading and buy past winners which will create a positive relationship between institutional flows and returns (Sias et al. 2006). The positive correlation is also consistent with institutional investors trading in the same direction. Recent studies have shown that institutional investors can have a significant impact on prices (Nofsinger & Sia.1999; Dasgupta et al. 2010). Finally the direct impact of institutional trades such as price pressure may be responsible for the positive contemporaneous correlation between institutional ownership flow and returns. Price pressure refers to situations where strong demand for a stock from a block of investors will lead to a rapid increase in the price of the stock. The large demand for the stock will push the share price above its fundamental value. Over time, stock prices will slowly readjust back to their fundamental level. Studies have shown that both individual institutional trades (Keim & Madhavan 1997; Chan & Lakonishok 1995) and aggregated institutional trades can move prices.

4.2.5 Past evidence: can institutional ownership predict future returns?

From the discussion, it is clear that any evaluation of institutional investors' ability must also take account of their ability to forecast future returns. In other words, it is necessary for their trades to generate excess returns beyond the information (or formation) period. Empirical studies including Grinblatt et al. (1995), Nofsinger and Sias (1999), Chen et al. (2000), Sias et al. (2006) and Yan and Zhang (2009) have shown that institutional investors are able to forecast higher future returns.

Chen et al. (2000) examined what they describe as 'virtually all US mutual funds' (Chen et al. 2000, p. 346) in the 1975–1996 period and found that the stocks that were purchased by institutions performed significantly better than the stocks that they sold. In fact, for the year after the trade, the stocks that were purchased by institutions performed 5% better than the stocks that were sold by institutions. The authors conclude that this evidence strongly suggests that institutional investors were superior in choosing their investments. Bennet et al. (2003) also found a 5% difference in returns between the quintile of stocks that were most heavily purchased by institutional ownership and those stocks that were most heavily sold by institutions. However, this differential in returns only existed for a sample of small stocks. For large stocks, there was no significant difference in returns between the stocks purchased and sold by institutional investors. Bennet et al.'s results confirm Wermer's (1999) findings that show institutional investors have the greatest information advantage when investing in small stocks.

Yet the question of whether institutional investors can forecast future returns is far from resolved. Like Bennett et al. (2003), Yan and Zhang (2009) show that only short term institutional investors are able to forecast future returns. Consistent with Metrick and Gompers (2001), Yan and Zhang show that the levels of institutional ownership are able to successfully forecast one-quarter and one-year future returns. After separating institutional

ownership levels into lagged institutional ownership and institutional trading (in the current quarter), both lagged institutional ownership level and institutional trading can predict future returns. However the authors show that only short term institutional investors exhibits superior investment skills.

Still others contend that institutional investors cannot yield superior returns (Cai & Zhang 2004; Watkins 2006; Dasgupta et al. 2010). Cai and Zhang (2004) show that a negative relationship exists between lagged institutional trading and returns. They found that stocks that were subject to high institutional demand were stocks that experienced high positive excess returns before and during the institutional investors buying into the stocks. However, any excess return peters out soon in the quarter after the institutional purchases. Overall, both the firms that were subject to the greatest institutional buying and those that were subject to the greatest institutional selling had excess returns close to zero in the 24 months after the institutional trading. Several recent studies present even more damning results for short run and long run reversals of stocks that were heavily purchased by institutions. Watkins (2006) presents evidence that suggests institutional trading is responsible for short term reversals in some stocks. He found that those firm that experienced positive returns for seven days or more tend to yield lower future returns. Given that the reversals only occur for firms with the highest levels of institutional ownership, Watkins concludes that institutional investors' overreactions may be the cause of the reversals. More recently, Dasgupta et al. (2010) show that institutional trading, more specifically herding, is associated with long term reversal of stock returns. The key to the long run reversal is herding triggered by persistence in institutional trading. If an institution repeatedly buys or sells a stock over a number of quarters, other institutions infer the institution has private information and imitate their actions. This creates persistence in portfolio choice. The stocks that are subject to persistent institutional buying (or selling) will experience high (or low) returns in the short run but will

underperform (or outperform) over a longer horizon. Dasgupta et al. (2010) shows that stocks that were sold by institutions over the span of three to five quarters outperformed those stocks that were persistently purchased by institutions after a two-year period. Put simply, Dasgupta et al's results suggest that institutional trading is in fact a poor predictor of long-term returns.

Sias, Starks and Titman (2006) also argue research methodology is important in the institutional literature. They argue that reliance on 13F quarterly holdings data has frustrated previous attempts to explain the quarterly relationships between institutional ownership and contemporaneous returns. In the spirit of Sias et al. (2006), we have chosen to use a unique set of daily holdings data from the Australian stock market. The use of Australian data provides a number of advantages. Firstly, the bulk of the literature relies on data from the US market. Therefore, the Australian market provides the opportunity to conduct an out-of-sample test of institutional investors' ability to generate excess profit. The availability of precise data on institutional ownership on a daily basis enhances the precision of our research. Third, Australia being a relatively small financial market, institutional investors may have a greater impact than they do in other markets.

4.3 Methodology & Data

4.3.1 Data

For the first study, we utilised the full set of data as described in section 3.1.3. As we have stated previously, our access to institutional ownership was confined to the stocks that were constituents of ASX S&P500 (also known as the All Ordinaries index). Rather than replicating the description, please refer to the previous section for a description of the sample.

4.3.2 Choice of methodology

In order to examine whether institutional investors are superior investors, we created portfolios based on both institutional ownership level and institutional ownership flows (changes in institutional ownership). This method is in contrast to some previous studies which employed match firm strategies (see Ovtcharova 2003). Whereas a “matching firm” method may be useful and appropriate in analysing the impact of institutional ownership on company performance, we favour the use of a portfolio method when analysing the performance of institutional investors as our interests are centred on whether institutional investors are able to generate higher returns for their stakeholders.

4.3.3 Portfolio formation and estimation of returns

Portfolios are formed according to the level of institutional ownership or institutional ownership flow. This study divides the data into quartiles based on institutional ownership level or institutional ownership flow. Each portfolio is held for a 12-month holding period.¹³ Returns are estimated on a monthly basis. For each portfolio, we estimated the average excess returns of its constituents. Abnormal returns are calculated as an excess of the portfolio returns over the market returns. The study uses several measures of market returns. For the purpose of consistency, most of the results are estimated using a benchmark return of the S&P ASX 500¹⁴. However we extend our analyses by using size-adjusted returns to eliminate the impact of the size effect on the portfolio performance. Finally we apply a four-factor model¹⁵

¹³ We have also formed portfolios for holding periods of 24 month. They provided very similar results to the reported 12 months holding periods.

¹⁴ We have also conducted analysis using different benchmarks such as the average of all stocks in the sample. We can report that there were similar findings.

¹⁵ We employ the four-factor model as described in Carhart (1997). The Carhart four-factor model encompasses the Fama French three factors of beta (systematic risk), SMB (the size premium or small stocks minus big stocks) and HML (the book-to-market premium or high minus low book-to-market stocks). Carhart (1997) also includes one-year momentum as an additional risk factor in the 4 factor model. Moreover we have also calculated a liquidity to determine whether a liquidity premium is present in any of the institutional portfolio.

to assess the extent to which size, value and momentum impact on the portfolio returns. It is important to note however that the results proved to be similar regardless of what benchmark was used in the analysis.

The cumulative excess returns were calculated using an equally weighted average return method. First, portfolios were formed on the basis of either institutional ownership or institutional ownership flows. The next step involved the calculation of excess returns on a stock-by-stock basis for each month within our sample. Then we derived an equally weighted average excess monthly return for each portfolio. Finally the cumulative excess returns for the holding period is simply an average of the accumulated monthly returns across all the portfolios in the sample. For example, the two-month cumulative excess return for a particular portfolio is the accumulated two-month excess return for the 125 portfolio (with the same characteristics in our sample).

4.4 Empirical results

4.4.1 Level of institutional ownership and returns.

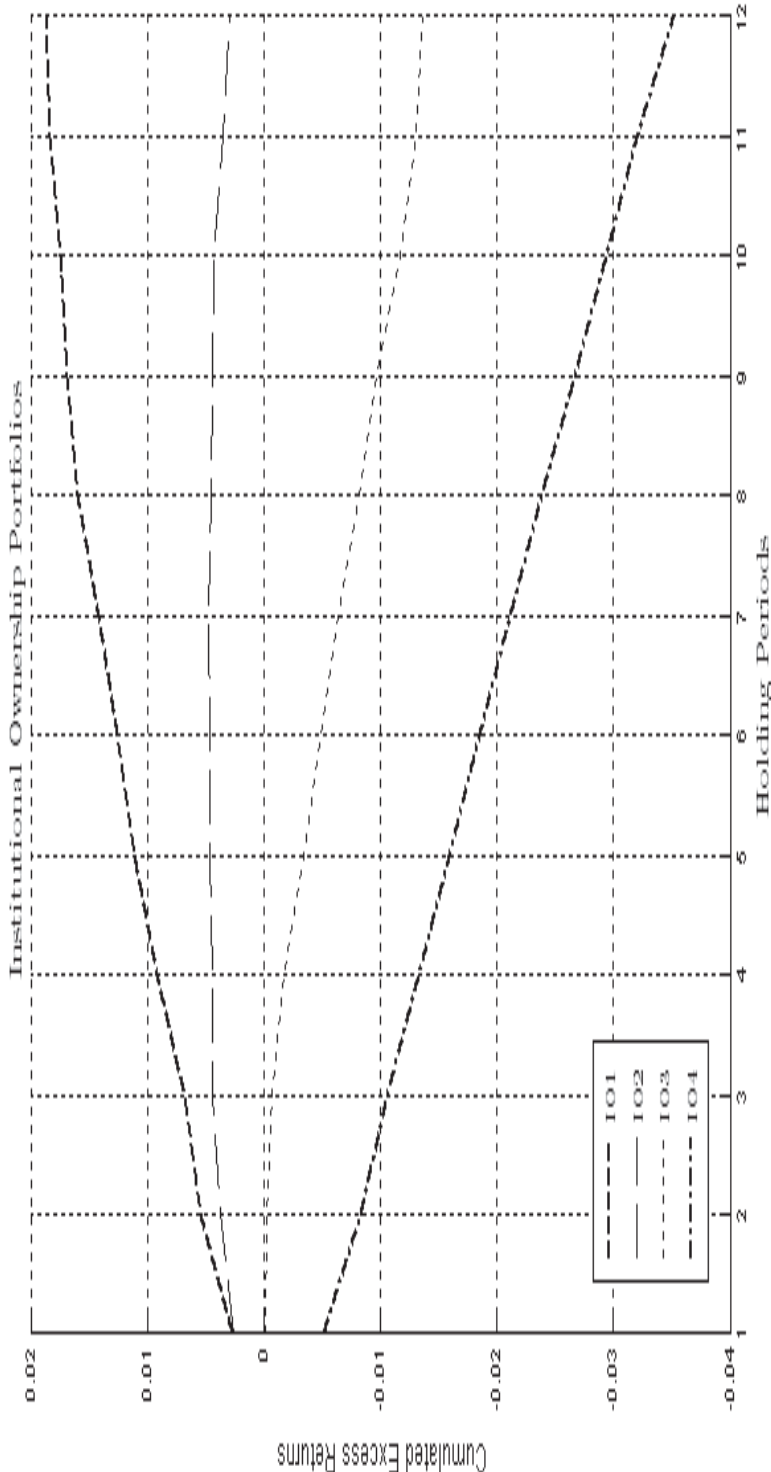
In Figure 4.1, we present the results of portfolios built on the level of institutional ownership. It is evident that the portfolio of firms with a low level of institutional ownership outperformed the market by approximately 2% over a 12-month period. Moreover an investment strategy (based on shorting high institutional ownership firms and taking a long position long on low institutional ownership firms) earned an excess return of 7% over the 12-month period.¹⁶ The Figure 4.1 also shows that the cumulative excess return decreases monotonically in portfolio rank. In so doing, the result highlights the inverse relationship between the level of institutional ownership and returns. These results are in contrast to the results found in

¹⁶ It is notable that the large difference in performance is mainly due to the poor performance of the high institutional ownership portfolio (IO4). Portfolio IO4 underperformed the market in the 12 month period by approximately 5%; which is statistically significant at the 1% level.

previous studies (Gompers & Metrick 2001; Ovtcharova 2003; Cai & Zheng 2003) which have found high institutional ownership firms yield greater returns. It is worthwhile to note however that our study adopts a somewhat different methodology to previous studies. For example, Ovtcharova (2003) estimates her results through the use of a matching firm method and applies the three-factor model in returns estimation. On the other hand, this study relies on comparing the returns of portfolios of stock with different institutional ownership levels. We believe that our method provides a broader and more realistic analysis of institutional investors' performance. Our results are more comparable with Chen et al. (2000) who found that firms with high institutional ownership do not exhibit superior investment performance.

Figure 4-1 Performance of institutional ownership portfolios for the period ((full sample))

This figure shows the cumulative excess returns of portfolios that are formed on the basis of the level of institutional ownership. For each month from November 1995 to March 2006, all available stocks were sorted based on their level of institutional ownership with those in the bottom quartile being designated as IO1 and those in the top quartile being designated as IO4. Thus IO1 represents a portfolio comprising the quartile of firms with the lowest levels of institutional ownership and IO4 quartile represents the portfolio of firms with the greatest levels of institutional ownership. After formation, each portfolio is held for a maximum of 12 months and is then liquidated. Excess return is defined as the stocks' returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index).



One factor that may heavily influence our result is firm size. Since institutional investors require liquidity in their shareholdings, they will mainly invest in large firms. This is confirmed by Table 4.2 which shows the average market capitalisation of each institutional ownership portfolio.

Table 4-1 Firm Characteristics of the institutional ownership portfolios

Table shows the median characteristics of the various portfolios built on the level of institutional ownership. The firm characteristics are calculated by calculating the median level of each item for each period, then applying an average of all the median values over the entire sample period. To form the portfolios, companies are sorted by the level of institutional ownership and then divided into quartiles. Each quartile is placed into portfolios with IO1 representing the quartile of firms with the lowest level of institutional ownership and so on.				
	Market capitalisation (\$ million)	Price to earnings ratio	Market-to-book Value	Price-to-book Value
IO1 – Low (Bottom Quartile)	48.81	15.02	1.50	1.60
IO2	126.73	14.21	1.55	1.63
IO3	241.68	15.63	1.70	1.75
IO4 – High (Top Quartile)	482.12	16.20	1.66	1.72

It is evident that there is a strictly monotonic positive relationship between institutional ownership level and the market capitalisation of the firm. The average size of the firms in the highest level of institutional ownership is \$482million which dwarfs the average market capitalisation (\$48m) of the firms with the lowest level of institutional ownership. In other words, the firms in the largest portfolios are on average almost ten times larger than the firms within the lowest institutional ownership portfolios. Given the substantial difference in the size of these firms, it raises the possibility that the poor performance of the high institutional ownership portfolios may simply be a manifestation of the size effect.¹⁷ In the next section, we

¹⁷ The final study of this thesis provides indirect but strong evidence of the persistence of the size effect in the Australian stock market. In Chapter 6, we examine the turn-of-the-year effect in Australia and find

seek to examine the possibility that our results may be influenced by firm size. We investigate whether there was a size effect in the sample period.

4.4.2 Size effect in Australia and size adjusted portfolio returns

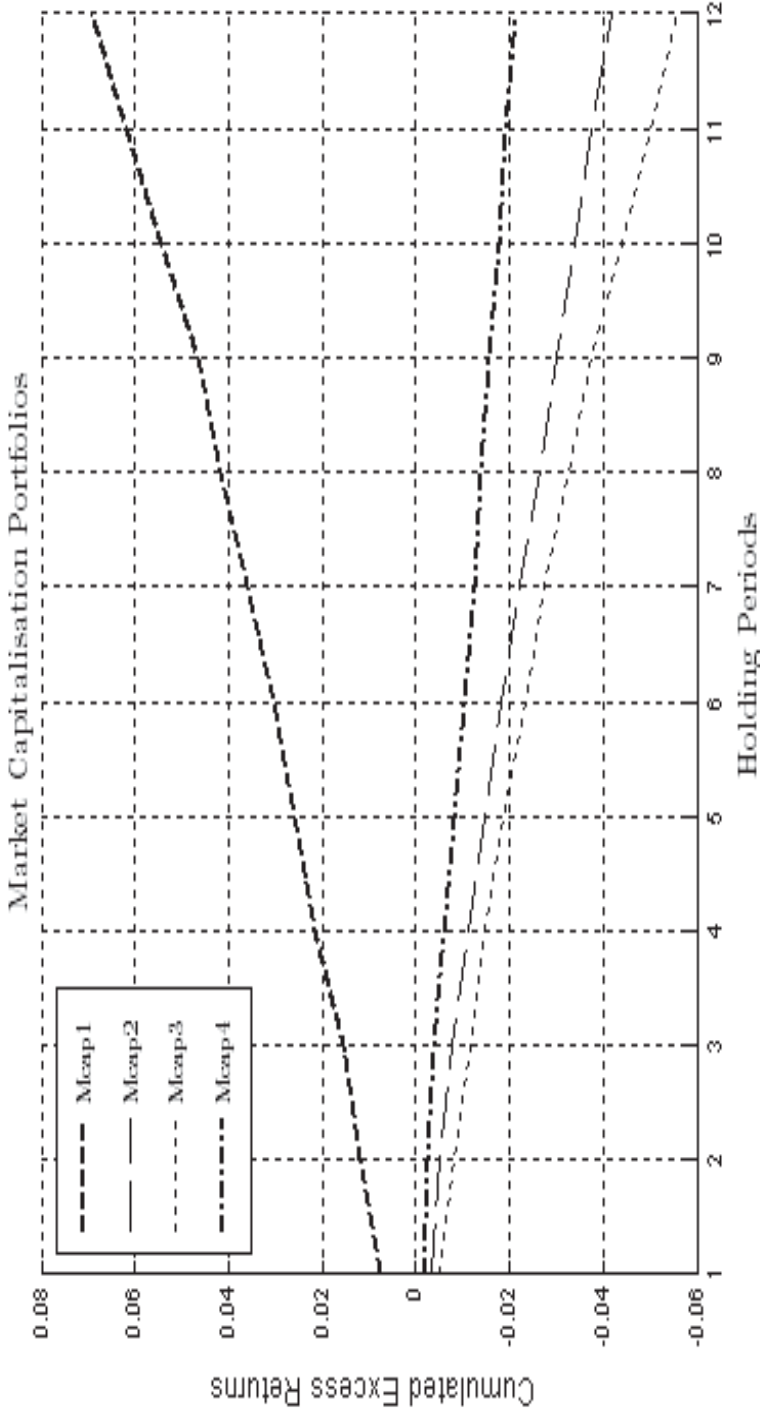
Consistent with a number of previous studies (Brown et al. 1983; Gaunt et al. 2000; Gharghori et al. 2009; Bettman et al. 2011), we find a size effect in the Australian stock market. Figure 4.2 indicates that a substantial size effect existed in Australia over the 1995–2006 period. A portfolio comprising the quartile of smallest firms earned cumulative excess returns of approximately 7% over a 12-month period¹⁸. Given that we have shown that institutional investors have a tendency to tilt their portfolio toward large cap stocks, it seems sensible to examine whether the underperformance of high institutional ownership firms is due to size tilts or other common risk factors.

that small firms outperform large firms by 7.01% and 5.46% in the months of January and July respectively.

¹⁸ We wish to note that we have performed analysis using size adjusted returns for the portfolios built on institutional ownership. We can report that the results remained unchanged. The negative and monotonic relationship between institutional ownership level portfolios and returns is robust to size adjusted returns.

Figure 4-2 Performance of market capitalisation portfolio for the period

The figure shows the cumulative excess returns of portfolios that are formed on the basis of the level of market capitalisation. For each month from November 1995 to March 2006, all available stocks were sorted based on their level of market capitalisation with those in the bottom quartile being designated as Mcap1 and those in the top quartile being designated as Mcap4. Thus Mcap1 represents a portfolio comprising the quartile of firms with the lowest levels of market value and Mcap4 quartile represents the portfolio of the largest firms. After formation, each portfolio is held for a maximum of 12 months and then is liquidated. Excess return is defined as the stocks' returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index).



4.4.3 Portfolio returns and risk factors

We checked the robustness of the results through the use of a four-factor model¹⁹. Table 4.2 presents the results of an analysis of the four-factor risk loading on the portfolio of institutional ownership. The results indicate the firms with low institutional ownership still exhibit superior performance after we take into account the four factors of market risk, the size premium, the value premium and one-year momentum. Table 4.2 shows that the alphas were 0.25% per month for the portfolio of low institutional ownership. Moreover, there is a negative monotonic relationship between the four-factor alphas and the institutional ownership portfolio. It is apparent that superior performance of the portfolio fund with the lowest level of institutional ownership cannot be explained by risks factors.

Turning our attention to the factor loading, Table 4.2 provides further evidence for our conjecture that the firms with low institutional ownership are the smaller firms. Indeed the analysis highlights a significant large cap tilt for the top two quartiles of institutional ownership and a significant small cap tilt for the bottom two quartiles. No similar discernable pattern emerges in the sensitivity-to-value factor and the sensitivity-to-momentum factor. Thus the adoption of value strategy or price momentum does not appear to play a major role in explaining the variation in performance across the four portfolios. The one exception is portfolio IO2 which registered a negative and significant relationship with both the sensitivity to value and the one-year momentum factor. So the relatively poor performance of IO2 may be attributed to the fact that the portfolio contains growth stocks and loser stocks.

It is unsurprising that momentum did not appear to have a huge influence on the results. Only the coefficient for IO2 displayed any significance to the momentum factors. After all, these

¹⁹ We have chosen to report the results of the 4 factor model because it is the most universal accepted asset pricing model in the literature. We have also checked for the robustness of our results using both a Fama-French 3 factor model and a 5 factor model that included the four Carhart factors ($r_m - r_f$, SML, HML, Momentum) and a liquidity factor. There were little changes to the reported in the reported alphas for our institutional ownership portfolio.

Table 4-2 Analysis 4-Factor Risk Loadings on the Portfolios of Institutional Ownerships (IO)

This table shows the characteristics of institutional ownership portfolios. For each month from November 1995 to March 2006, all available stocks were sorted based on their level of institutional ownership with those in the bottom quartile being designated as IO1 and those in the top quartile being designated as IO4. Thus IO1 represents a portfolio comprising of the quartile of firms with the lowest levels of institutional ownership and IO4 quartile represents the portfolio of firms with the highest levels of institutional ownership. The Carhart four-factor model coefficients are reported in the table. The “market” is the market premium (equally-weighted index minus the risk-free rate), SMB is the size premium (small stocks minus big stocks), HML is the book-to-market premium (high minus low book-to-market stocks) and momentum is the momentum factor. We also document the R-square of the regression as well as the four-factor alphas of the time series regressions with their corresponding *t* statistics.

institutional ownership portfolios	4-Factor Model									
	α -4F	$t(\alpha)$	β -4F	$t(\beta)$	δ -SMB	$t(\delta)$	γ -HML	$t(\gamma)$	θ -PR1YR	$t(\theta)$ R ²
IO[1] - Low	0.25%	3.541	1.3666	11.699	0.422	2.913	0.1407	1.416	0.0059	0.997 74%
IO[2]	0.13%	1.069	0.8541	3.414	0.4568	1.656	-0.5962	1.916	-0.5424	2.394 47%
IO[3]	-0.01%	0.190	0.9406	15.486	-0.1507	2.193	0.0541	0.844	0.1068	1.950 85%
IO[4] - High	-0.10%	3.208	0.7596	15.484	-0.212	3.835	-0.0049	0.614	0.0173	0.447 83%
Median	0.064%	---	0.897	---	0.136	---	0.025	---	0.012	--- 72%

* Number of periods (not rolling) applied for the estimation (n) is equal to 125 (>10 years)

** Winsorization is applied to the cross-section of the returns (zk=3 standard deviations)

portfolios are formed on the levels of institutional ownership which are relatively stable and are unlikely to be subject to large monthly changes.

Finally we also examined the robustness of the institutional portfolio returns through the use of both the Fama French 3 factor and a 5 factor model that included an additional factor that control for the liquidity premium.²⁰ The results from our analysis using the Fama French 3-factor analysis show that the absence of the momentum factor did not lead to any significant changes in the alphas of the institutional ownership level portfolios. These results are not surprising. A review of Table 4-2 shows that the coefficients for one year momentum were largely statistically insignificant. The same situation applies for the 5-factor model, the factor loadings for the liquidity factor were small and statistically insignificant. Thus we were able to conclude that the superior a liquidity premium cannot account for the higher performance of the low institutional ownership portfolios.²¹

4.4.4 Why does low institutional ownership firm yield higher returns?

From our results it is apparent that the portfolio of firms with lower levels of IO outperforms the other portfolios. There are a number of plausible explanations for this finding. For example, low institutional ownership may signal an unidentified risk factor (other than size and value) for investors. Falkenstein (1996) shows that institutional investors have a preference for stocks with low levels of idiosyncratic volatility and high liquidity. So the high excess returns associated with low firms with low institutional ownership may simply represent compensation for bearing greater risks.

²⁰ The five factor model include encompass the four Carhart factors ($r_m - r_{fr}$, SML, HML, Momentum) as well an extra factor that controls for liquidity premium. The liquidity factor returns are calculated using the following method. Each December, we ranked all firms in the ASX by our measure of stock liquidity; monthly trading volume standardised by the market capitalisation of the stock. The stocks that are ranked in the bottom 30% are consigned into the low liquidity portfolio, while the stocks in the top 30 percentiles are placed in the high liquidity portfolio. The liquidity factor is the difference between the equal weighted return of the low liquidity portfolio and the high liquidity portfolio.

²¹ The full results for the Fama French 3 factor model and the five-factor are not reported but are available from the author on request.

There are also a number of reasons that investors may hold a stock that is unrelated to a firm's performance. Firstly institutions are attracted to and invest in stocks based on particular characteristics (Falkenstein 1996; Gompers & Metrick 2001; Agrawal 2007). Previous studies such as Chen et al. (2000), Gompers and Metrick (2001), Falkenstein (1996) and Agrawal (2007) have shown that institutions prefer large and liquid firms. This is logical as institutions demand liquidity which is more likely to be found in larger stocks. We have already demonstrated a sizeable size effect, so the poor performance may be attributable to institutions' preference for stocks with certain characteristics. Secondly, institutional investors' performances are often gauged on a risk-adjusted basis in which they are penalised for idiosyncratic risks in the portfolio (Cohen et al. 2005). So institutional investors may also be compelled to hold stocks for portfolio diversification reasons rather than for the purpose of increasing mean returns. Finally Cohen et al. (2005) also highlights that the size-based fee structure of some institutional investors provides them with an incentive to maximise the funds under management. In order to invest all their funds, these institutions may have to expand their holdings beyond the stocks that they expect to outperform. All these factors suggest that institutional ownership flow may provide a better measure of institutional investors' investment skills.

4.4.5 Institutional ownership flows and returns

The evidence from the evaluation of institutional investors' holdings have not provided any evidence that institutions possess superior abilities in choosing stocks and thus are superior investors. Let us now turn our attention to the changes in institutional ownership. Flows or changes in institutional ownership should provide a better reflection of institutional investors' investment decisions. Unlike the passive act of holding a stock, trading requires investors to form a clear opinion of the value of the stock. So trading should provide a much better indication of whether institutional investors are truly informed and have superior investment abilities. Figure 4.3 captures the results for portfolios built on the basis of absolute changes in

the level of institutional ownership. It is evident from the information contained in Figure 4.3 that the firms that experience the greatest increases in institutional ownership exhibit superior performance. That is, the quartile of firms that experienced the greatest increase in institutional ownership experienced a 3% excess return in the month in which the transaction took place. Consistent with our expectations, firms that exhibited the greatest decrease in IO incurred significant negative excess returns²². These results are consistent with previous studies that have shown a highly significant positive relationship between institutional ownership flows and stock returns (Gompers & Metrick 2001; Bennett et al. 2003; Yan & Zhang 2009).

The portfolio consisting of stocks with the greatest positive flow (IO4) realised a positive excess return of approximately 3% in the first month. They continued to outperform in the next three months, hold their own for the following three months and then slight underperform for the next five months. The fact that the initial 3% excess returns is maintained is noteworthy for several reasons. Firstly it is consistent with Sias et al. (2006) who show that institutional investors' actions lead to permanent changes in prices. The lack of a significant reversal also casts doubts for price pressure being the explanation for the relationship between institutional ownership flows and investment returns (Nofsinger & Sias 1999). Herein lies the advantage of the use of higher frequency data: most previous studies which found the changes in institutional ownership are positively related to contemporaneous returns used quarterly data which made it more difficult to delineate the path of the excess returns and thus to more precisely diagnose the cause of the relationship between changes in institutional ownership and stock returns.

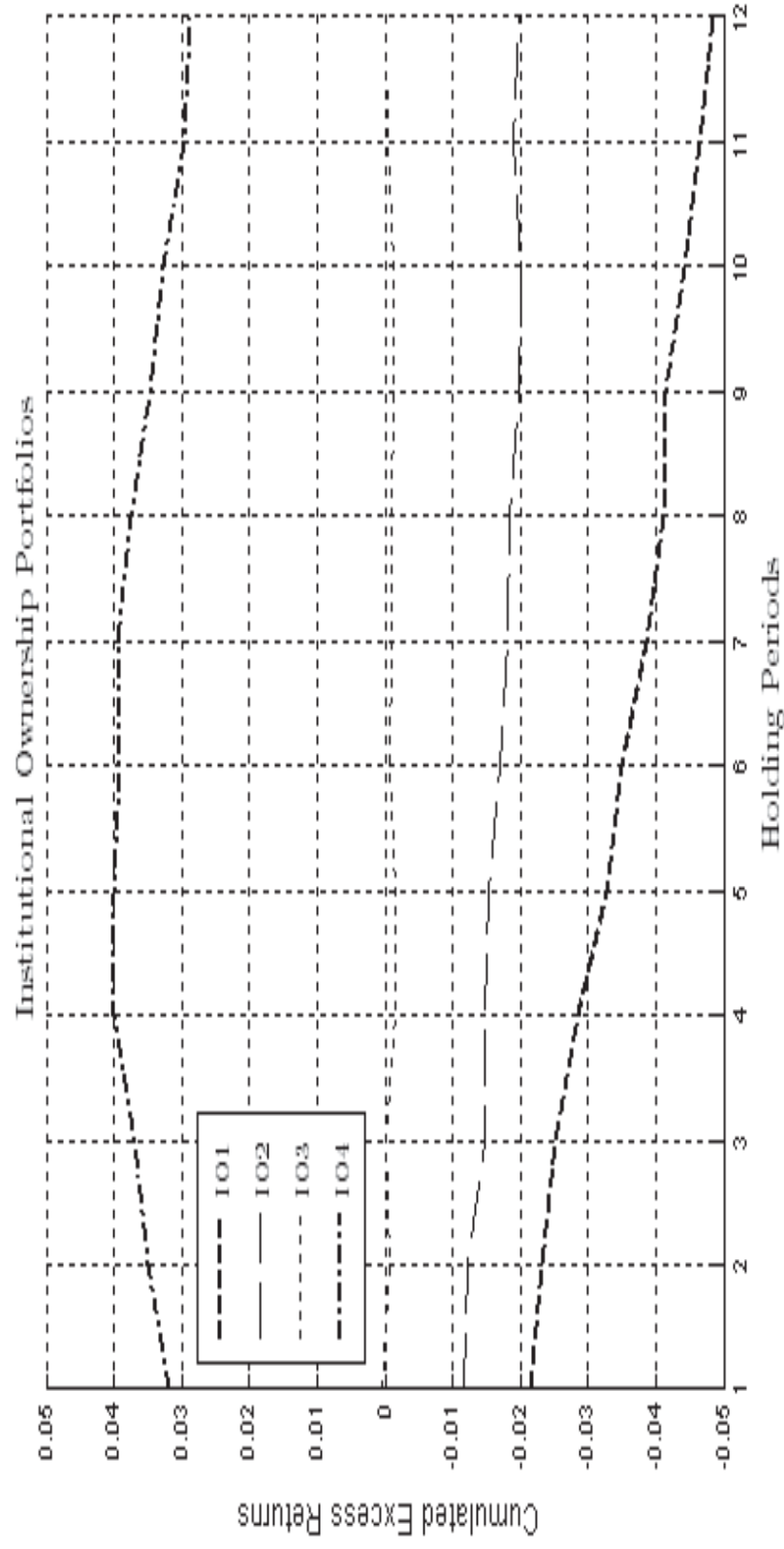
²² For the 12 month holding period, both the firms that experience the greatest increase (greatest decrease) in institutional ownership; portfolio IO4 (portfolio IO1) experienced positive (negative) excess returns that is statistically significant at the 5% level.

Turning our attention to the stocks that experienced the greatest outflow of institutional ownership (IO1), it is evident that these stocks continued to underperform relative to all other portfolios over the entire 12-month period. This finding is skin to the findings of Dasgupta et al. (2010) who found that the firms which were subject to the greatest outflow in institutional ownership continued to underperform for a period of two years²³. The continuation of the underperformance throughout the 12-month period is indicative of an information-based motivation for the sale of the stock. It is noteworthy that institutional investors can generate substantial positive excess returns in their trading activities. An interesting observation is that an investment strategy based on buying the stocks that experienced the greatest increases in IO (IO4) and shorting the stocks that were sold by the institutions (IO1) would yield a profit of around 8% in the first six months.

²³ It should be noted that Dasgupta et al. (2010) shows that the poor performance of these firms is the results of persistent selling. On the other hand, we form our portfolio based on institutional ownership flow for each month.

Figure 4-3 Performance of institutional ownership flow portfolio for the period (maximum holding period = 12months)

The figure shows the cumulative excess returns of portfolios that are formed on the basis of the changes in institutional ownership. For each month from December 1995 to March 2006, all available stocks were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest quartile being designated as IO1 and those in the highest quartile being designated as IO4. Thus IO1 represents a portfolio comprising the quartile of firms that experienced the greatest decrease in institutional ownership. Portfolio IO4 represents the quartile of firms with the greatest increase in institutional ownership. After formation, each portfolio was held for a maximum of 12 months and was then liquidated. Excess return is defined as the stocks' returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index). The cumulative excess return is the result of a buy-and-hold strategy with a maximum holding period of 12 months.



4.4.6 Institutional ownership flow and the four-factor model

Next we examine whether institutional ownership flows' apparent investment successes are attributable to these investors exploiting risk factors. Table 4.3 below shows the results of the Carhart four-factor analyses on the four portfolios of institutional ownership. An examination of Table 4.3 reveals that the portfolio that was subject to the greatest increase in institutional ownership, Portfolio IO4, had a factor-adjusted alpha of 0.25% per month which is statistically significant at the 1% level. The four-factor adjusted alphas α_{4F} for all the other firms were below zero. The results are consistent with Figure 4.4 which shows that all other portfolios experienced negative cumulative excess returns.

It is noteworthy that Portfolio IO4 loads up negatively on both HML factor and the momentum factor which indicates the source of Institutional investors' success lies in growth and losers stocks. It is most interesting that IO4 is the only portfolio that loads up negatively on the momentum factor with all the weak positive coefficients for the other portfolios. The findings are consistent with Gompers and Metrick (1999) which showed that institution have a preference for stocks with relatively low returns in the previous 12 months. Turning our attention to the portfolio IO1, we find that it has a very similar 4 factor beta as the IO4 but no other factor loading appears to be significant. So their poor performance of the firms that experienced the largest decrease in IO cannot be explained by these risk factors. It is interesting that the value factor of the IO1 portfolio is negative which serves to confirm Badrinath and Wahal's (2002) findings that institutional investors follow a contrarian strategy when they exit stocks. Finally it is important to point out the difference in 4 factor alphas of 0.37% is statistically different at the 1%.²⁴

²⁴ We have also conducted analysis that encompasses on a model that included a liquidity factor. The results (not reported) indicate that the liquidity factor adds little in terms of explanatory power to the model. There were no statistically significant loadings for the liquidity factor in any of the portfolios.

Table 4-3 Analysis 4-Factor Risk Loadings on the Portfolios of institutional ownerships flows (IO)

This table shows the characteristics of institutional ownership flow portfolios. For each month from December 1995 to March 2006, all available stocks were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest quartile being designated as IO1 and those in the highest quartile being designated as IO4. Thus IO1 represent a portfolio comprising the quartile of firms that experienced the greatest decrease in institutional ownership. Portfolio IO4 represents the quartile of firms with the greatest increase in institutional ownership. We derived equally weighted monthly returns for each portfolio and regressed the portfolio returns in a Carhart four-factor model. The Carhart four-factor model coefficients are reported in the table. The “market” is the market premium (equally-weighted index minus the risk-free rate), SMB is the size premium (small stocks minus big stocks), HML is the book-to-market premium (high minus low book-to-market stocks) and momentum is the 12-month momentum factor. We also document the R-square of the regression as well as the four-factor alphas of the time series regressions with their corresponding *t* statistics.

Institutional ownership Flow	4-Factor Model									
	α -4F	$t(\alpha)$	β -4F	$t(\beta)$	δ -SMB	$t(\delta)$	γ -HML	$t(\gamma)$	θ -PR1VR	$t(\theta)$ R ²
IO[1] - Low	-0.12%	3.876	1.097	16.702	0.085	1.231	-0.087	0.993	0.055	0.932 90%
IO[2]	-0.14%	6.315	0.851	18.974	-0.142	2.824	0.104	1.894	0.107	2.623 89%
IO[3]	-0.07%	3.121	0.777	17.534	-0.165	3.311	0.065	1.341	0.074	1.866 87%
IO[4] - High	0.25%	8.119	0.984	15.355	0.040	0.591	-0.197	2.419	-0.139	2.412 88%
Median	-0.10%	---	0.917	---	-0.051	---	-0.011	---	0.064	--- 88%

* Number of periods (not rolling) applied for the estimation (n) is equal to 125 (>10 years)

** Windsorisation is applied to the cross-section of the returns (zk=3 standard deviations)

4.4.7 Investment skills and stock characteristics

So there is clear evidence that institutional investors' trading activities are a good predictor of the stocks' returns over the next year. In the final section of this chapter, we pose the question of whether institutional investors' skills lie in the selection of particular types of stocks. Previous studies have shown institutional investors have preferences for stocks with certain characteristics (Yan & Zhang 2009). For example, Yan and Zhang (2009) show that institutional investors display a preference for stock with certain characteristics such as larger stocks, higher book-to-market stocks, higher priced stocks and higher turnover stocks. This raises the question of whether institutional investors have a preference for these stocks because they have greater stock selection skills.

In order to explore this question, we examine both the level of institutional ownership and firm characteristics that will help us isolate the impact of institutional investors. In essence, we aim to examine the returns of the "extreme portfolios" or corner portfolios. To demonstrate the methodology, we will describe the portfolios built on institutional ownership levels and market capitalisation. Each month from November 1995 to March 2006, all available stocks are sorted based on their changes in institutional ownership. Those firms in the bottom quartile are designated as IO1 (firms which experience the greatest outflow in institutional ownership) and those in the top quartile are designated as IO4 (stocks that experienced the greatest increase in IO). These portfolios are then sorted by market capitalisation with those in largest third being designated as large firms and those in the smallest third being designated as small firms. Consequently 12 portfolios were obtained based on the combinations of institutional ownership and market capitalisations. We compared the performances of these extreme portfolios to assess the impact of IO on portfolio with various sizes.

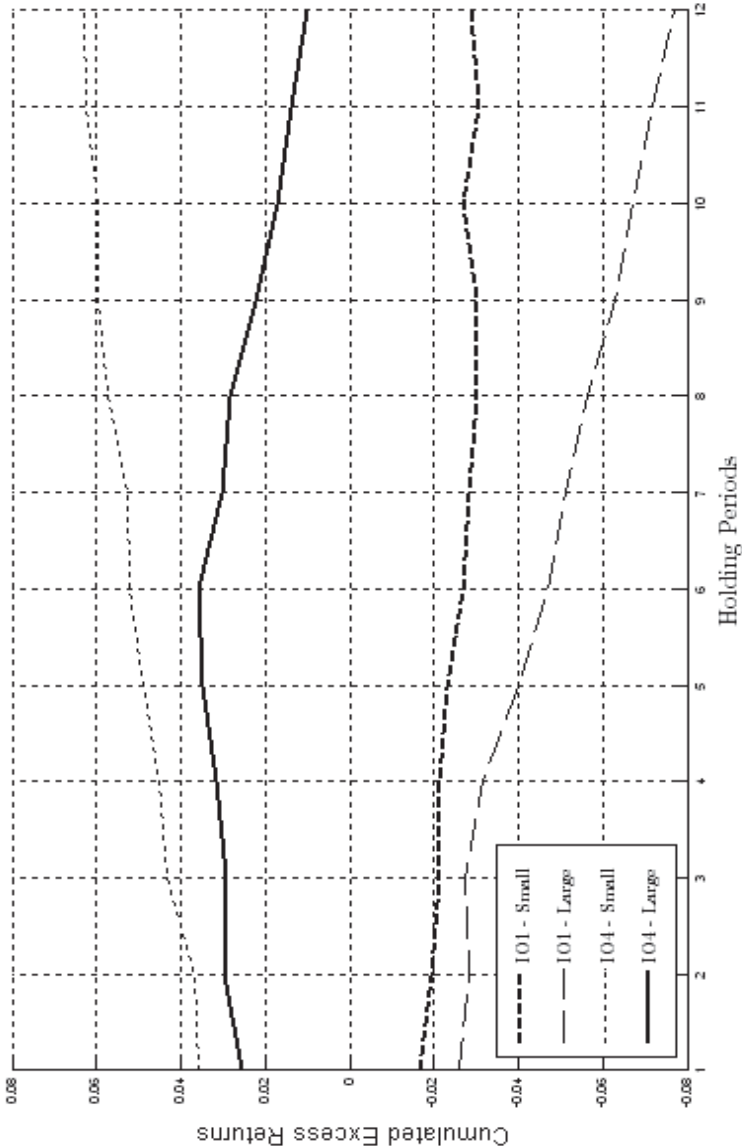
4.4.7.1 Institutional investment and firm size

Firstly we examined the relationship between institutional ownership flows and size. The literature has documented that institutional investors have the greatest information advantage in investing in the smallest stocks and these stocks thus yield the greatest returns (see Wermers 1999; Bennett et al. 2003). Figure 4.4 shows the performance of portfolios formed by firm size and changes in the level of institutional ownership. The most notable feature of Figure 4.4 is that firms that are subject to the greatest inflow of institutional investment outperform those that are subject to the greatest outflow irrespective of the size of the firm. We compare the performance of the small firm portfolio with the largest increase in IO (IO4-Small) with the performance of the small firms that experience the greatest decline in IO (IO1-Small). There is a 9% differential in excess returns over the first 12 months. It is noteworthy that the small firms that were subject to the greatest increase in institutional ownership yielded excess returns over 12-month holding period. Conversely the portfolio of small firms that was subject to the greatest outflow of institutional ownership continued to underperform the market over the holding period. The results are consistent with Wermers (1999) and Bennett et al. (2003) which shows that institutional investors are very adept in their choice of small stocks.

Yet there is also a substantial difference between the large firms that were subject to the greatest inflows and outflows of institutional ownership. Indeed the evidence points to a dominant institutional ownership effect which can override the size effect. Figure 4.4 shows that the large firms that experienced the greatest inflow in institutional ownership (IO4-Large) outperformed the market, its low institutional ownership counterparts and the portfolio of small firms that were subject to the greatest outflow of institutional investors (IO1-small).

Figure 4-4 Performance of portfolio built on two criteria: Changes in institutional ownership and market capitalisation

This graph shows the cumulative excess returns of portfolios that were formed on the basis of the changes in institutional ownership and market capitalisation. For each month from December 1995 to March 2006, all available stocks were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest quartile being designated as IO1 and those in the highest quartile being designated as IO4. Thus IO1 represents a portfolio comprising the quartile of firms that experienced the greatest decrease in institutional ownership. Portfolio IO4 represents the quartile of firms with the greatest increase in institutional ownership. These portfolios are then sorted by the market capitalisation value with those in largest third are designated as “large firms” and those in the smallest third being designated as “small firms”. Consequently four portfolios were obtained based on the combinations of changes in institutional ownership and market capitalisation. Excess return is defined as the stocks returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index).



4.4.7.2 Institutional investment and value/growth stocks

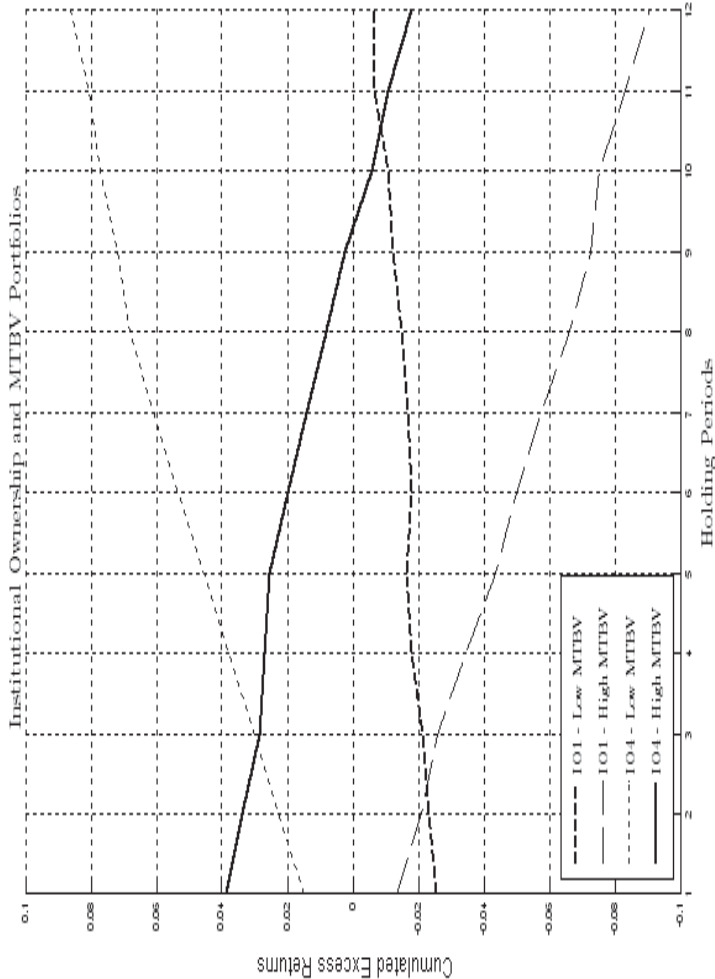
We examine whether institutional Investors are able exhibit superior stock-picking ability amongst value (low market-to-book stock) and growth stocks (high market-to-book stock). We formed portfolios based on institutional ownership flows and market-to-book value of the stocks.²⁵ The cumulative excess returns of the corner portfolios are shown in Figure 4.5. An examination of Figure 4.5 clearly shows that institutional investors exhibit significant stock selection skills in value stocks. The portfolios of value stocks that experienced the greatest increases in institutional ownership (IO1-Low MTBV) experienced cumulative excess returns of 8.5% per annum. Moreover the positive slope of the cumulative excess returns indicates that portfolio IO4-Low MTBV continued to outperform the market throughout the entire sampling period. To further investigate the institutional investors' expertise in the selection of value stocks, we examined necessary the value stocks that had the greatest outflow in institutional ownership (IO1-Low MTBV). Portfolio IO1-Low MTBV experienced negative excess returns in excess of 2% in the first month but recovered over the remaining 11 months of the holding period to record a 12-month cumulative excess return of -0.6%. The differential of 9% in cumulative excess returns between the portfolio of value firms that experienced the greatest inflows and outflows of institutional ownership highlights institutional investors' ability in the selection of value stocks.

Of the growth stocks portfolios, both IO1-High MTBV and IO4-High MTBV underperformed against both the market and the value portfolios over the 12-month period. The growth stocks that were subjected to the greatest inflow of institutional ownership experienced a 3.9% positive excess return in the first month but continued to underperform the market over the next 11 months for a final cumulative excess return of -1.8% over the 12-month period.

²⁵ We also formed portfolios on the basis of institutional ownership and other measures of valuation such as the price to earnings ratio and the price-to-book ratios. The findings proved to be identical irrespective of what measure is used.

Figure 4-5 Performance of portfolio built on two criteria: Changes in institutional ownership and market-to-book value

This graph shows the cumulative excess returns of portfolios that were formed on the basis of the changes in institutional ownership and market-to-book value. For each month from December 1995 to March 2006, all available stocks were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest quartile being designated as IO1 and those in the highest quartile being designated as IO4. Thus IO1 represents a portfolio comprising the quartile of firms that experienced the greatest decrease in institutional ownership. Portfolio IO4 represents the quartile of firms with the greatest increase in institutional ownership. These portfolios were then sorted by the market-to-book value with those in largest third being designated as “high MTBV” and those in the smallest third are designated as “low MTBV”. Consequently four portfolios were obtained based on the combinations of changes in institutional ownership and market-to-book value. Excess return is defined as the stocks returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index).



However this result is still far superior to the performance of the growth stocks that were sold by the institutional investors, Portfolio IO1-High MTBV, underperformed the market by 9% in the 12-month period. Once again the results demonstrate that institutional ownership flow is a good indicator of stock returns irrespective of their valuation characteristics.

4.4.7.3 Institutional investment and momentum

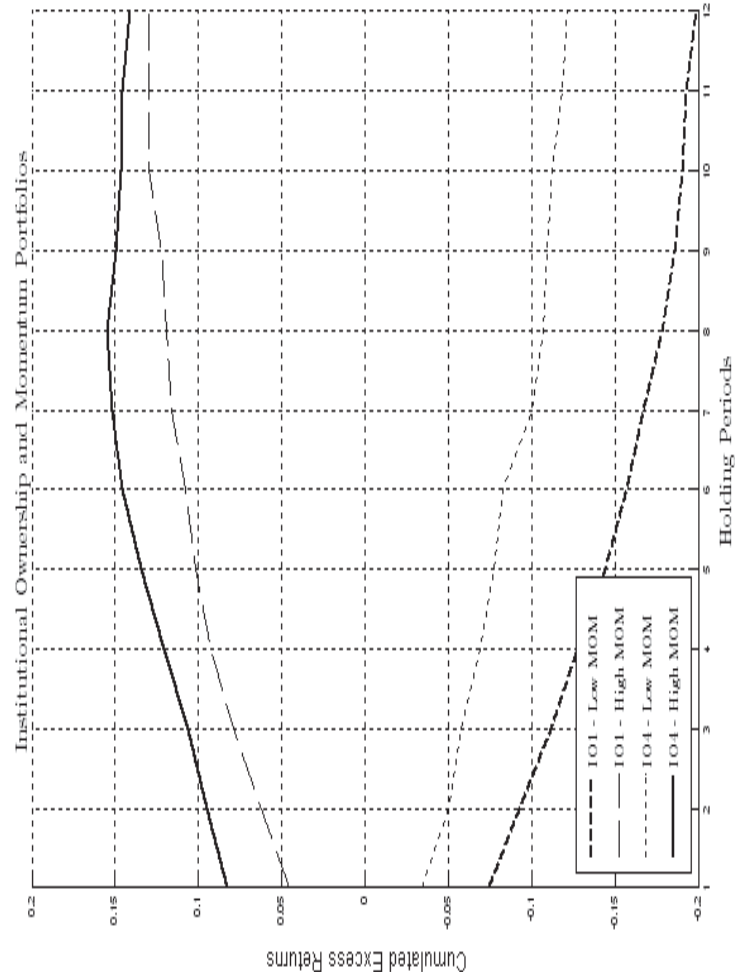
Finally we will examine whether institutional investors display superior skills in the selection of momentum firms by examining the returns of portfolios built on changes in institutional ownership and price momentum. The analysis was performed using three measures of price momentums: three-month price momentum, six-month price momentum and 12-month price momentum. Since the portfolio results were similar, we will only present the results of the six-month price momentum. Figure 4.6 shows the portfolio results of the portfolios formed from the three-month momentum factor and the institutional ownership.

An examination of the Figure 4.6 reveals two very distinctive trends. Firstly, they highlight the importance and effectiveness of momentum strategy in Australia. Both high momentum portfolios yield excess returns in excess of 10% over the 12-month periods. Similarly, low price momentum firms continue to experience negative excess returns throughout the 12-month period with both low momentum portfolios underperforming the market by -13% to -20%.

Secondly, the findings indicate that institutional investors do not exhibit superior investment skills in the selection of momentum stocks. The high momentum firms that experienced the greatest inflows in institutional ownership realised similar returns to the high momentum with the greatest institutional ownership outflows over the 12-month period. For the portfolios of low momentum stocks that experienced the greatest increase in institutional ownership, there was still a negative excess return of approximately 6% in the first month. However the negative excess return still represents a 3% improvement on low momentum firms that

Figure 4-6 Performance of portfolio built on two criteria: Institutional ownership flow and the six-month momentum factor

This graph shows the cumulative excess returns of portfolios that were formed on the basis of the changes in institutional ownership and the six-month price momentum factor. For each month from December 1995 to March 2006, all available stocks were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest quartile being designated as IO1 and those in the highest quartile being designated as IO4. Thus IO1 represents a portfolio comprising of the quartile of firms that experienced the greatest decrease in institutional ownership. Portfolio IO4 represents the quartile of firms with the greatest increase in institutional ownership. These portfolios are then sorted by the six-month price momentum factor with those in largest third being designated as “high MOM” and those in the smallest third are designated as “low MOM”. Consequently four portfolios were obtained based on the combinations of changes in institutional ownership and six-month price momentum factor. Excess return is defined as the stocks returns in comparison to the benchmark return (i.e. S&P ASX 500 or All Ordinaries Index).



experienced the greatest decline in institutional ownership. Moreover the low momentum firms that experienced the greatest increase in institutional ownership continued to outperform the low momentum stocks sold by institutions. On balance, however the results do not indicate that institutional investors have superior skills when it comes to their choice of momentum stocks (especially when in their selection of winners stocks).

4.5 Chapter conclusion

On the balance of the evidence presented in this chapter, we can conclude that institutional investors exhibit superior skills through in their trading activities. Firms that experience the greatest positive inflow of institutional ownership realise positive excess returns over the 12-month period. On the other hand, the stocks that experienced the largest outflow of institutional ownership continued to perform poorly throughout the 12-month period. Consistent with the literature, Institutional investors showed superior investment skills in their choice of stocks based on size and book-to-market characteristics. It is interesting that they did not show superior judgement when it comes to their choice of high momentum stocks.

The finding of this chapter also provides ample issues for future research. A most interesting question relates to the poor performance of the firms with high levels of institutional ownership. The results presented indicate that institutional ownership level is not a good guide of a stock's future market performance. It is important to remember that investors may hold a stock that is unrelated to performance. For example, an institution may hold a stock for purpose of diversification. There may also be a risk related explanation for the curious results from our analysis of institution ownership level portfolios. Falkenstein (1996) show institutional investors prefer stocks with low levels of idiosyncratic volatility and high liquidity, so our results may be reflective of the fact that institutional ownership level serves as a proxy for an identified risk factor. In light of the contrasting results between this study of the Australian

market and the US literature, an interesting line of research is to determine whether these results are driven by institutional differences between these markets.

5 CHAPTER 5 The impact on institutional ownership in initial public offerings

5.1 Introduction

The dual Initial Public Offerings (IPOs) anomalies of underpricing and long-run underperformance have inspired a plethora of studies. Yet few have examined the impact of the majority investors in IPOs, namely institutional investors. In this chapter, we examine the impact of institutional ownership on the level of underpricing and on the long-term performance of these newly floated public companies. The aim is to further explore whether institutional investors aid in the efficient allocation of resources. More specifically, we pose the question of whether institutional investors provide funding for companies with the most potential to develop into successful businesses. The alternative view is that institutional investors have little interest in the long-run success of these companies and their sole interest is to obtain the extraordinary returns often associated with IPOs. In either case, institutional trading at the time of the listing should provide us with insights into the short-run and long-run performance of these newly formed corporations.

5.1.1 The dual anomalies of underpricing and underperformance

It is commonly accepted that several persistent anomalies are associated with IPOs. The first is the underpricing of shares. This refers to the common occurrence that at the time of listing the shares of floated companies trade at a price that is higher (often substantially higher) than the offer price charged to the subscriber of the IPOs. This so-called IPO underpricing has attracted much publicity and research for over 50 years (see SEC 1963; Reilly 1973; Ibbotson 1974; Ritter

1987; Loughran & Ritter 1995). The US Stock Exchange and Securities Commission's 1963 special study on security markets was one of the first to formally acknowledge the occurrence of IPO underpricing. By examining a sample of 1671 IPOs that took place in the 1959–61 period, the SEC (1963) found that 79% of the IPOs experienced positive returns immediately upon listing. Indeed the average underpricing was over 20%. The SEC report was the first of a long list of studies that documented IPO underpricing (e.g. Stoll & Curley 1970; Reilly 1973; Ritter 1987; Loughran & Ritter 1995). The persistence of IPO underpricing has only been matched by the magnitude of the underpricing. In monetary terms, Ritter (2008) estimates that of the 4733 IPOs in his sample, issuing firms left a total of \$102.7 billion on the table. That is a staggering 22.4% of the total proceeds. Indeed Ritter and Loughran (2004) estimate that the money left on the table equated to approximately three years of profit for the issuers.²⁶

From the above discussion one can see that an IPO poses a huge management challenge to the issuer. The issuer must determine an appropriate price to sell their shares in order to avoid excessive transfer of wealth.²⁷ On the other hand, IPOs offer investors an opportunity to make significant profit from their investment. Indeed the existence and persistence of underpricing appears to offer investors a simple strategy for making significant profits from subscribing to IPOs. However, the reality is that there is a limited supply of shares. Rock (1986) points out that subscriptions to the attractive underpriced stocks tend to be rationed. Investors who invest an equal amount in each IPO may make a loss because they will get a full subscription in overpriced IPOs. Moreover, average investors may not get access to the most underpriced IPO with underwriters tending to make favourable allocations to their own clients in IPO issuance

²⁶Although the aforementioned studies are based on the US IPO market, others have shown that underpricing is a worldwide phenomenon (see Aggarwal et al. 1993, Loughran & Rydqvist 1994, Ibbotson et al. 1994, Lee et al, 1996; Álvarez & González, 2005). Recently Jay Ritter, the doyen of IPO studies showed that IPO underpricing occurs in more than 44 European and non-European countries. Ritter found that average underpricing ranged from around 6.5% in Austria to 165% for Chinese IPOs.

²⁷ In relation to the setting an appropriate issue price, we are aware that price setting is part of the overall IPO issue process that is determined by jointly by the issuer, the investment bank engaged to organise the IPO and the underwriter. We are simply referring to the fact that issuer's management must agree to the issue price.

(Agrawal et al. 1993). Along with these factors, the greater uncertainty associated with young companies means IPO investment does not provide a free lunch for investors.

Investments in IPOs are made even more difficult because they are plagued by a second anomaly: the long-run underperformance of IPOs. Many studies have found IPOs represent very poor long-term investments (Ritter 1991; Loughran 1993; Loughran & Ritter 1995). In Ritter's (1991) seminal study on long-term underperformance of issuers, he found that in the three years following the public issue, 1526 firms in his sample underperformed by 27.4% in comparison to a set of firms matched by size and industry. Although the magnitude of IPO underperformance displays substantial variations over time and across industries, empirical evidence has shown that poor long-run performance has been persistent. For example, Ritter (2006), using a sample of 6585 IPOs during the 1980–2004 period, showed that the IPO firms underperformed the market by 20.6%.²⁸

The combination of short-term underpricing and long-term underperformance makes IPOs a most interesting research subject. Not surprisingly a plethora of studies have been devoted to the research of the IPO phenomena, but very few studies have examined whether institutional investors directly impact on the IPO anomalies. The dearth of research in this area is certainly surprising given that institutional investors are by far the major investors in IPOs. In fact, Field and Lowry (2005) estimate that institutions contributed 90% of the investment in firms that went public between 1980 and the year 2000. In light of the fact that most IPOs underperformed, it is surprising that well informed institutions should choose to invest in these seemingly poor investments.

²⁸ Just as IPO underpricing is a worldwide phenomenon, the long-term underperformance of IPO has also been found in financial markets across the globe (See Aggarwal et al. (1993) for data on Brazil and Chile, Loughran and Ryvquist (1994) for Sweden, Cai and Wei 1997 for Japan, Chen et al. (2001) for Hong Kong, Lee, Taylor and Walter (1996) for Australia, Schlag and Wodrich (2000) for Germany).

Their significant investment in IPOs leads us to ask two important questions. First, if institutional investors continue to make large investments in IPOs, why do these issuers continue to exhibit such poor long-run performance? We test whether institutional investors use their greater skills and knowledge to yield higher initial and long-term returns, a finding which would indicate that they are superior investors when it comes to IPOs. Second, we seek to examine how the presence of institutional investors impacts on the IPO-related anomalies. The significant institutional interest in IPOs, coupled with empirical evidence that has shown that institutions can have a significant impact on both stock prices (see Nofsinger & Sias, 1999) and stock market anomalies (such as the January effect) makes such a study not only logical but also imperative.

Aggarwal and Rivoli (1990), Welch (1989), Rajan and Servaes (1997) and Álvarez and González (2005) are amongst the few studies that examine the relationship between the two main IPO anomalies. Aggarwal and Rivoli (1990) found evidence that is consistent with fads in IPO market, providing an explanation for the high initial returns and subsequent underperformance of IPOs. The implication is that exuberant markets are driven by “fads” for particular stocks. Many IPOs will be initiated to exploit these fads but as the interest fades stock prices will gradually revert to a base level which leads to the long-run underperformance of the IPO firms. Others have suggested that the link between IPO underpricing and long-term performance can be traced to signalling (Grinblatt & Hwang 1989; Welch 1989). Welch (1989) argues that IPO underpricing is the result of signalling, with which high quality firms seek to differentiate themselves by underpricing their IPO. Since high quality firms will have the best performance in the long run, signalling predicts a positive relationship between underpricing and the long-term performance. Finally in his seminal paper on uncertainty, Miller (1977) proposes that underpricing arises from the high divergence of opinions in the issuers of IPOs at the time of issue. As time passes, the level of divergence in opinions decreases, and the

average valuation will decrease which results in a steady fall in share price, which results in the poor long run performance of IPOs.

We propose a different explanation for the relationship between the IPO anomalies based on information cascade (Welch 1992; Ritter 2003). The term 'informational cascade' refers to a situation where potential investors' decisions are influenced not only by their own information about the issuers but also by the purchasing decisions of other investors, so a bandwagon or information cascading effect develops (Welch 1992; Ritter 2003). It stands to reason that herding behaviour induced by informational cascade is most likely in events where there is a high uncertainty such as initial public offerings. Welch (1992) speculates that the bandwagon effect often dominates the private information of the original investors as potential investors simply imitate the actions of earlier investors. While Welch's original version of information cascade considers the IPO subscription period, we believe that the presence of a high level of informed traders (i.e. institutional ownership) in an issue will also induce a bandwagon effect in the first days of trading. We hypothesise that the presence of institutional investors will act as a signal of IPO quality and embolden investors to make additional investment in these firms. Therefore the higher the level of institutional ownership in an IPO, the greater the demand on the first days of trading and the higher the initial returns for the IPO firm. Similar to the "fads" explanation, high demand in the initial aftermarket will lead to high initial returns but also to overshooting of fair value. As the market slowly makes corrections in the long run, the issuers' share price falls and IPO underperformance can be observed.

Our study contributes to the literature in two main ways. First, we provide greater clarity on the role and impact of institutional investors in IPOs. Previous studies on institutional ownership and IPOs have focused mainly on the preferential treatment of institutional investors in IPO allocation. Our focus is different; we examine how the presence of institutional ownership in issues will impact on returns both in the initial period and over the

long run. Second, previous empirical works have found it difficult to discern the cause of the relationship between the two IPO anomalies because a number of the main explanations proffered (e.g. fads and heterogeneous beliefs) all make the same predictions as to share price behaviour. Our results shows that the reversal in returns only occurs in a selected sample of stocks: the issues with a high initial level of institutional ownership, and thus the results provide strong evidence of support for an informational cascade in the IPO process.

The structure of the chapter is as follows. Section 5.2 provides a review of the existing literature on institutional investors in IPOs. Section 5.3 presents a brief review of the explanations that have been put forward to account for the link between the IPO anomalies. In Section 5.4, issues related to data restrictions and the methodology used in this study is discussed. Section 5.5 presents the empirical results and analysis of the initial returns and long-run performance of the IPO issuers. Section 5.6 provides us with the opportunity to summarise the results and suggests opportunities for further research.

5.2 Institutional Ownership and the initial public offering

The notion that institutions might possess an information advantage is a well accepted view in the literature. Numerous studies have shown that institutional investors appear to have foreknowledge of corporate decisions (Szewczyk et al. 1992; Alangar et al. 1999). Most of the literature on the direct impact of institutional ownership in IPOs has focused on the alleged favourable treatment that institutions receive from underwriters in IPO allocation (see Hanley & Wilhelm 1995; Aggarwal et al. 2002; Boehmer et al. 2005). Both Hanley and Wilhelm (1995) and Aggarwal et al. (2002) found that institutional investors are able to profit from favourable allocation from underwriters. Hanley and Wilhelm (1995) argue that institutions are able to claim a large portion of the short-term profits from IPOs as a result of their quid pro quo

relationship with underwriters. In return for purchasing shares in less attractive issues, institutions are given the majority (70%) of the shares in hot issues.

Given their favourable access to these so-called hot issues, it is not surprising that a number of studies have shown that institutions can obtain higher initial returns than less informed investors. The important question is whether these superior initial returns are simply the result of favourable allocations or whether they occur as a consequence of the institutions possessing private information.

5.2.1 Do institutional investors benefit from an informational advantage in IPO investments?

Importantly, the literature has yet to reach any consensus on the ability of institutions to exploit their informational advantage in IPO investments. Hanley and Wilhelm (1995) question the notion that institutions possess private information about IPOs. They argue that institutions yield higher initial returns solely as a result of preferential allotments of underpriced IPOs. The authors argue that if institutions possessed private information, they would use their information advantage to avoid investment in overpriced offerings. Yet according to Hanley and Wilhelm the evidence showed that institutional allotment levels were similar for underpriced and for overpriced offerings. On the other hand, Aggarwal et al. (2002) show that book building alone cannot explain the difference between the initial returns of institutional and retail investors. Aggarwal et al. argue that the higher returns earned by institutions also reflect their superior access to private information (such as the final offer price relative to the filing range) which helps them to gauge the fundamental value of the issuers.

From the above discussion, it becomes clear that the possibility of favourable allocation would potentially place an upward bias on the institutional investors' initial returns in equity issues.

The examination of the long-term performance of the IPOs is one method that can help to determine whether institutional investors are truly informed in initial equity offerings.

5.2.2 Institutions, informational advantage and long run performance in IPO investments

Dor (2003) and Field and Lowry (2005) examine the long-run returns of institutional investors in IPOs. Both studies demonstrate that IPO firms which attract higher levels of institutional interest exhibit long-run returns that are superior to IPOs with lower levels of institutional ownership. Unfortunately neither study provides conclusive evidence to support the informed trading hypothesis. Dor (2003) finds that both the level of institutional ownership and the level of institutional trading can be used to forecast future returns. Indeed, in Dor's study the quintile of firms with the highest level of institutional ownership (IO) outperformed the lowest IO quintile by a risk-adjusted 1% per month in the three years following the issue. Yet Dor argues that the success of the institutions should not be attributed to an information advantage. Rather, according to Dor, the institutions invested in stocks with high growth expectations and profited from the subsequent increase in prices. Moreover, Dor shows that the institutional investors were only able to achieve superior results in hot market conditions. Thus, Dor attributes the institutional investors' success to a momentum strategy that exploited the prevailing market sentiments rather than superior knowledge or skills.

In their 2005 study, Field and Lowry offer qualified support for the informed trading hypothesis. Consistent with Dor, Field and Lowry also found that IPOs with greater institutional ownership outperformed IPOs with lower levels of institutional ownership. IPO firms with greater institutional interests outperformed their low institutional ownership counterparts by a four-factor adjusted 1.5% per month in the first quarter after issue. Over a longer investment horizon of three years, however, the institutions' edge diminished to just 0.06% per month. Indeed the institutions were only able to achieve greater returns by avoiding the worst

performing firms. Thus the authors argue that institutions did not succeed because they were privy to any proprietary private information as suggested by the winner's curse and book building theories. On the contrary, the authors attribute the superior performance of the institutions to their making better use of readily available public information such as firm and offer characteristics (for example, venture capitalists backing and firm age).

5.2.3 The informed trading hypothesis

In spite of the inconclusive evidence in previous studies, we still believe that initial public offerings have the potential to provide a strong test of the informed trading hypothesis. Subscribers to IPOs can make extravagant returns in the initial period. Yet it is also important to remember that IPO underpricing is not uniform across firms or across time. For example, initial returns in Bayley, Lee and Walter's (2004) sample of 419 Australian IPOs ranged from -66% to 734%. Although Field and Lowry (2005) show that the top 100 IPOs earned over 1000% in the first three years, the authors also found that the bottom 100 IPOs had a return of -99% over a similar period. This wide variation in IPO returns is the source of the winner's curse in IPO investments (Rock 1986). The winner's curse hypothesis suggests that IPOs are underpriced to induce uninformed investors to invest in IPOs. The idea is that informed investors will only participate in underpriced IPOs, which leads to significant rationing in hot issues. On the other hand, according to Field and Lowry informed investors will abstain from subscribing in overpriced offerings. As informed investors withdraw from the market, the uninformed investors will suffer heavy losses as they will receive disproportionately high allocations of overpriced offerings. As a consequence, despite the fact that most IPOs are underpriced, only informed investors can make significant profits in IPOs.

Following this logic, if institutional investors are informed and skilful investors, the level of institutional interest in an IPO should be in proportion to the expected benefits from subscribing to the equity issue. An underpriced IPO should attract greater interest from

informed investors such as financial institutions. Similarly, an overpriced equity issue should receive little interest from informed investors. This leads to our first hypothesis:

H1: There is a positive relationship between the level of institutional ownership at the time of the initial issue of an IPO and the initial return for the investors

Of course, it may not be possible to determine whether institutions earn a higher initial return from private information or from a favourable allocation from the underwriter. Therefore it is necessary to examine the relationship between institutional interests in an IPO and the issuers' long-run performance. We hypothesise that informed investors can utilise their informational advantage to subscribe to IPOs with good long-term prospects. A study of long-run performance should also provide a superior test of investment skills because long-term IPO investors are more likely to suffer significant losses (in opportunity costs) as a result of IPO underperformance. Our second hypothesis is as follows:

H2: There is a positive relationship between the level of institutional ownership at the time of initial issue and the long term returns of the issues

One key difference between the previous studies on institutional investors in IPOs and this chapter is our interest in the relationship between the IPO anomalies. Both Dor (2003) and Field and Lowry (2005) concentrate solely on the institutional investors' impact on the issuers' share price performance. We expand the analysis by identifying and examining the possible link between the two IPO anomalies.

There has been some indirect support for the notion that institutional investors are informed. Many studies have found that that institutional flipping can help predict future returns (Boehmer et al. 2005; Krigman et al. 1999). Flipping is the practice of subscribing to an IPO and selling these shares shortly after the issue to profit from the high initial returns of IPOs. Flipping can be particularly profitable for institutions because their relationships enable them

to receive favourable allocation in most IPOs. It is obvious that institutions would only sell their holdings in an issue if they were pessimistic about the long-term prospects of the issuers. Studies by Krigman, Shaw and Womack (1999) and Boehmer et al. (2005) show that institutional flips can predict the future returns of the issuers. The implication is that institutions have private information that allows them to predict the future performance of the issuer.

5.3 Underpricing, underperformance and information cascade

Grinblatt and Hwang (1989) and Welch (1989) were among the first papers to study the link between the dual anomalies: IPO underpricing and their subsequent long-run underperformance. Both studies propose that IPO underpricing may be a deliberate attempt by good IPO issuers to signal their quality. The intuition is that good IPO issuers have private and superior information about their own cash flows, so they are willing to offer their IPO shares at a discount with the knowledge that they (the firm or insider) will be able to recoup their shares in a future share issue. The signal is made more effective because the substantial costs involved will preclude poor quality firms from imitating them. A poor quality firm will not underprice their IPO because it will not be able to recoup the costs from future issues. So the signalling hypothesis predicts a positive relationship between initial underpricing and long-run returns.

Several problems plague the signalling theory of IPO underpricing. First, underpricing is a very costly and inefficient way of signalling quality (Daniel & Titman 1995). Ritter (2003) argues that underpricing is unlikely to be used to signal quality unless managers have some restriction in their strategic choices. Second, the premise of signalling relies on the ability to make further forays into the equity market. As Ritter (2003) points out, the fluctuations in the IPO markets are such that issuers may not have “reasonable assurance” that the window will be open when

they wish to make seasoned offerings. Finally, the empirical evidence for signalling is at best mixed. In a sample of Spanish IPOs, Álvarez and González (2005) provide support for the signalling hypothesis when they find long-run performance is positively related to underpricing and the amounts of funds raised in seasoned offerings. However other studies such as Michealy and Shaw (1994) fail to find a relationship between under-pricing and seasoned offerings. More alarmingly, Lee, Taylor and Walter (1996) find a negative relationship between retained ownership and long-run returns which contradicts the prediction of the signalling hypothesis.

In his 1991 study, the doyen of IPO studies, Jay Ritter, was amongst the first to theorise that the link between the IPO anomalies may be the result of investor overreaction. Upon observing the poor long-run performance of issuers, Ritter suggested that the poor performance was caused by investors' over-optimism in "hot" sectors of the market. These "fads" for certain sectors that simultaneously go public will lead to high initial returns but over the long run, market adjustment takes place which manifests itself in the underperformance of the issuers. The notion is succinctly summed up by Proposition 2 of Daniel, Hirshleifer, and Subramanyam's famous (1998) study of behavioural finance. Proposition 2 states that "if investors are overconfident, price changes are unconditionally negatively correlated in both short and long runs" (Daniel et al. 1998, p.1841). The idea of "fads" or overoptimism in the IPO market is supported by numerous studies. For example, Teoh, Welch and Wong (1998) argue that the poor long-run performance of IPOs can be attributed to overoptimistic accounting. Since it is in the issuers' management's interests to maximise proceeds, it makes sense to issue at a time where the company's books present the most "rosy picture". The implication is that at least some of the poor underperformance of IPOs can be attributed to overconfidence on the part of investors. This conclusion is consistent with Purnanandam and Swaminathan (2004) who find that IPO firms are often priced at a value above their seasoned publicly traded

counterparts. The authors conjecture that these overvalued firms tend to earn high initial returns but will inevitably produce poor long-run performance.

There has been some empirical support for the speculative bubble or “fads” explanation of IPOs. Jelic, Saaudouni and Briston (2001) find evidence consistent with the overreaction hypothesis. They found that a portfolio of IPOs with low initial returns outperformed a portfolio of IPOs with high initial returns by about 62.7% over a two-year period. Yet Lee et al. (1996) find that long-run returns do not behave in a way which supports the fads explanation of IPO anomalies.

Whereas Purnanandam and Swaminathan (2004) demonstrate that overvaluation may allow the issuer to set an offer price above the fundamental value of the firm, others argue that long-run underperformance may also occur as the result of issuers deliberately setting an offer price that is too low). Rajan and Servaes (1997) see underpricing as a strategic choice by the issuers’ management. In this case, the authors argue that underpricing is used as a marketing ploy by the issuer. The suggestion is that underpricing creates interest in the issue which ultimately creates a following among financial analysts. Rajan and Servaes show that these security analysts systematically overestimate the future earnings of the issuers. In fact, they found that the average forecast errors were approximately 5% of the stocks’ price. Overoptimism in earnings forecasts entices other firms of the same industry to conduct public offerings. In the long run, IPOs have poor long-run performances when analysts are more optimistic about the firm’s prospects. When analysts forecast that an IPO will have earnings growth above the industry average, the subsequent long-run performance is poor. On the other hand, if analysts forecast that the issuers will have below average growth, these firms will have poor initial returns but rebound in the long run.

We propose an alternative overreaction hypothesis where the source of the initial underpricing (i.e. investor overreaction) stems from the level of institutional interest in an

initial equity offering. The level of institutional interest acts as a signal of an issuing firm's quality. Potential investors interpret a high level of institutional interest as a signal that the issuer represents a good investment. This creates additional demand for the stock on the IPO listing day and thus leads to greater initial returns (i.e. greater underpricing).

We believe that the level of institutional ownership can act as a credible signal which can influence both informed and uninformed investors. To the informed investor, a high level of institutional interest in an IPO will trigger a herding or informational cascading effect. Welch (1992) speculates that the bandwagon effect often dominates the private information of the original investors as potential investors simply imitate the actions of earlier investors. Empirical studies provide some support for the information cascade hypothesis. For example, Amihud, Hauser and Kirsh (2003) found strong evidence of herding or a cascade in the Tel Aviv stock market. Ritter also highlighted the possibility of cascading in the market when he noted that a survey suggested that only 26% of the respondents claimed that they did any fundamental valuation prior to subscribing to an IPO. The inference here is that IPO investors can be easily swayed by other investors' actions and are susceptible to informational cascade.

While Welch's original version of information cascade considers the IPO subscription period, we believe that the presence of high levels of institutional ownership in an issue will also induce a bandwagon effect on the first days of trading. We hypothesise that the presence of institutional investment will act as a signal of IPO quality and embolden investors to make additional investments in these firms. Therefore the higher the level of institutional ownership in an IPO, the greater the demand on the first day and the higher the initial returns for the IPO firm. Our hypothesis is in the spirit of Dasgupta et al. (2010) who provide empirical evidence to demonstrate that information cascade is prevalent amongst institutional investors. The authors argue that persistence behaviour (buying or selling) by an institution can lead other institutions to infer the first institution possesses private information and imitate their action.

We believe that the presence of a high level of institutional ownership in an IPO can have a similar impact on other institutional investors.

The important question is whether investors will be able to detect the level of institutional interest in an issue. We believe that institutions will be able to estimate the level of institutional investment in an issue by the amount of allocation that they received in the issue and the final offer price relative to the initial offer range. An institutional investor can deduce high levels of institutional investment from other institutional investors if it received fewer shares than its desired allocation of shares or if it paid a high final offer price relative to the offer range.²⁹ In these circumstances, the institutions will disregard their own information and make a revision of the issuers' value. This revaluation induces greater demand for the stock on the listing date. The strong demand for stocks will lead to a rapid increase in the share price which is consistent with the extravagant returns that are often experienced in the IPO market. Our hypothesis is consistent with Nofsinger and Sias (1999), who found that institutions herd as a result of inferring that other institutions possess inside information based on their trades.

Informational herding effects can have a large impact on the market price of a stock (Shleifer 1986; Nofsinger & Sias 1999). Shleifer (1986) demonstrates the impact of price pressure by showing that purchases by index funds into firms that are newly included into the S&P 500 cause large increases in stock prices. The author found that these firms earn an average excess return of 3% on the announcement day. The question is whether the hypothesised informational herding (cascade) will push the share prices above the fundamental value or increase the speed of price adjustment.

In spite of earlier evidence that herding (especially institutional herding) did not have a significant destabilising effect on stock prices (Lakonishok et al. 1992), recent studies indicate

²⁹ This notion is consistent with Hanley (1993) who found higher institutional interests in IPOs where the final offer price is greater than the price range specified in the prospectus.

that institutional herding can have a significant impact on stock price (Wermers 1999; Nofsinger & Sias 1999; Dasgupta et al. 2010). Wermers (1999) showed that there was a strong positive relationship between mutual fund herding and quarterly returns. Moreover herding is most disruptive when it is carried out by large investors such as institutions. Nofsinger and Sias (1999) showed that herding by mutual fund investors have a greater impact on price than herding by individual investors. Dasgupta et al. (2010) showed that institutional investors conducted information cascade-inspired herding which can lead to long-term stock returns reversals. We hypothesise that the presence of institutional investors induces informational herding in the IPO process. Such herding pushes the stock prices beyond the fundamental price in the short run (i.e. initial returns). Our hypothesis is as follows:

H3: There is a positive relationship between the level of institutional ownership at the time of the initial issue and the initial returns of the Initial Public Offering.

Over time, the price slowly adjusts back to the fundamental level. This long-term reversal manifests in the stock market underperformance of many issuers. So the hypothesis is as follows:

H4: There is a negative relationship between the level of institutional ownership at time of initial issue and the long term returns of the issuers.

5.4 Data and Methodology

5.4.1 Chapter sample selection and characteristics

We included in our final sample all Initial Public offerings for which we possess institutional ownership data. As we have stated previously, our access to institutional ownership was confined to the stocks that were constituents of ASX S&P500 (also known as the All Ordinaries index). This resulted in a sample of 68 initial public offerings between November 1995 and

April 2004. One benefit of evaluating only IPOs that were listed in the ASX500 is that they are the offerings that were of the greatest economic importance. So these IPOs are likely to have attracted the most interests from institutional investors. Other criteria for inclusion in the sample were that we had to have records of the level of institutional ownership and offer characteristics (such as size of the issue and the total share issued).

The final sample contained 68 Australian initial public offerings. Table 5.1 contains the descriptive statistics for the sample.³⁰ An examination of Table 1 shows average proceeds were \$125 million which is significantly higher than the sample mean of \$84.9million reported in Bayley et al. (2005). Note the high standard deviation of \$258 million indicates that the sample contains issuers from a wide spectrum of the market. The high dispersion of issuer was also noted by Bayley et al. (2005) which recorded a standard deviation of \$839million in their sample of Australian IPOs.

Table5-1 Descriptive statistics for 68 Australian IPO made between December 1995 and April 2004

The following sample shows the summary statistics of the sample of 68 Australian IPOs. Size is the gross proceeds of the issue measured in millions. Offer price is the price at which the shares were issued in the IPO. Total shares issued represent the total number of shares issued in the offering (in millions).					
Variable	Mean	S.D.	75%	Median	25th
Size (\$millions)	125.11	285.98	99.04	28.41	8.03
Total Shares issued	83.76	137.58	83.96	40.00	18.38
Offer Price	\$1.64	\$2.31	\$1.86	\$1.15	\$1.00

³⁰ It is important to remember that this study only included firms that were listed within the ASX500, so it is not surprising that there was a relatively small number of Australian IPOs of sufficient size to be listed in the All Ordinaries in that period.

5.4.2 Methodology

In order to examine the hypotheses, we employ two different methods. Firstly, we examine these hypotheses at the portfolio level. We created portfolios based on institutional ownership levels. We believe that the use of a portfolio method provided a realistic approach to analysing the performance of institutional investors. This is especially true in assessing the validity of the informed trading hypothesis since our interest lies in whether institutional investors are able to generate higher returns due to their informational advantage. After we complete our portfolio analysis, we examine the impact of institutional ownership levels at the firm level (i.e. cross section analysis). Our interest lies in examining the marginal effect of institutional ownership level and IPO characteristics (such as Size, Total Shares Issued and Offer Price) on both the short-term and long-term performance of the issuers.

5.4.3 Estimation of returns

The sample uses two measures of abnormal returns. For firm level analysis, we measure the returns of the issuer on the listing day. This measure represents the initial returns that are often referred to as underpricing in IPO literature. Initial returns are calculated using the following formula:

$$\text{Initial Returns} = \frac{\text{Closing Price Listing Day} - \text{Offer Price}}{\text{Offer Price}}$$

This is the same method employed in a number of IPO studies (Ritter 1987; Loughran & Ritter 2004). For the long-term performance study, we estimated cumulative abnormal returns to gauge the performance of the issuer. Abnormal returns are calculated daily and they are the market adjusted excess return for the firm. For the purpose of this study, we defined the All Ordinaries Index (ASX S&P500) as the market return. The cumulative abnormal returns are the

sum of the daily abnormal returns in the event period. Long-term post issue performances are measured using a two-year event window.

5.5 Empirical Results

5.5.1 Initial public offerings: further evidence of underpricing.

Table 5.2 shows that the average initial return was a statistically and economically significant 37.35% for the sample of 68 IPOs. The results are consistent with previous Australian studies that documented considerable underpricing. For example, Lee et al. (1996) found an average underpricing of 16.41%. Baley et al. (2006), with a sample of 419 IPOs, found an average underpricing of just over 26%. However it is important to note that Bayley et al. utilised a value-averaged mean price to estimate their initial returns as opposed to the stock's closing price that is favoured in our study and that this difference in methodology may explain the difference in the initial returns.

Table5-2 Characteristics of Institutional Ownership terciles

This table classifies transactions into three groups based on the level of institutional ownership. In order to classify these groups, the IPO transactions are divided into terciles according to the level of institutional ownership. High IO IPOs are firms that fall into the tercile of firms with the highest level of institutional ownership. Similarly Low IO IPOs are those firms that are in the tercile with the lowest institutional holdings. Size is the gross proceeds of the issue measured in millions. Offer price is the price at which the shares were issued. Total shares issued represent the total number of shares issued in the offering. We report the average characteristics of each institutional ownership-ranked terciles.				
		Institutional Ownership Terciles		
Firm Characteristics	Full Sample	1 (lowest IO)	2 (medium IO)	3 (highest IO)
Institutional Ownership Level	26.28%	6.12%	20.62%	51.85%
Size	125.11	233.03	70.42	69.50
Initial Returns	37.35%	17.52%	23.29%	70.64%
Offer Price	\$1.64	\$2.24	\$1.16	\$1.49
Number of Firms	68	23	22	23

Table5-3 Analysis of the effects of Institutional Percentage Holdings in Initial Public Offerings

This table reports the effect that institutional investors' holdings have on the IPO firms' performances between 1995 and 2004. Institutional ownership is defined as the total shareholdings of the IPO firm that are held by institutional investors. The definition of institutional investors includes all shareholdings in a firm that are not owned by individual investors. The mean aggregate holdings are reported as percentages. The table classifies transactions into two groups: IPO transactions by firms with low levels of institutional ownership and IPOs by firms with high levels of institutional ownership. In order to classify these groups, the IPO transactions are divided into terciles according to the level of institutional ownership. High IO IPOs are firms that fall into the tercile of firms with the highest level of institutional ownership and low IO IPOs are those firms with that are in the tercile with the lowest institutional holdings. The two measures of initial returns are the event windows EW {t} and EW {t, t+3} where t is the date of issue. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms).				
Type of Transactions	Number of Transactions	Average Institutional ownership level on Issue Date	Initial Abnormal Return	
			Initial Return	EW(0,3)
Full Sample	68	26.28%	37.35%*	38.88%*
			(t = 1.69)	(t =1.75)
Low Level of Institutional Ownership	23	6.12%	17.52%***	17.79%
			(t = 2.85)	(t = 0.96)
High Level of Institutional Ownership	23	51.85%	70.64%	70.93%
			(t =1.13)	(t =1.13)
Difference (High IO less Low IO)			53.12%	53.14%

5.5.2 Institutional Ownership and underpricing of IPOs

Now we turn our attention to the relationship between underpricing and the level of institutional ownership. In order to examine the possible influence of institutional ownership on the initial returns of the issuer, we sorted the sample into terciles according to the level of institutional ownership of the issuers. The results are presented in Table 5.3. In columns 2 to 4, we report the initial returns and other characteristics of the institutional ownership terciles. Consistent with both the informed trading and the overreaction hypotheses, we found a monotonically positive relationship between institutional holdings and initial returns. In fact, there was a difference of 53% between the returns of the tercile of firms with the lowest institutional ownership and their high institutional ownership counterparts. Although the

difference is not statistically significant due to the high variability of the sample, this difference of 53% in one day of trading is unquestionably economically significant. The results are consistent with a number of overseas studies that show higher initial returns for issuers that attract higher levels of institutional investment (Hanley & Wilhelm 1995; Aggarwal et al. 2002). However our results contrast with Field and Lowry's findings which found that the firms with the highest level of institutional ownership experienced relatively small initial returns in comparison to the rest of the sample.

Table 5.2 also revealed several other interesting and potentially important characteristics in the institutional terciles. First, it is notable that there was a substantial difference of 45% between the average institutional ownership of the high IO tercile and their low institutional ownership counterparts. Of greater interests, we found that the high institutional ownership tercile contained much smaller firms. In other words, institutions showed a preference for investing in smaller firms. This is contrary to the findings of Dor (2003) and Field and Lowry (2005). Dor (2003) found a positive relationship between institutional ownership and the gross proceeds of the issue. However there was only a small difference in the average gross proceeds across the various institutional quintiles. Similarly Field and Lowry (2005) also failed to find any significant connection between gross proceeds and institutional ownership. We believe that the difference in the institutional investors' appetite for smaller firms may be exaggerated by the composition of our sample. It is important to remember that the sample only contains issuers in the largest 500 companies on the ASX. So although there is little doubt that institutions demonstrated a preference for investing in the relatively small firms in our sample, these issuers should not be regarded as small per se.

That being said, we recognise the possibility that the positive relationship between institutional ownership and underpricing may be driven by a size effect. Beatty and Ritter (1986) documented a negative and highly significant relationship between the gross proceeds

of an issue and initial returns. They argue that smaller issuers needed to offer greater underpricing to compensate potential investors for “ex-ante” uncertainty or risks. So it is possible that the institutional investors were only able to realise greater returns because they purchased these smaller and more risky issues. In order to clarify these issues, we conducted cross-sectional analysis on the initial returns. While the results are not reported in this chapter, we found a negative but insignificant relationship between size and initial returns. So we conclude that the “size effect” is unlikely to have played a major role in the institutional investors’ success when investing in IPOs.

So far the findings are consistent with the prediction of both the informed trading hypothesis and the overreaction hypothesis. IPOs with high institutional ownership tend to earn higher returns than the IPOs that attract lower levels of institutional investment. This is consistent with both Hypotheses 1 and Hypotheses 3. We now turn our attention to the long-run performance of the issuers.

5.5.3 Analysis of IPO long-run performance

Table 5.4 reports the long-term stock market performance of the issuers. The table contains several measures of long-term performance, the issuers’ cumulative abnormal of returns for one year and two years.

Table 5.4 shows no evidence of general long-term underperformance across the entire sample. For the purpose on this discussion, we will concentrate on the two-year cumulative abnormal returns (CAR). The average cumulative abnormal return in the sample was 12% over the two-year period. In other words, the average issuer outperformed the All Ordinaries Index by 12% in the two years post issue. The results are inconsistent with previous Australian studies. For example, Bayley, Lee and Walter (2006) found substantial underperformance within their sample of 419 Australian IPOs.

Table5-4 : Analysis of the effects of Institutional Percentage Holdings in Initial Public Offerings

This table reports the effect of institutional investors' holdings on IPO firms' performances between 1995 and 2004. Institutional ownership is defined by the total shareholdings of the IPO firm that is held by institutional investors. The definition of institutional investors includes all shareholdings in a firm that are not owned by individual investors. The mean aggregate holdings are reported as percentages. The table classifies transactions into two groups: IPO transactions by firms with low levels of institutional ownership and IPOs by firms with high levels of institutional ownership. In order to classify these groups, the IPO transactions are divided into terciles according to the level of institutional ownership. High IO IPOs are firms that fall into the tercile of firms with the highest level of institutional ownership. Similarly Low IO IPOs are those firms with that are in the tercile with the lowest institutional holdings. The two windows are, EW (t, t+250) and EW (t, t+500), the first year following the IPO and 500 trading days after the IPO. Consistent with convention in long-term IPO studies, the measures of long-term performance exclude the initial returns. To derive abnormal returns, the firm's returns are benchmarked against the All Ordinaries Index in the corresponding period. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms). The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively

Type of Transactions	Number of Transactions	Average Institutional Ownership on			Long Run Abnormal return	
		Issue Date	1 year post listing	2 year post listing	EW{1,250}	EW{1,500}
Full Sample	68	26.28%	41.16%	43.79%	-0.37%	11.99%
					(t = -0.05)	(t =1.24)
Low Level of Institutional Ownership	23	6.12%	31.43%	35.79%	17.52%***	51.41%***
					(t = 2.85)	(t =3.33)
High Level of Institutional Ownership	23	51.84%	58.38%	59.94%	-11.43%	-21.42%
					(t =-1.17)	(t = -1.48)
Difference (High IO less Low IO)					-28.95%*	72.83%***

There are several possible explanations for the difference in the findings. First, Bayley et al's sample contained a large proportion of small firms. Although the average size of the proceeds in Bayley et al's sample was just one-third that of the sample average, Bayley et al. reported that the median proceeds were just \$8 million dollars. In other words, the vast majority of their issuers were very small firms. Since empirical evidence has shown that these small firms are the ones that are most susceptible to underperformance, we believe that Bayley et al's finding of underperformance may be driven by the poor returns amongst these small firms.

Moreover, the effect of the technology bubble may also have contributed to the poor long-run performance of Bayley et al's sample.

Our findings are consistent with Brav et al. (2000); Jelic et al. (2001); and Eckbo and Norli (2004). All of these studies failed to find any evidence of IPO long-term underperformance. Brav et al. (2000) found that after controlling for risk factors, issuers did not underperform in comparison to their seasoned counterparts. Similarly Jelic et al. (2001) found positive buy and hold returns for issuers for three years after the issue.

5.5.4 Institutional ownership and IPO long run performance

We now turn our attention to the influence that initial institutional investment has on the long-run performance of IPOs. From Table 5.4, we can see substantial underperformance in the high institutional ownership tercile. The high institutional ownership tercile underperformed the market by 21.42% over the two-year period. Interestingly the IPO underperformance is confined to firms with high levels of initial institutional investment. In fact, the firms with low levels of institutional ownership outperformed both the market and the firms with high level of institutional ownership. Over the two-year horizon, the portfolio of low IO issuers outperformed their high institutional ownership counterparts by an economically and statistically significant 72.83%.

The results are contrary to the findings of Dor (2003) and Field and Lowry (2005). As we mention in Section 5.2, Dor (2003) found that a portfolio of high institutional ownership firms was able to outperform the market by 1% over a three-year period. Similarly Field and Lowry (2005) found that a portfolio of issuers with high institutional investment was able to outperform their low IO counterparts. We should note however that Field and Lowry's results showed that the IO portfolio's performance began to decline for longer investment horizons. For a three-year investment horizon, Field and Lowry's high IO portfolio only outperformed the low IO portfolio by a four-factor adjusted 0.06% per month. The drop in performance of the

high IO portfolios is mirrored in our results. We noted that the differential between the high IO and low IO tercile increased from 28.95% in year 1 to 72.83% in the second year after the equity issue.

5.5.5 IPO underperformance and the informed trading hypothesis

So far the results of the long-run portfolio analysis do not support Hypotheses 2; high Initial institutional ownership does not lead to superior long-run stock market performance. However we are aware of the possibility that these findings may be subject to downward bias for several reasons. Firstly, due the nature of the aggregated institutional ownership data we are not able to determine how long the individual Institutions held on to the stocks. It is possible that the institutions who subscribed to the IPO had sold their takings prior to the end of the to-year holding period A second possibility is that there was a high proportion of relatively small issues in the high institutional ownership tercile. In order to control for size (and other factors), we conducted a cross sectional regression on the long-run performance of the issuers. The results are reported in Table 5.5.

An examination of Table 5.5 reveals there is a negative and significant relationship between initial institutional ownership and the long-run performance of the issuers. The coefficient of -0.0085 suggests that an increase of 1% in total institutional ownership will reduce the two-year CAR by 0.85%. So the evidence is not consistent with Hypothesis 2; the level of institutional investment is a poor predictor of the issuers' future returns. Our results indicate that the level of institutional ownership is a poor indication of the future stock market performance of the IPOs. The prima facie evidence suggests that institutions do not have any private information about the issuers in the period prior to or immediately after the equity issue (listing day). These findings are consistent with Hanley and Wilhelm (2005) who argue that institutional investors' success in IPO investment is solely the result of favourable allocation from the underwriter.

Table 5-5 Linear Regression Analysis of IPO Long Term Performance

The following table reports the results of linear regression models on long-term performance of companies that underwent initial public offerings. The sample consists of IPO transactions between January 1997 and December 2003. The dependent variable is the long-term share price performance of the IPOs in the period after the IPO. The event window is 500 trading days after the IPO. Consistent with convention in IPO long term studies, the measure of long-term performance excludes the initial returns. To derive abnormal returns, the firm's returns are benchmarked against the All Ordinaries Index in the corresponding period. Institutional Ownership Change represents the difference in institutional ownership between 1 month post IPO listing and 500 trading day post listing. Year dummies are included but not reported in the regression. The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.		
		Model 1
		Dependent Variable: CARI [1,500]
Variables		Coefficients
INSTUTIONAL OWNERSHIP		-0.0085*
INSTUTIONAL OWNERSHIP CHANGE		0.0134**
SIZE		0.0007
OFFER_PRICE		-0.1237
TOTAL SHARES OFFERED		0.0000
R-square		0.181

Of course, our finding does not necessarily suggest that institutions are poor investors. It is possible that the institutional investors may sell their share holdings after the initial period of high returns. This argument is supported by the positive and significant coefficient of 0.0134 associated with “institutional ownership change”. The “institutional ownership change” variable measures the institutional ownership flow from one month post listing to two years post listing (500 trading days). We have deliberately excluded the first month after the issue because of the possibility that our results will be contaminated by the large amount of flipping in the market. The positive and significant coefficient suggests that post-issue institutional trading is a good predictor of the future performance of an issuer. A closer inspection of Table 5.4 further demonstrates the success of the institutions’ post-listing trading. We can detect a substantial increase in the institutional ownership level for the tercile with low initial institutional ownership. In the two years after the initial listing day, the average institutional ownership increased almost sixfold from 6.12% to 35.79%. The result implies that institutions are able to cash in on the high long-run CAR (excess returns) of the low IO tercile. Although

there is evidence that institutions also increased their holdings in the high initial institutional ownership tercile of IPOs, the average increase is modest.

Our results present conflicting evidence with respect to the informed trading hypothesis. Although IPOs with high institutional ownership earn superior initial returns, these issuers also experienced significantly lower long-run returns in comparison to both their peers and the market. Yet our results still indicate that institutional investors exhibited superior judgement in their investment in the post-listing period.

Prior to our analysis of the overreaction hypothesis, it is worth dwelling on the implications of the findings thus far. The negative relationship between initial institutional investment and long-term performance of the firm is quite disconcerting. Ultimately companies float their stocks because they require greater resources to grow. In so doing, they exert a greater impact on the output and wealth of the economy. The main source of funds in the IPO process is institutional investors. If they do not allocate funds (or invest) on the basis of the prospects of the IPOs' long-term success, this must have a detrimental impact on the economic wealth of the nation.

5.5.6 IPO underpricing, underperformance, overreaction and information cascade

Finally we turn our attention to testing the overreaction hypotheses as an explanation for the IPO anomalies (Hypotheses 3 and 4). On a sample-wide basis, the results from Table 5.2 and Table 5.4 failed to support the overreaction hypothesis across the entire sample. There was no evidence of a general long-run reversal in returns. On the contrary the issuers continued to outperform the market in the two years after the equity issue. This is inconsistent with a number of Australian (see Lee et al. 1996; Bayley et al. 2006) and international IPO studies that

document reversals in returns (see Ritter 1991; Aggarwal et al. 1993; Álvarez & González 2005).

However a closer examination of Table 5.4 reveals a somewhat different story. After we sort the sample by the initial institutional ownership, we noted a dramatic returns reversal for the tercile with the high level of initial institutional ownership. The high IO tercile that experienced an average abnormal return of 70.93% on listing date proceeded to experience an abnormal return of -21.42% over the next two years. This provides *prima facie* support for the information cascade hypothesis (Hypotheses 3 and 4) for issuers that attract high institutional interest. These results prompt us to ponder the cause of the reversal.

Again we consider the possibility that the poor performance of the high IO tercile may be driven by a size effect. Previous studies have shown that small issuers tend to underperform (Brav & Gompers 1997; Brav et al. 2000). Brav and Gompers (1997) showed that small-growth firms tend to underperform in hot IPO markets. Similarly Brav et al. (2000) studied a sample of both IPOs and seasoned equity offerings. They also found that underperformance is mainly confined to small-growth firms. To control for the possibility that a size effect biased the results, we conducted a cross section analysis to assess what factors determine long-term IPO performance. The results are reported in Table 5.6. As we can see from Model 1 of table 5.6, there is a small positive but insignificant relationship between the gross proceeds (i.e. size) of the issuer and long-run returns of the issuers. The results suggest that it is unlikely that a size effect had a significant impact on the performance of the issuers.

The cross sectional analysis indicates a strong reversal in stock returns across the entire sample. Model 1 of Table 5.6 shows a significant negative relationship between initial returns and the long-run performance of the issuer. The coefficient associated with initial return was -0.1070 which suggests that a 1% increase in initial return will lead to a 0.1% reduction in long-run cumulative abnormal return. At first glance, this negative relationship contradicts the

results from our portfolio analysis which found a reversal only occurs amongst firms with ‘high’ levels of institutional ownership at the date of listing.

Table 5-6 Linear Regression Analysis of IPO Long Term Performance

This table reports the results of linear regression models on long-term performance of companies that underwent initial public offerings. The sample consists of IPO transactions between January 1997 and December 2003. The dependent variable is the long-term share price performance of the IPOs in the period after the IPO. The two windows are the one year following the IPO and 500 trading days after the IPO. Consistent with conventions in IPO long term studies, the measure of long term performance excludes the initial returns. To derive abnormal return, the firm’s returns are benchmark against the All Ordinaries Index in the corresponding period. Institutional Ownership Change represents the difference in institutional ownership one month post IPO listing and after two years of listing. Year dummies are included but not reported in the regression. The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.			
	Model 1		Model 1
	Dependent Variable:		Dependent Variable:
	CARi [1,500]		CARi [1,500]
Variables	Co-efficient		Co-efficient
INSTUTIONAL OWNERSHIP	-0.0092**		-0.0044
INSTUTIONAL OWNERSHIP CHANGE	0.0107		0.0085
INITIAL RETURN	-0.1070**		0.8057**
INSTUTIONAL OWNERSHIP*INITIAL RETURN			-0.0259***
SIZE	0.0005		0.0013
OFFER_PRICE	-0.1233		-0.0421
TOTAL SHARES OFFERED	0.0000		0.000
R-square	0.2358		0.3248

In order to cast further light on the relationship between initial returns and long-run performance of IPO, we added an interaction variable between institutional ownership and initial returns into the regression model. The inclusion of the interaction variable resulted in substantial changes in the relationship. First, the coefficient associated with initial institutional ownership has reduced to -0.0044 and was no longer statistically significant. Moreover the coefficient associated with initial returns became large, positive and statistically very significant. In order to interpret the relationship between initial returns and the long-run

performance of the issuers, it is necessary to combine the effects of coefficients associated with the initial returns and the interaction variable. Since the coefficient of the interaction between the initial returns and the institutional ownership is negative and highly significant, it will have an opposite effect to the initial returns variable. With the help of some simple arithmetic, we can work out that any issuer with an institutional ownership level below 31.1% would not have experienced any reversal in their long-run returns. Put simply, the results reaffirm the notion that reversal in returns only occurs in the third tercile of the sample, that is, for the IPO issuers that attracted the highest level of institutional ownership.³¹ The results are consistent with Dasgupta et al. (2010) who found long term reversals for stocks that were subject to persistently institutional investment. The stocks that were persistently bought (sold) by institutions will experience high (low) returns in the short run but will underperform (overperform) over a longer horizon.

In summing up, we can report that the results provide strong support for Hypothesis 4. The findings suggest that there is an information cascade-driven overreaction effect at work in the Australian IPO market. Our results are consistent with an informational herding or cascade effect around the time of the listing date. Investors view the presence of a high level of institutional investment as a pseudo stamp of quality for these issuers. Therefore, investors disregard their own private information and herd toward the issuers with high initial institutional ownership. The resultant demand creates price pressure on these stocks and pushes the share price beyond its fundamental value. In the short term, the only obvious symptom of these excesses is high initial returns. As the market adjusts in the long run, the issuers with high initial institutional investments will experience underperformance.

³¹ It is an interesting coincidence that only 24 issuers firms in our sample had an initial institutional ownership level greater than 31.1%. In other words, the only firms that were expected to experience a reversal of returns were the firms that are in the aforesaid high IO tercile.

These results allow us to rule out a number of competing hypotheses for the IPO-related anomalies. The positive relationship between underpricing and underperformance contradicts the prediction of the signalling hypothesis (see Welch 1992; Álvarez & González 2005). The absence of a general reversal of returns across the entire sample allows us to discard the fad explanation (Aggarwal & Rivoli 1990) and the heterogeneous belief explanation (Miller 1976). None of these hypotheses can provide a satisfactory explanation for a reversal in returns that only occurs in a subsection of issuers, namely the firms with high levels of institutional ownership.

Our results place some doubts over the notion that the presence of institutional investors aids price discovery and contributes to market efficiency through informed trading. On the contrary, institutional investment in the IPO process appears to create a climate of greater uncertainty and short-term mispricing.

5.6 Chapter conclusion and remarks

In this chapter, we have attempted to cast more light on the impact of institutional investors in major corporate decision, initial public offering. Being the majority investors in the stock markets worldwide, institutional investors are crucial to the IPO process. Yet there are few studies on whether the presence of institutional investors impacts on the IPOs and in particular, whether they cause the IPO anomalies. Consistent with expectations, the results indicate that institutional investors are able to yield higher initial returns. Indeed the tercile of IPOs with high institutional ownership outperformed their low institutional ownership counterparts by over 53%. Over the long run, however, issuers that attracted high institutional investment (at the time of issue) underperformed both the market and Low IO counterparts. The results do cast some doubts on the notion that institutional investors have an information advantage in IPOs. More importantly, the results pose the question of whether these large

influential investors provide funding to the companies that have the greatest economic potential.

The analysis also uncovered a most interesting link between the IPO anomalies. A number of previous studies found a positive relationship between initial underpricing and long-run underperformance of issuers. In other words, the issuers that experienced the greatest initial returns have a tendency to experience the greatest underperformance. There have been a number of explanations for this apparent reversal including the overreaction hypotheses (i.e. fads or speculative bubbles), heterogeneous expectations and the marketing event explanation (Rajan & Servaes 1993). Common to all these explanations is the prediction of general returns reversals in IPO firms which means researchers had great difficulties in interpreting past results. However our results indicate that only stocks with high initial levels of institutional ownership will experience high initial returns and long-run underperformance. We believe that the presence of a higher level of institutional investment in the IPO triggers herding behaviour by investors. The heightened demand causes price pressure which pushes the issuers' share prices beyond the fundamental value. Over time, market adjustment occurs and the issuers' share price returns to the fundamental level which will manifest in the apparent underperformance. Our results are consistent with Dasgupta et al. (2010) who showed that institutional herding can cause long-term reversion in stock prices.

It is widely accepted that institutional investors' participation plays an essential role in the IPO market. Not only are institutions the major investors in most IPOs, but they are also the major contributors in the book-building process and more importantly, in the price discovery process that is so essential in determining the value of the as-yet unlisted company. Our results cast a somewhat different light on institutions' impact on IPOs. Rather than contributing to the price discovery process and efficient resource allocation with their large resources of information

and talent, institutions' presence in IPO may lead to further uncertainty in what is already a process beset with uncertainty.

6 CHAPTER 6 – Monitors or Traders: A study of institutional investors’ role in mergers and acquisitions

6.1 Introduction

This chapter explores the very important question of whether institutional investor’s involvement in the ownership of corporations reduces the agency problem and leads to better corporate decisions. Both the theoretical and empirical literature have postulated that institutional investors have the incentives, means and know-how to perform the very important role of monitoring the actions of corporations and thus of reducing the agency costs associated with large corporations. Yet there is still a lack of consensus in regard to whether managers are willing to fulfil this most important monitoring role. Others believe that institutional investors prefer to follow the “Wall Street Rule” and vote with their feet when they perceive that a company is poorly managed. We seek to provide greater clarity on these conflicting roles through an analysis of institutional investors’ impact on the most contentious of corporate decisions: mergers and acquisitions.

Section 6.2 provides a brief review of the literature in the field of mergers and acquisitions and discusses the importance of evaluating the role that institutional investors play in mergers and acquisitions. This is followed by a review of prior studies that examines the impact of institutional investors in these transactions. Section 6.3 outlines and develops testable hypotheses related to the role of institutional investors in mergers and acquisitions. Section 6.4 details the data used in the study and provides a brief explanation of the unique set of institutional data used in this study. In section 6.5, we present the results and analyse the implications of our findings. Section 6.6 concludes the chapter and summarises the impact of institutional owners on mergers and acquisitions.

6.2 Why are mergers and acquisitions so contentious?

Mergers and acquisitions are regarded as contentious because of a belief amongst many academics and practitioners that they are wealth destroying processes. For example, a recent survey of executives shows that only approximately 37% of managers believe mergers and acquisitions create value for the acquiring firm. More alarmingly, the respondents believe that only 20% of mergers achieve their strategic aims (Bruner 2004). One question that this raises is whether this negative view of mergers and acquisitions is justified.

In Bruner's 2004 survey paper, he reviewed the findings of a large number of empirical studies into both the announcement period returns and long-term performances of bidders. Of the 52 studies, 32 reported positive returns but only 23 reported significantly positive returns in the announcement period. At the same time 14 of the 22 studies reported significant negative returns for bidders. However Moeller et al. (2005) reported more damning results when they found that acquirers lost 12 cents per dollar spent on acquisitions in their sample of 4136 merger deals from 1998 to 2001. In dollar terms, the losses amounted to \$240 billion. Significantly, Moeller et al.'s results show that the acquirers' losses are 50 times greater than the acquirers' losses in the 1980 to 1990 period. So in spite of the improvement in the standards of corporate governance in security markets over the past decades, bidder losses have escalated in the most recent merger wave.³²

Empirical studies on long-run performance show that bidders fared no better. Bruner (2004) documented the results of 16 studies of bidders' long-run performances and found that 11 of

³² The increase in bidder's losses may be reflective of the changes in law that provide greater protection for the target. Bradley et al. (1988) found evidence that more stringent regulations on merger transaction benefit the target at the expense of the acquirer. These findings are consistent with other empirical studies (Smiley 1975; Jarrell & Bradley 1980). Smiley (1975) found that the Williams Amendment of 1967 increased the targets' return by 13%. Jarrell and Bradley compared the returns distribution before and after the introduction of the Williams Amendment. They found that target returns increased from 22% to 47% in the period after the introduction of the Williams Amendment and changes to state law.

the 16 studies show the acquirers experienced significant negative returns in the post-merger years. Agrawal and Jaffe (1999) also canvassed the literature and conclude that bidders experience long-run underperformance. The authors found that the negative performances are confined to mergers. Interestingly they found that the bidders who make tender offers do not experience poor performance in the post-merger period. These results are consistent with Rau and Vermaelen (1998) who documented a negative mean CAR of -4% for mergers but Agrawal and Jaffe's sub-sample of tender offers offered a positive mean CAR of 9% over a three-year period. Yet Loughran and Vijh (1997) found tender offer bids earn little or no abnormal returns for the bidder's shareholders.

Empirical studies outside the US market also provide conflicting results (Andre et al. 2004; Higson & Elliott 1998; Pettit 2000; Conn et al. 2005; Tuch & O'Sullivan 2007). For example, Andre et al. (2004) found bidders experienced significant negative returns in a sample of 143 Canadian merger and acquisition transactions. Yet Dutta and Jog (2007) in a more comprehensive study of Canadian takeovers which included a larger sample of 1300 transactions, found no evidence of underperformance for the bidders after accounting for the methodological discrepancies (such as benchmarks) and deal-specific factors (such as medium of exchange and offer type). The evidence from the European market for corporate control is also inconclusive. Franks and Harris (1989) found that bidders' realised CAPM-adjusted average abnormal returns of 4.5% in a sample of 1058 UK bidders. Coon et al. (2005), Tuch and O'Sullivan are amongst the UK studies that found significant underperformance for the bidders in takeovers. Similarly Pettit (2000) found significant negative returns for acquirers in a sample of 216 French tender offers. In Australia, Brown and da Silva Rosa (1997), da Silva Rosa et al. (2000) and Strutt (2009) are amongst the studies that found long-term underperformance for the bidding firms. Interestingly da Silva Rosa et al. (2000) found that the underperformance was confined to the firms that used shares as a medium of exchange. Strutt (2009) found that

bidders are not only underperformers in general, they also become more pro-cyclical. The bidders are more able to take advantage of the good economic condition but they are also more susceptible to downturns as well. Given that takeover waves usually come in the midst of a boom, the general finding of poor long-run performance may be reflective of the ensuing downturns. So the balance of empirical evidence suggests that the long-run performances are mixed at best.

6.2.1 Is the underperformance caused by overpayment? The case of the winner's curse

Perhaps the most logical explanation for these underperformances is the most obvious: that bidders pay too much for the target firms (Varaiya & Ferris 1987; Varaiya 1988; Black 1989; Schurman 1999). Varaiya and Ferris (1987) provide empirical support for this view. They measured the winning bid premium relative to the market valuation of the target companies and found that more than half of the bidders overpaid for the expected takeover gain. Moreover Variya and Ferris observed a direct contrast between the acquirers that overpaid for the target and other bidders. The "winners" experienced average excess returns of 13.4%, while the 58% of firms who overpaid yielded an excess return of -14%. Schurman (1999) studied a sample of proposed takeovers that were subsequently rejected by anti-trust authorities. He found that the negative returns in the announcement window can be largely attributed to managers making offers that were too high. So it can be seen that many successful bidders suffer from a winner's curse.

6.2.2 Agency problem and managerial confidence in corporate takeover decision

It appears odd that corporate executives are willing to consistently overestimate the benefits of takeovers and destroy shareholder value. The reason may lie in the fact that increasing shareholder value is not the paramount motive for these mergers and acquisitions. Some

believe that managers' objectives such as risk reduction (Amihud & Lev 1981), entrenching investment (Shleifer & Vishny 1989) and empire building (Avery et al. 1998) drive the mergers and acquisitions market. The common underlying theme in all of these explanations is that managers undertake value decreasing takeovers to further their own aims at the expense of the shareholders. In other words, the agency problem may be responsible for the apparent underperformance by the acquirers. Morck et al. (1990) found evidence to indicate that managers consider their personal gains prior to the merger decision.

Others believe that managers may not deliberately overpay for target firms; rather they over-value the target because they are overconfident about their own ability to generate synergistic gains (Roll 1986; Hayward & Hambrick 1997; Morck et al. 1990; Hietala et al. 2003). Roll (1986) points out that in his study the acquirers were typically highly successful firms who experienced above-average returns in the period prior to the takeover. As a result of their success, corporate management are bullish in their judgements. Roll argues that this overconfidence entices them to pursue targets despite an unjustifiably high premium. Hayward and Hambrick (1997) found a positive relationship between indicators of managerial hubris and the premium paid in acquisitions. Using a sample of 106 mergers, the authors found that CEO salary, media praise for the CEO and hubris were positively related to the premiums paid in takeover transactions. Hietala et al. (2003) created a framework to analyse information in merger announcements and found support for the presence of managerial overconfidence in merger and acquisition transactions. The results indicate that both managerial overconfidence and the search for private monetary and non-monetary gains are more likely explanations for overpayment than the traditional agency problem (i.e. pecuniary benefit).

In view of the firm support for management overconfidence or agency based explanations for the underperformance of the bidder, it stands to reason that more stringent monitoring of

managerial action could significantly reduce the likelihood of poor merger and acquisition decisions. One important source of monitoring is provided by institutional investors.

6.2.3 How can a study of institutional ownership help us understand the takeover puzzle?

6.2.3.1 *Institutional Investors as guardians of the gate*

Many believe that institutional investors can provide effective monitoring of managerial actions (Black 1992; Hartzell & Starks 2003; Almazan et al. 2005). Conventional wisdom suggests that institutions have a greater incentive than small shareholders to monitor firms and are in better position to do so. By taking advantage of economies of scale, institutions should derive benefits from monitoring the managers' actions which are greater than the associated costs (Schlifer & Vishny 1986; Huddart 1993). In doing so, institutions could effectively reduce the agency problems within the firms. Indeed many studies have shown that institutional ownership of a firm can help reduce the agency problem in corporate decisions (Nesbitt 1994; Kang & Shidasani 1995; Wright et al. 1996; Hartzell & Starks 2003; Almazan et al. 2005). Nesbitt (1994) demonstrated how effective institutional investor monitoring can be. They found firms that were targeted for monitoring by the Californian Public Employees' Retirement (i.e. CalPERS) System yielded returns that were 41% higher than the market average over the subsequent five-year period. Hartzell and Starks (2003) showed that there is a positive relationship between institutional investor ownership concentration and the pay for performance sensitivity of managerial compensation. The authors also found that institutional ownership concentration has the tendency to reduce executive compensation. Elsewhere Wright et al. (1996) have shown that institutional investors can reduce the agency problem by exerting a positive influence on corporate risk taking in firms with ample growth opportunities.

However there is still some doubt over whether institutions are willing to take on this role. Empirical studies have only provided limited support for the idea that institutional investors

can be effective monitors. Jennings (2004) conducted Grainger Causality tests to show that institutions are attracted to quality firms. However institutions fail to monitor management and these quality firms have a tendency to lose value after the institution's investment. Song and Szewczyk (2003) studied the Council of Institutional Investors' (CII) focus list of underperforming firms. The Council of Institutional Investors is an organisation which comprises 120 public funds. Each year, the CII publishes a "focus list" to alert its members to increase their monitoring of the listed companies. The aim is to increase monitoring and coerce the listed firms' managements to improve operating performance. Unfortunately the authors found no marked difference in performance between the firms targeted by the CII and matching firms. Song and Szewczyk conclude that there is little evidence to support the efficacy of monitoring by institutional investors.

In Australia, Gallagher et al. (2005) further undermined the notion that institutional investors are effective monitors. In their study of institutional investors, they show that after addressing some methodological issues in the Hartzell and Stark's study, the presence of institutional investors actually lowers pay-for-performance sensitivity and increases executive salaries. The authors argue that the fear of managerial entrenchment has the effect of lowering private share holdings which ultimately creates environments where there is lower pay-for-performance sensitivity.

6.2.3.2 Institutional investors and the Wall Street rule

One impediment to institutional monitoring is that many see institutional investors as passive and myopic investors. Under this view, institutional investors are short-term investors who are not interested in bearing the costs of monitoring the shareholders (Kahn & Winton 1998). Rather, they are "stock pickers" who try to earn superior returns through astute trading. They are driven purely by the myopic pursuit of outperforming a designated benchmark. If the company's management makes poor decisions, institutions will follow the 'Wall Street Rule'

and vote with their feet by exiting the company. Parrino et al. (2006) suggest the fact that institutional investors behave in this way is evidenced by the fact that they sell stocks in the year prior to the sacking of CEOs.

There are a number of other reasons that institutions may not wish to monitor managers. First, due to the need for diversification, institutions may only hold small positions within any particular firm resulting in the monitoring costs being greater than the potential benefits. Second, the institutions themselves may suffer from agency problems such as managerial incentives, related business with companies and the free rider problem. Given that the benefits go to the institutions' beneficiaries rather than its managers, the managers of institutions may not wish to bear the costs of any personal liabilities (Jennings 2004).

Under this view, the influence of institutions on mergers and acquisitions transactions will be detected through institutional investors trading at or near the announcement of acquisitions. Institutions will buy shares in bidders that undertake value increasing transactions and penalise poor bids by dumping the shares of those firms.

There is disagreement over the contribution that institutional investors might have in mergers and acquisitions. Recent studies by Harford et al. (2007) and Qiu (2006) have provided some support for the institution's monitoring role in takeovers. On the other hand, Ashraf and Jayaraman (2007) provide evidence that institutions strategically trade at the time of the takeover announcements to derive the highest returns for the stakeholders. This chapter aims to shed further light on whether institutions play a monitoring role or are short-term transient investors who are only interested in deriving a high return from trading.

6.2.4 Previous literature on institutional ownership and mergers and acquisition

As mentioned in the introduction, there have been few studies directly relating institutional ownership to mergers and acquisitions. Some studies have explored the relationship between

the likelihood of a takeover and the extent of institutional ownership in the target firm (Brickley et al. 1988; Karpoff 2006; Gopalan 2005). The main finding of these studies is that the presence of a large blockholder (such as institutional investors) can improve the probability of success of the bid. For example, Gopalan (2005) finds that institutional blocs of holders selling their stakes in the target can increase the probability of a successful bid by 35%.

Other studies have shown that large shareholders (such as institutional investors) have a wealth increasing impact for the target shareholders in mergers and acquisition transactions (Schlifer & Vishny 1986; Bhagat & Jeffries 1991; Brickley et al. 1988; Qiu & Hong 2006). Schlifer and Vishny (1986) built a model containing firms with large minority shareholders and examined the impact of the shareholder's presence on the takeover decisions. The authors found that the large minority shareholder can negate the free-rider problem which is a "necessary condition for a value-increasing takeover to occur" (Schlifer & Vishny 1986, p.470). Brickley et al. (1988) argue that institutional investors are more likely to vote in opposition to management in proposals that are harmful to shareholders such as anti-takeover amendments. So there is agreement on the beneficial contribution played by institutions in the target firms. We now turn our attention to the more pressing question: can institutional holdings have a positive impact on the bidding company by ensuring that managers are more likely to only bid for value-increasing takeovers?

The studies that are most closely related to our work are Duggal and Millar (1999), Harford et al. (2007) and Qiu (2006). Duggal and Millar (1999) examine the role of institutional investors in the corporate takeover. They show that after controlling for firm size, insider ownership and the firm's presence in the S&P500, the presence of institutional investors failed to enhance the announcement period returns of the bidding firm. Moreover they found that the presence of CalPERS in the bidding firm's ownership also did not have a significant impact on the bidder's returns. Qiu (2006) concentrated on the monitoring role of public pension funds (PPF)

in mergers and acquisition transactions. The authors argue that unlike banks, insurance companies and other institutions that may have related business with the firm, public pension funds have a greater incentive to monitor firms because of their independence. Qiu found that the presence of public pension funds has a beneficial effect on the acquirer's long-run performance (measured by both CAR and accounting measures). Qiu also shows that the presence of PPF results in a substantial reduction in the likelihood of bad mergers and acquisitions proceeding. Qiu's results indicate that an increase of 1% in PPF ownership will reduce the mergers and acquisitions frequency of a cash rich and low q acquirer by 8%. The study reports that other institutions such as mutual funds do not have the same influence on merger and acquisition transaction.

Following a similar theme to Qiu (2006), Harford et al. (2007) separated institutions into two main types, long-term investors that performed the role of monitoring (rather than trading) and other non-monitoring institutions that are short-term investors. The authors found that a high level of institutional ownership (or large ownership by institutions with short investment horizons) is not indicative of the success of the acquisition (i.e. the post-merger performance of the bidder). However there is a positive relationship between the levels of ownership by long-term institutional owners and post-merger performance. Interestingly, the authors reported that the monitoring effect was greater in 1990–2001 and attributed the greater effectiveness to an increase in shareholder activism in that period.

Harford et al. (2007) also note that long-term independent institutions appear to be privy to information regarding the value of the merger prior to the announcement. The institutions increase ownership in value-increasing mergers and sell firms that make poor M & A decision. It is notable that the change in ownership occurs in the year prior to the announcement rather than in the quarter immediately prior to the announcement. These findings are supported by with Qiu (2006) which also found that institutional owners increase ownership in value-

increasing acquirers. However Qiu defined the change in ownership as changes that occur in the quarter prior to the merger announcement. Both studies conclude that the increase in ownership is the result of institutions acquiring “private” information from monitoring.

The issue of institutional trading around the merger period was explored in greater detail by Ashraf and Jayaraman (2007). These authors examined a sample of 2073 mergers in the period 1992–2001. Once again, the study separated institutions into two types. Investment companies and independent investment advisors were regarded as active investors but other institutions were classified as passive investors. Ashraf and Jayaraman (2007) found that active investors increase their ownership in bidders that experience positive returns in the announcement period. Moreover these institutions appear to show a preference for stock rather than cash bids. Conversely the authors failed to detect any relationship between passive institutions’ trading and announcement period return. Ashraf et al. argue that passive institutions base their investment on the bidder’s fundamentals rather than the short-term market reaction to the merger announcement. Their study also found that active institutions will switch their preferences to cash mergers prior to the resolution quarter. The authors argue that this shift in preference is the result of active IO correcting their initial overreaction to stock merger announcements. This argument is at variance with previous evidence that has shown that cash mergers are associated with higher CAR in the event window because cash bids are widely regarded as value-increasing transactions. If active institutional investors were reacting to the CAR around the announcement period, they would prefer to buy into cash bidders. Moreover the switch from stock to cash bidders is likely to be associated with substantial transaction costs and capital losses.

All of these studies suffer from a major shortcoming, the reliance on 13F filings as the source for institutional ownership data. Although 13F filings by institutions can divulge a comprehensive picture of the ownership structure of the acquirers, institutions are only

required to make 13F filings at the end of each quarter. For the purposes of an events study (of events such as merger announcements), any 13F-deduced institutional ownership data lacks precision. In most circumstances, the data will allow the researcher to detect and examine institutional ownership trading in the period immediately prior to and after the announcement. For example, Chen et al. (2006) examine changes in institutional holdings in the quarter prior to a merger announcement. A real disadvantage of this methodology is that the researcher can only make an inference rather than a direct conclusion about the institutional investors' behaviour. In this study, we will be able to overcome this problem because the ASX-CHESS institutional data is updated daily and promises to provide a more detailed analysis of the trading activity around the merger announcement period.

6.3 Hypothesis Development and Empirical Prediction

6.3.1 The monitoring hypothesis

We have established that the agency problem in corporate decision making is one of the explanations offered for bidder underperformance. The takeover puzzle is an enduring anomaly in corporate finance (Amihud & Lev 1981; Shleifer & Vishny 1989; Morck et al. 1990). We argue that one of the most efficient methods of eliminating managerial incentive-driven takeover bids is effective monitoring by powerful and informed shareholders such as institutional investors. We argue that institutional investors have the means and more importantly the incentive to monitor the actions of corporate managers.

The issue of incentive is an important since there large fixed costs associated with monitoring but the benefits are distributed evenly across all shareholders. For institutional investors to carry out monitoring, they must be able derive sufficient benefit to recoup the costs of forbearing the monitoring duties. In other words, institutional investors must own a large enough stake so that they will receive greater benefits than the costs incurred in monitoring.

This forms the basis of our first hypothesis. As institutional ownership increases in the bidding firm, there is a greater likelihood of institutional monitoring and a lower likelihood of value-decreasing decisions. This leads to our first hypothesis:

H1: there is a positive relationship between the bidder's institutional ownership level and bidder's returns

In this study, we examine both the short-run and the post-merger long-run performance of the bidding firm. Of course, effective monitoring of managerial action does not cease after the takeover decision. Continued effective monitoring should ensure that managers continue to work hard in the most important transaction period when the bidder is looking to incorporate the target firm into its operations. If institutional investors provide an effective source of monitoring, then we should see superior post-merger operating performance for bidders with high levels of institutional ownership. This leads to our second hypothesis:

H2: There is a positive relationship between the bidder's institutional ownership level and the bidder's long run operating performances.

Finally since the main objective of monitoring is to prevent agency-related poor investment decisions. Institutional monitoring should be most effective in preventing value-destroying transactions (e.g. takeovers for the purpose of empire building, entrenchment or diversification). In order to further test the effectiveness of institutional monitoring, we will examine the impact and effectiveness of institutional monitoring within the sample of value-destroying transactions. We will use a logit regression model to evaluate whether the level of institutional ownership can reduce the likelihood of a value-decreasing merger bid. This leads to our final hypothesis for institutional monitoring:

H3: There is a negative relationship between the bidder's institutional ownership level and destroying transaction transactions.

6.3.2 The informed trading hypothesis

There is an alternative school of thought which argues that institutions will prefer to trade on their superior information rather than provide monitoring service. Many studies have shown that institutional investors have an information advantage and appear to have foreknowledge of corporate decisions (Szewczyk et al. 1992; Alangar et al. 1999). For example, Alangar et al. (1999) show that firms with relatively high levels of institutional ownership tend to have a smaller share price reaction to the announcement of changes in dividends. The information (or informed trading) hypothesis suggests that economies of scale in the gathering and processing of information gives institutions an information advantage which is utilised to make trading profits. Empirical studies have provided strong support for the informed trading hypothesis (Ke & Petroni 2000; Amihud & Li 2002).

Although the aforementioned studies found evidence to support the informed trading hypothesis, we believe that merger and acquisition transactions have the potential to provide a stronger test of the informed trading hypothesis. Merger and acquisition decisions have a far greater impact on firm value than other corporate announcements (such as changes in dividends). An announcement's impact on the share price is a most important consideration for institutional investors' decisions to reorganise their portfolio. By their nature, institutions hold much larger positions in stocks than individual investors. Whereas individual investors' transactions are unlikely to influence the share price, institutions' transactions can lead to significant share price movements. This is why institutions are likely to incur large "transaction" costs in reorganising their portfolios. With this in mind, institutional investors will only trade if the benefits of conducting the trade are greater than the costs involved in reorganising their portfolios. Since a takeover decision is likely to have a greater impact than other corporate decisions, they are more likely to trade prior to a takeover announcement than they are prior to other announcements.

Following a similar logic, the changes in institutional ownership should be in proportion to the expected benefits and losses of the merger. A merger that is expected to substantially increase firm value will lead to an influx of institutional investors prior to the announcement. Similarly a value-destroying transaction will lead to an exodus of institutional investors. This leads to our hypothesis:

H4: There is a positive relationship between the changes in institutional ownership and subsequent bidder's returns.

In order to have a value-increasing merger, it is imperative that management is able to achieve synergy between the bidder and target companies. We argue that institutional investors use their informational advantage to assess the quality of the bidder's management. The more able the bidder's management, the greater the probability of a successful merger of the two business entities. Therefore institutional investors will invest in bidders who are most likely to achieve effective synergies. Using changes in operating performances (measured by changes in profitability) as our measure for synergy, we test the following hypothesis:

H5: There is a positive relationship between the changes in institutional ownership announcement and the bidder's long run operating performances.

Finally we will further test the informed trading hypothesis using the logit models. With access to superior information, institutional investors should be able to avoid investment in value-decreasing mergers. Put simply, institutional investors should be able to avoid investment in bidders that make value-destroying bids. We test the informed trading hypothesis and make the following empirical predictions:

H6: There is a negative relationship between the bidder's institutional ownership level and destroying transaction transactions.

6.4 Data and Methodology

6.4.1 Data and Sample Characteristics for the takeover study

This chapter examines data for a set of merger and acquisition transactions from the Australian Stock market from January 1997 to March 2006. The mergers and acquisition transaction details were sourced from Connect4. Returns data were calculated from the price data gathered from DataStream and IRESS. Company financial data were acquired from the Aspect Huntley via the FinAnalysis service and DataStream. To reduce the impact of outliers, data were windsorised at three standard deviations from the mean.

6.4.1.1 Sample selection and characteristics

We included in our final sample all mergers and acquisitions (between 1997 and March 2006) for which we possess institutional ownership data. As we have stated previously, our access to institutional ownership was confined to the stocks that were constituents of ASX S&P500 (also known as the All Ordinaries index). One benefit of evaluating only the mergers and acquisitions of the largest 500 companies is that they are likely to be the stocks that were sufficiently large to attract interest from institutional investors. Also, to be included in the final sample, we must have records of institutional ownership level, firm characteristics (such as market-to-book value ratio and firm size) and bid characteristics (medium of exchange, scheme arrangement and the relative size of the companies involved). Table 6.1 contains the definitions of the data used in this study. Table 6.2 details the summary statistics of the final 123 completed transactions from the Australian stock market. Consistent with our expectations, the bidders are substantially larger than the target firms. On average, the bidder's market value is five times greater than the market value of the target firm. Bidders used a number of mediums of exchange in the takeovers with cash tenders being the most frequently used. It is also notable that cash payment was the dominant method of payment for

the bidders with high institutional ownership, with 50% of the transactions being conducted with cash payments.

Table 6-1 Definition of variables

Variable	Definition
<i>Dependent Variables</i>	
CAR _i [t-1,t+1]	The cumulative abnormal return for firm 'i' for the 3-day window that surrounds the merger announcement. The event window encompasses one day before the announcement, the announcement day and the day after the announcement.
CAR _i [t-5,t+5]	The cumulative abnormal return for firm 'i' for the 11-day window that surrounds the merger announcement. The event window encompass the 5 days prior to the announcement, the announcement day and the five days after the announcement.
CAR _i [t, t+350]	The cumulative abnormal return for the event for firm 'i' for the period from the announcement day to 350 days post announcement.
NEG_CAR[t-5, t+5]	If the cumulative abnormal return of firm i is positive for event window [t-5, t+5], Dummy variable = 1. Otherwise, Dummy = 0.
NEG_CAR[t, t+350]	If the cumulative abnormal return of firm i is positive for event window [t, t+350], Dummy variable = 1. Otherwise, Dummy = 0.
ROEChange	Measures the change in bidder's profitability (namely change in Return on Equity) in the year after the merger announcement.
ROAChange	Measures the change in bidder's profitability (namely change in Return on Equity) in the year after the merger announcement.
<i>Explanatory Variables</i>	
Inst Ownership	Represents the percentage of the bidder's shares that are controlled by institutional investors.
Change in IO	Represent the changes in the percentage of institutional shareholdings in the 20 days prior to the merger.
<i>Bid Characteristic</i>	
DIVERSIFICATION	A dummy variable that takes on the value of 1 if the bidder and target firms have different industry code. Otherwise, Dummy =0.
SCHEME	If the takeover involves a scheme of arrangement, Dummy variable = 1. Otherwise, Dummy = 0.
SHARES	If the medium of exchange used in the transaction is purely stock, Dummy variable = 1. Otherwise, Dummy = 0.
CASH	If the medium of exchange used in the transaction is purely cash, Dummy variable = 1. Otherwise, Dummy = 0.
IMPLIED RELATIVE SIZE	This variable measure of the proposed size of the merger deal relative to the size of the bidder.
<i>Firm Characteristic Controls</i>	
LNMCAP	The natural logarithm of the bidder's market capitalisation at the time of the merger announcement.
ROA	Variable that represents the bidder's Return on Asset as measured by
ROE	Variable that represents the bidder's Return on Equity as measured by
MARKET TO BOOK	The approximation of the bidder's Tobin's Q statistics which is measured by the market value of the equity divided by book value of equity

Table 6-2 Summary Statistics

Table 6.2 contains the summary statistics of the sample from January 1997 to March. Market value of the bidder is reported as at the date of the announcement. The variable Implied Relative Deal Size measures the proposed size of the merger deal relative to the size of the bidder.			
Variables	Full Sample	Low Institutional Ownership	High Institutional Ownership
Market Value-Bidder	3744.64	4109	3380
Market Value-Target	714.5	639	790
Implied Relative Deal Size	34.00%	28.00%	41.00%
Market To Book Value	4.04	4.78	3.31
Medium of Exchange:			
- Scheme	39	24	15
- Cash Dummy	57	26	31
-Others	28	12	16
Diversification	53	33	33

6.4.2 Chapter Methodology

6.4.2.1 Choice of Methodology

In order to examine the hypotheses, we employ three different methods. First, we examine the six hypotheses at a portfolio level. We created portfolios based on both IO level and institutional ownership flows (changes in institutional ownership). We believe that a portfolio method provides a realistic approach in analysing the performance of institutional investors. This is especially true in assessing the validity of the informed trading hypotheses because our interest lies in whether institutional investors are able to generate higher returns from their informational advantage. After we complete our portfolio analysis, we examine the impact of institutional ownership level and institutional ownership flow at the firm level. Our interest lies in examining the marginal effect of these variables on both the short-term and long-term performance of the bidding firms. Finally we complete our analysis by creating logit models. The use of the logit model allows us to examine whether the level of institutional ownership (or changes in this level) can predict a value-destroying transaction.

6.4.2.2 Estimation of returns

The study employs both a short-term and long-term event window to gauge the performance of the bidders. For firm-level analysis, we measure the cumulative abnormal returns of individual bidders (denoted as $CAR\{t-, t+\}$). This is the same method employed by Andrade Mitchell and Stafford (2001) and Hartford et al. (2006) amongst others to examine bidders' performances in mergers. Abnormal returns are calculated daily and represent the performance against the market. For the purpose of this study, we defined the All Ordinaries Index as the market. The cumulative abnormal returns are the sum of the daily abnormal returns in the event period. Three different event windows are considered. Announcement period share price performances are measured using 10-day event windows $\{t-5, t+5\}$ ³³. Long-term post-merger performances are measured using a 350 day-event window.³⁴

For the portfolio-level analysis, we use the cumulative average abnormal return as a gauge of portfolio performance. Abnormal returns are calculated daily and they are the market adjusted excess returns. The cumulative average abnormal returns (CAAR) are calculated by deriving excess returns on a stock by stock basis for each event day. The next step is to derive an arithmetic average of the excess returns. As such, the CAAR is an equally weighted average abnormal return. Finally we sum all the daily average abnormal returns to arrive at a cumulative average abnormal return for each event window.

6.5 Empirical Results

6.5.1 Merger announcement and short run abnormal return

Previous studies have shown that merger announcements are associated with short-run abnormal returns (Moeller et al. 2005; Bruner 2001). We also find evidence of short-run abnormal returns around the time of the merger announcement. Table 6.3 displays the results

³³ Analyses were also carried out for different event windows with little variance to the results.

³⁴ All days refer to trading days.

of the abnormal returns for the 11-day period around the merger announcement. We present the mean abnormal return for the full sample of 123 mergers and acquisition as well as the results for the groups of firms with high and low levels of institutional ownership.

Firstly we focus on the results of the full sample of 123 transactions. We can observe that the market typically reacts favourably to the announcement of a merger. In fact, the abnormal return in the of the three-day window surrounding the merger (i.e. $EW\{t-1, t+1\}$) was positive at 1.18% . This positive abnormal return in the short-term event window is consistent with a recent study by King (2007) who found a 1.49% abnormal return in the three-day event window around the merger. However, the positive abnormal returns are at variance with the negative abnormal returns documented in an earlier study by Walter (1984). Given that King's sample contained only mergers in the 2003–2005 period, the positive abnormal returns may indicate that the Australian stock market now has a more favourable view of merger and acquisition transactions or that the nature of the mergers has changed.

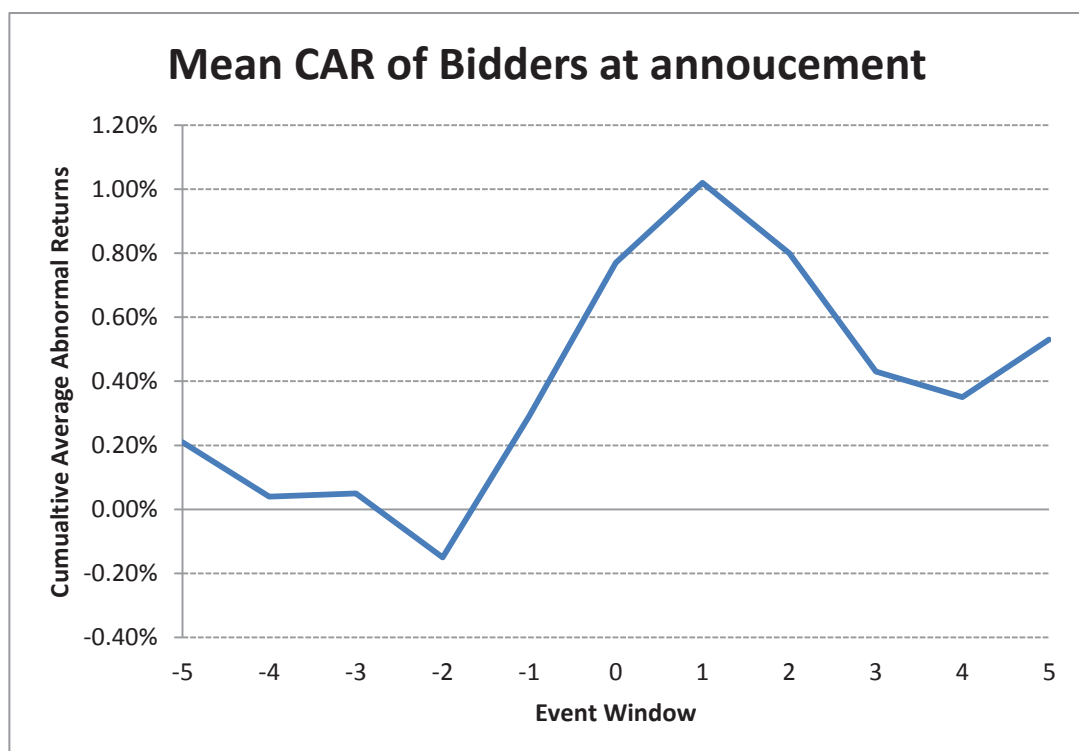
Table 6-3 Daily Abnormal Returns in the announcement period

	Low level of institutional ownership (n =62)		High level of institutional ownership (n =62)		Full Sample (n =113)	
Day(s) relative to acquisition announcement	Average abnormal returns	t-stat	Average abnormal return	t-stat	Average abnormal return	t-stat
(-100, -6)	0.41%	0.169	2.77%	1.406	1.58%	1.011
-5	0.07%	0.376	0.34%	2.062**	0.21%	1.712
-4	-0.11%	0.507	-0.23%	1.563	-0.17%	1.323
-3	-0.13%	0.543	0.14%	0.673	0.01%	0.042
-2	-0.45%	1.777*	0.06%	0.221	-0.20%	1.151
-1	0.50%	1.722*	0.39%	2.037**	0.44%	2.686***
0	0.50%	0.972	0.47%	0.944	0.48%	1.352
+1	0.28%	0.676	0.22%	0.631	0.25%	0.913
+2	-0.42%	1.473	-0.02%	0.090	-0.22%	1.275
+3	-0.49%	2.104**	-0.24%	1.238	-0.37%	2.460**
+4	-0.18%	1.008	0.02%	0.091	-0.08%	0.603
+5	0.34%	1.776*	0.02%	0.081	0.18%	1.264
(-1, +1)	1.28%	1.901*	1.08%	1.598	1.18%	2.564**
(-5, +5)	-0.19%	0.227	1.27%	1.684*	0.54%	0.901

Figure 6.1 provides a graphical representation of the cumulative abnormal return during the merger period. Consistent with previous studies, we observed the significant run-up prior to the announcement. For the full sample, the mean abnormal return was 0.44% and is significant at the 1% level. Moreover the 0.44% is only marginally smaller than the abnormal return of 0.48% on announcement day. The run-up in returns supports the notion that news of the mergers was leaked prior to the merger. This is followed by a significant market reaction in the days around the announcement.

Figure 6-1 Performance of full sample of takeover announcements (Event Window {t-5, t+5})

This figure shows the mean cumulative abnormal return of portfolios formed on the basis of the level of institutional ownership in the 11 days around the merger announcement. “Low IO” represents the mean CAR of the bidders below the median of the sample. The “High IO” line represents the mean CAR of the bidders above the median institutional level of the sample of 123 bidders. Abnormal returns for each bidder are calculated on a daily basis. Abnormal return is defined as the stock’s returns compared to the benchmark return (i.e. S&P ASX500).



The favourable reaction in the announcement period only lasted a few days. A highly significant negative abnormal return occurred three days after the takeover announcement which may indicate that the market had initially overreacted to the takeover announcement. Taking into account of the significant reversals in returns after the announcement, we believe that the total reaction to the news of the announcement is best captured by the longer event window.

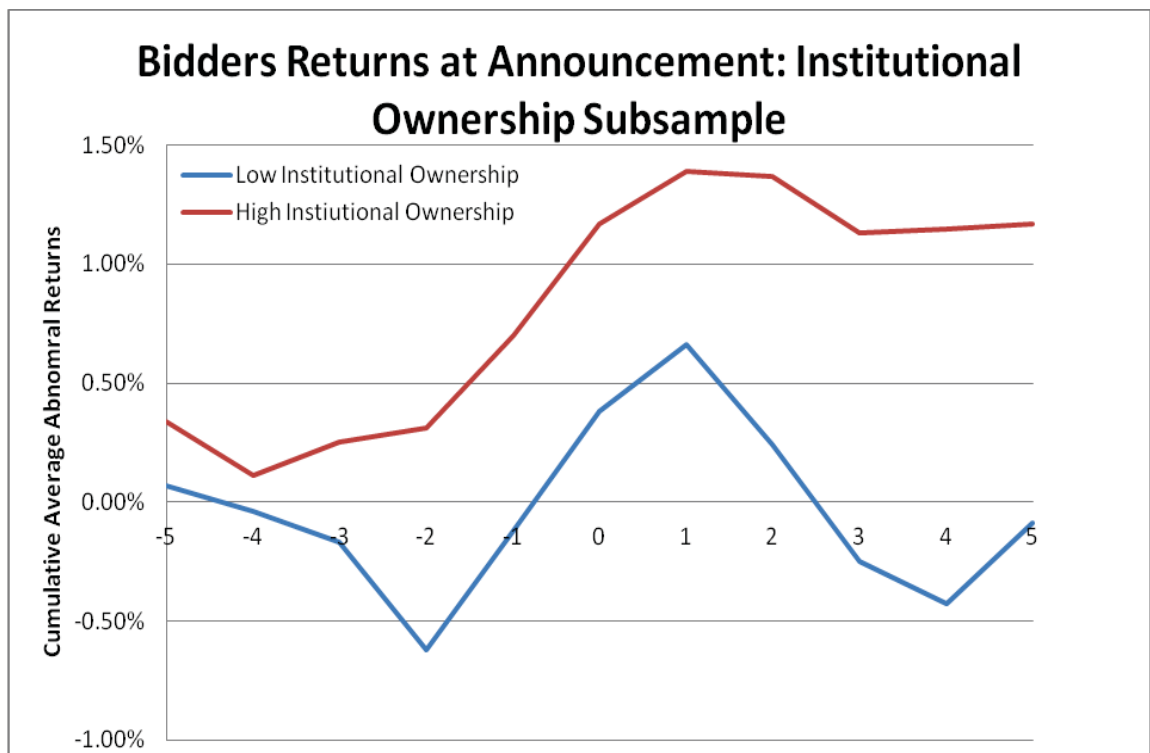
We now turn our attention to the sub-samples formed on the level of institutional ownership. The sub-sample “low level of institutional ownership” contains the firms where institutional ownership that falls below the sample median level of 59.1%. Table 2 shows the mean abnormal return for the sub-sample. There are some striking contrasts between the two samples. For the low institutional ownership sample, there is a larger reaction to the takeover announcement. These results are consistent with Hartford et al. (2006) who found firms with low institutional ownership experienced higher mean CAR around the announcement period. However this is followed by a rapid reversal which ultimately results in a negative CAAR over the 11-day event window. One plausible explanation may be that low IO firms are associated with greater belief asymmetry. Alexandridis et al. (2007) show that firms with a high level of information asymmetry earn higher returns at announcement because there is wider dispersion of belief in the bidders’ true value. However these firms are more likely to underperform in the future. Since institutions are generally regarded as more informed and sophisticated investors, firms with higher levels of IO should have lower information asymmetry.

For the sample of high institutional ownership bidders, the evidence of a run-up in returns prior to the announcement may indicate that some investors have foreknowledge of the announcement. Table 6.2 shows that the full sample of bidders had a mean CAR of 1.56% in the period leading up to the takeover announcement (i.e. $EW\{-100,-6\}$). It should be noted that

the CAR of 1.56% is smaller than the returns found in Walter (1984) and King (2007) which documented CARs of 2.64% and 2.34% respectively. The smaller CAR is attributable to the bidders with lower institutional ownership. Table 6.2 reveals that there is a significant difference of 2.33% between the samples divided by the level of institutional ownership. In the sub-sample of firms with institutional ownership levels above the sample median, the mean CAR was 2.77%. On the other hand, the mean CAR for the low institutional ownership sub-sample was just 0.41% in the $EW\{-100, -6\}$.

Figure 6-2 Performance of institutional ownership portfolio for the period ($EW\{t-5, t+5\}$)

The following figure displays the mean cumulative abnormal return of portfolios that are formed on the basis of the level of institutional ownership in the 11 days around the merger announcement. “Low IO” represents the mean CAR of the bidders below the median of the sample. The “High IO” line represents the mean CAR of the bidders above the median institutional level of the sample of 123 bidders. Abnormal returns for each bidder are calculated on a daily basis. Abnormal return is defined as the stocks returns in comparison to the benchmark return (i.e. All Ordinaries Index).



This run-up in returns is followed by a positive reaction to the takeover announcement which is maintained throughout the event period. The mean CAR for the 11-day window was a

statistically significant 1.17%. Moreover Figure 6.2 shows that the CAR of the high IO bidders was above the CAR curve of the Low IO bidders throughout the 11-day event window. Our results are consistent with Hypothesis 1, which predicts that bidders with a high level of institutional ownership will experience higher abnormal returns in the announcement period.

6.5.2 Short-run abnormal return and institutional ownership

To further examine the efficacy of institutional monitoring, we split our sample into value-increasing takeover announcements and value-decreasing takeover announcements.

Table 6-4 Institutional Percentage Holdings of Acquiring Firms Stocks (Event window (-5,+5))

This table reports institutional investors' average percentage holdings of acquiring firms stocks for the sample successful mergers and acquisitions between 1997 and 2006. The table classifies transactions into value-increasing and value-decreasing acquisitions according to their announcement period returns. Value-increasing mergers are mergers that experience positive returns in the period 5 days prior to the announcement and 5 days after the announcement. In other words, the event window is (t-5, t+5). Institutional ownership is defined according to the total shareholdings of the bidder held by institutional investors. The definition of institutional holdings includes all shareholdings not owned by individual investors. The mean aggregate holdings are reported as percentages. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms).				
Type of Transactions	Number of Transactions	Mean CAR (t-5, t+5)	Institutional Holdings	Average Change in institutional Ownership (t-20,t)
Value Decreasing Acquisitions	57	-4.79%**	54.31%	-0.17%
Value Increasing Acquisitions	66	5.14%**	60.06%	0.18%
Difference (Value Increasing less Value Decreasing)		9.93%***	5.75%*	0.35%*

In Table 6.4, we divide the sample into value-increasing and value-decreasing transaction merger announcements. Due to the fact that the aforementioned returns reversals that were evident around the announcement period, we decided the CAR of the 11-day event window

(EW{-5,5}) would provide a better gauge of the market reaction around the event window. A majority of the sample of 123 transactions experienced positive abnormal at announcements. For the sample of value-decreasing transactions, the mean CAR was -4.79% in the 11-day period, whereas the mean CAR for the value-increasing transactions was 5.01%. The differential in returns of 9.80% is statistically significant at the 1% level. Of greater interest to our study is the institutional ownership level of the two sub-samples. Table 6.4 shows that the value-decreasing transactions had an average institutional ownership level of 4.29% at the date of announcement. This is below the sample mean for the level of institutional ownership of 57.40%. More importantly, it is substantially lower than the mean institutional ownership level (60.35%) of the value-increasing transactions. The difference in institutional level is 6.06% which is statistically significant at the 10% level. The results support Hypothesis 1 which suggests that institutional owners will add value by ensuring that management only makes value-increasing transactions.

6.5.3 Bidder's long-run bidder performance

Next we turn our attention on the long-run performances of the bidders. The first measure of long-run performance indicator is the cumulative abnormal return for the period from the announcement day to 350 trading day after the merger. An examination of Table 6.5 reveals that takeovers are value-decreasing transactions. For the full sample of 123 firms, the mean CAR was minus 1.54% over the period (EW{t,t+350}). It should be noted that the negative mean CAR is not significant, so our findings are similar to the Australian results of Izzan et al. (2000) and Brown and da Silva Rosa (1997) which fail to find any evidence of bidder underperformance.

Similar to the analysis for the short-term returns, we divided the sample into long-run value increasing transactions and long-run value decreasing transactions. It is surprising that the majority of the bidders have realised positive excess returns over the sample period. Of the

123 transactions, 64 transactions earned positive cumulative abnormal returns in the period. In fact, the mean CAR was an economically and statistically significant 23.54%. The results in Table 6.5 also act as a warning that bad Mergers and acquisitions can lead to value destruction on a massive scale. For the 57 bidders that recorded negative CARs, the mean CAR was -30.3%. So the difference in the means of the wealth-creation and wealth-destruction samples was a stunning 52.61%.

The findings in the Table 6.5 suggest that institutional ownership level is a poor indicator of bidders' long-run stock market performance. The mean level of institutional ownership for the value-decreasing sample was a statically significant 7.39% higher than the average institutional ownership level of value-increasing bidders. The prima facie evidence suggests that institutional ownership level at the time of the merger is a bad indicator of the long-run success of a merger. So there is evidence against Hypothesis 2 which hypothesised that there should be a positive relationship between institutional ownership and the bidder's long run performance.

Table 6-5 Institutional Percentage Holdings of Acquiring Firms' Stocks (Event window (t,t+350))

This table shows institutional investors' average percentage holdings of acquiring firms stocks for the sample successful mergers and acquisitions between 1997 and 2006. The table classifies transactions into value increasing and value decreasing acquisitions according to their long term performance. Value increasing mergers are the mergers that experience positive returns in the period between the announcement day to 350 days after the announcement. Institutional ownership is based on the total shareholdings of the bidder that is held by institutional investors. The mean aggregate percentage holdings are reported as percentages. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms).

Type of Transactions	Number	Mean CAR {t, t+350}	Average Institutional Holdings			institutional ownership flow
			Announcement Day	120-day post- merger Announcement	180 day post- merger Announcement	
Full Sample	123	-1.69%	57.40%	58.05%	58.77%	0.01%
Value Decreasing Acquisitions	59	-29.07%***	61.24%	60.71%	60.47%	-0.51%
Value Increasing Acquisitions	64	23.54%***	53.85%	57.62%	58.35%	0.52%***
Difference (Value Increasing less Value Decreasing)		52.61%***	7.39%	-3.09%	-2.12%	1.02*

Prior to further examination of the monitoring hypothesis, Table 6.6 offers several pieces of evidence that provide strong support for the trading hypothesis. Firstly we can observe that there was a significant pre-merger increase in institutional ownership for the bidders that made value-increasing takeover decisions. For the wealth-increasing sub-sample, there was an average increase of 0.52% in the level of institutional ownership in the 20 days prior to the announcement. Conversely, institutions reduce holdings in firms that make bad acquisition decisions. The 1.03% difference in institutional ownership is statistically significant at the 10% level. The results suggest that institutions are able to use superior information to buy firms that make good takeover decisions and sell firms that participate in dud acquisitions. The results are consistent with Hypothesis 5 which hypothesised a positive relationship exists between the change in institutional ownership and the bidder's long run performance. This is a point we will revisit later in this chapter.

6.5.4 Institutional ownership level and bidder performance

To further examine the impact of institutional shareholdings on mergers and acquisitions, we partitioned the merger transactions into high institutional ownership and low institutional ownership sub-samples. We classify high institutional ownership firms as firms where the level of institutional ownership is above the sample median. The low institutional ownership sub-sample comprises the bidders with institutional ownership level is below the sample median. Table 6.6 documents the performance of the two sub-samples of bidders.

Firstly, we note a substantial difference in the mean institutional ownership level in the two samples. The low institutional ownership sub-sample had a mean institutional ownership level of 39.60, while the high institutional ownership sub-sample registered a mean institutional ownership of 75.50. The large difference reflects the wide dispersion of institutional ownership levels in our sample.

It is notable that the firms with higher levels of institutional ownership (at the time of the announcement) experienced a greater level of underperformance than their low institutional ownership counterparts over the 350 trading day period. The bidders with high levels of institutional ownership experienced a negative CAR of -2.61% compared to just -0.47% for the average CAR of the bidders who were below the median institutional ownership level. So the results fail to support Hypothesis 2, as there is no evidence that institutional ownership improves bidders' post-merger performance. The findings call into question the benefits and efficacy of institutional monitoring over management's decisions regarding mergers.

To further examine the monitoring hypothesis, we examine the institutional investors' impact on the operating performances of the bidders. It is noteworthy that the high institutional ownership firms exhibited superior performance in every measure. The accounting measures of the bidders' long-run performances also indicate that high institutional ownership firms tend to perform better than their low institutional ownership counterparts in the post-merger period. In this study, we employed two measures of profitability, namely change in return on equity and change in return on assets as an indication of company performance in the post-merger period.

Table 6-6 Analysis of the effects of institutional Percentage Holdings in Acquiring Firms

This table shows the effect of institutional investors' holdings on the bidder's performance in mergers and acquisitions between 1997 and 2006. Institutional ownership is defined based on the total shareholdings of the bidder that are held by institutional investors. The definition of institutional investor includes all shareholdings in a firm that are not owned by individual investors. The mean aggregate holdings are reported as percentages. The table classifies transactions into two groups: takeover transactions by firms with low levels of institutional ownership and takeovers by firms with high levels of institutional ownership. Transactions by bidders with institutional ownership levels below the sample median are in the low institutional ownership group. High institutional ownership transactions are those conducted by firms above the sample median institutional ownership level EW (t-5, t+5) and EW (t, t+350) are the different event windows. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms).

Type of Transactions	Number of Transactions	Average institutional holdings at announcement	Mean Cumulative Abnormal Return		Accounting Based Measures		
			Abnormal Return at Announcement EW (t-5, t+5)	Long Run Performance EW(t, t+350)	Bidders Change in ROE	Bidder Change in ROA	
Full Sample	123	57.40%	0.54%	-1.69%	-2.43%**	-2.02%**	
Low Level of institution ownership	61	39.28%	-0.19%	-0.66%	-4.64%***	-2.95%*	
High Level of institutional ownership	62	75.25%	1.27%*	-2.70%	1.26%	-1.10%	
Difference (High IO less Low IO)			1.46%	-2.04%	5.89%**	1.85%	

In line with the negative abnormal returns, Table 6.6 shows that takeovers in general tend to have a negative effect on the bidder's performance in the financial year following the merger announcement. On average, the bidder's returns on equity and returns to assets fell by 2.43% and 2.02% respectively in the year following the merger. These results are consistent with Sharma and Ho (2002) who found that Australian bidders' operating performances were inferior to those of matched firms in the post-merger period.

There is large discrepancy between the firms with high levels of institutional ownership and those with low levels of institutional ownership. From Table 6.6, we can see that low institutional ownership firms (i.e. firms with institutional ownership below the sample median) registered a performance below both the full sample and the large institutional ownership firms. For the low institutional ownership firms, the average change in ROE was a statistically significant -4.64%. More importantly, the low institutional ownership firms underperformed the high institutional ownership sample by almost 6%. Indeed the results indicate that there was a hint of an improvement in profitability for the firms with high levels of institutional ownership. For the sample of 62 'high IO' bidders, the mean change in institutional ownership was a positive and healthy (but statistically insignificant) 1.26% in the year after the merger.

Turning our attention to the return to assets measure, we can see that the low institutional ownership firms experienced a decline in ROA of 2.95% in the year following the merger. In comparison, the average change in return on assets was only -1.10% for the sub-sample of high institutional ownership firms. Again the sample of high institutional ownership firms exhibits a slightly better performance, however there is no discernible difference. So our analysis on institutional ownership's impact on bidders' post-merger operating performance could only offer partial support for Hypothesis 2.

So far, our findings on the post-merger performance of high institutional ownership bidders have proven to be quite disappointing. The evidence does not seem to suggest that institutional investors are able to prevent managers from making value-destroying takeovers.

6.5.5 Institutional monitoring and low Q firms

If institutional ownership is a source of effective monitoring of management's actions, then the benefit of the institution's contribution should be most evident for the firms that are most at risk from agency problems. In the context of merger and acquisition transactions, empirical studies have shown that the agency problem plagues the firms with low investment opportunities, bidders with low Tobin's Q (Morck et al. 1990; Servaes 1991; Lang et al. 1989; Lang et al. 1991). We will use the market-to-book ratio as a proxy for Tobin's Q and partition the sample into high Tobin's Q and low Tobin's Q sub-samples. In this context, low Tobin's Q bidders are the bidders with a market-to-book ratio below the sample median. In the next step, we further partitioned the low Tobin's Q sub samples by the bidder's level of institutional ownership on the merger announcement. In so doing, we are able to examine how institutional owners can impact on the firms with low investment opportunities. Table 6.7 displays the result of our analysis.

For the full sample of low Tobin's Q bidders, there was a surprisingly positive reaction to the announcements of the transactions. The mean CAR across the sample of low Tobin's Q bidders was a statistically significant 1.96% over the announcement period. This is 1.42% greater than the average across the whole sample of takeovers. The positive reaction can be largely attributed to the sub-sample of low Q bidders with high institutional ownership, the market's reaction to these announcements (3.09%) was almost six times greater than the sample average. The results are consistent with our earlier findings that there is a positive relationship between the level of institutional ownership and announcement period returns. One possible explanation for the results is that the market places greater faith (i.e. goodwill) in

announcements by bidders with higher levels of institutional ownership. So bidders' levels of institutional ownership act as positive signals for the overall prospects of the M&A transactions. Indeed the larger market reaction for the low Tobin's Q/High institutional ownership firms suggests that this signal is more important for firms that are most at risk from the agency problem – low Tobin's Q bidders.

The presence of high institutional ownership in the bidding firms does not have a positive impact on the bidders' long-run performance. The low q/high institutional ownership sample actually experiences significant underperformance in the post-takeover period. For the 350-day event window, the high institutional ownership sub-sample experienced a negative but insignificant cumulative abnormal return of -5.37%. In comparison, there was no discernible underperformance for the Low Tobin's Q/low institutional ownership bidders.

Turning our attention to the operating measures, the results provide further evidence that firms with low Tobin's Q tends to engage in value-decreasing transactions. Amongst the 61 low Q bidders, the merger led to a 3.37% reduction in the return to equity. This is almost 1% below the full sample average. The main contributors to the poor operating performance are the low Q/ low institutional ownership firms. On average, low Q/High institutional ownership bidders outperformed their low institutional ownership counterparts by 1.13% in the *change on return to equity* measure. There is a similar story for the returns on assets measure. So, consistent with the monitoring theory, institutional monitoring does appear to have a positive impact on operating performance in the long run. Presumably the market believed that the presence of institutional monitoring means management will only make value-increasing merger bids. As time passed, the bidders failed to meet the market's high expectation of the merger bids, investors sold the stocks which led to the negative long-run cumulative abnormal returns.

Table 6-7 Analysis of the effects of institutional Percentage Holdings on low Q Acquirers

This table reports the effect that institutional investors' holdings have on the bidders' performances in mergers and acquisitions between 1997 and 2006. We report the sample of low Tobin q firms. We formed the sub-samples with the following process. First we sorted the sample of takeovers by the level of institutional ownership. Bidders with institutional ownership levels below the sample median were placed in the low institutional ownership group. Transactions by high institutional ownership bidders are transactions conducted by firms above the sample median institutional ownership level. Then for each institutional ownership group, we sort the firms by their Tobin's Q measure. We report the performance of two sub-samples, Low institutional ownership/Low Tobin's Q and High institutional ownership/Low Tobin's Q bidders. The definition of institutional investor includes all shareholdings in a firm that are not owned by individual investors. $EW(t-5, t+5)$ and $EW(t, t+350)$ are the different event windows. Two sample t-tests were conducted to determine whether there was a statistical difference between the shareholdings (and return of the firms). The notations *, ** and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Type of bidders	Number of Transactions	Average institutional holdings at announcement	Mean Cumulative Abnormal Return			Accounting Based Measures	
			Abnormal Return at Announcement $EW\{-5,5\}$	Long Run Performance $EW\{t,t+350\}$		Change in ROE	Change in ROA
Full Sample Low Tobin Q	61	57.68%	1.96%***	-2.29%		-3.37%**	-1.78%**
Low Tobin's Q/Low institutional ownership firm	30	38.38%	0.79%	0.08%		-3.94%*	-2.05%
Low Tobin's Q/High institutional ownership firm	31	75.91%	3.09%***	-5.29%		-2.8%***	-1.5%**
Difference (High IO less Low IO)			2.30%	-5.37%		1.13%	0.55%

So despite the fact that the low Q/high institutional ownership firms may have exhibited superior operating performances in comparison to their low institutional ownership counterparts, the high institutional ownership bidders still failed to meet the market's expectations. For the low Q/low institutional ownership bidders, we did not observe any return reversals because the market may have held lower expectations of their post-merger performances. Notwithstanding the reasons behind the poor performance of the Low Tobin's Q/high Institutional ownership bidders, our results do not support Hypotheses 2 and 3, and the results suggest institutional ownership failed to have any positive impact on the long-term returns of the bidders and they did not seem to reduce the likelihood of bad takeovers.

In the next section, we conduct firm-level (regression) analysis to determine whether institutional ownership level can influence the bidding firm's performance in mergers and acquisitions.

6.5.6 Firm level regression analysis on the monitoring hypothesis

Previous research has shown that the bid characteristics can have an impact on the bidders' performance in the announcement period and on long-term performance. For example, Sicherman and Pettway (1987), Macquieira et al. (1998) and Morck et al. (1991) are amongst the studies that show that diversifying mergers are associated with lower returns in the announcement period. The medium of exchange used in a merger can also be influence short-term and long-term performance (Wansley et al. 1983; Brown & Ryngaert 1991; Da Silva et al. 2000; Bugeja & Walter 2007). In Australia, Da Silva Rosa et al. (2000) found some support for the notion that medium of exchange conveys information that is priced by the market. In order to control for the impact of the bid characteristics, we included the bid details as control variables for the multivariate regression to analyse the performance of the bidders. Table 6.8 reports the results of the linear regression model.

6.5.6.1 Institutional ownership level and announcement period returns.

Model 1 of Table 6.8 shows that there is a statistically significant positive relationship between the level of institutional ownership and cumulative abnormal return for the 11-day period. For a 1% increase in the level of institutional ownership in the bidding firm, there is an increase of 0.1% in CAR over the 11-day period. These results provide strong evidence of the monitoring hypothesis because it indicates that the market reacts favourably to the merger announcement from bidders who are subject to the greatest scrutiny from institutions. The results support Hypotheses 1 which states that there should a positive relationship between institutional ownership levels and announcement period returns. The model also shows that smaller bidders tend to earn higher returns in this period.

Table 6-8 Long run linear regression analysis on institutional ownership level

This table reports the results of linear regression models on three measures of the long-run performances of the bidding firms. The sample consists of merger and acquisition transactions between January 1997 and March 2006. The dependent variables are measures of abnormal returns over two short-term event windows. To derive abnormal returns, the bidder's returns are benchmarked against the All Ordinaries Index in the corresponding period. The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.				
	Model 1	Model 2	Model 3	Model 4
		Dependent Variable	Dependent Variable	Dependent Variable
	CAR _i {t-5,t+5}	CAR _i {t,t+350}	Change in Return on Equity	Change in Return on Asset
	Coefficient	Coefficient	Coefficient	Coefficient
INSTITUTIONAL OWNERSHIP	0.001**	-0.0042	0.0005	0.0001
DIVERSIFICATION	-0.008	0.0260	0.2046***	-0.0122
SCHEME	-0.009	0.0981	-0.0004	-0.0040
CASH	0.006	0.0315	-0.0148	0.0200
SHARES	0.021	-0.1545	-0.0736	0.0230
IMPLIED RELATIVE SIZE	-0.004	0.0108	-0.1519	0.0124
LNMCAP	-0.007*	-0.0005***	0.0695	0.0025
BROE	0.024	1.0788**	-2.444***	0.2877***
MARKETTOBOOK	0.000	-0.0108	0.0038	-0.0008
Adj R-square	0.045	0.19	0.54	0.21

6.5.6.2 Institutional ownership level and long run performance of bidders

Thus far, we have seen that high institutional holdings are associated with higher bidders' returns around the time of the merger announcement. In this section, we examine whether the level of institutional ownership can predict the long-run post-merger performance of the bidding firms. Table 6.8 examines the determinants of three measures of post-merger performance: long-run cumulative abnormal return, post-merger change in return on equity and post-merger change in return on asset.

Model 1 of Table 6.8 shows the results of the linear regression between the bidders' long-run cumulative abnormal return and a number of bid and bidder characteristics. Our findings are consistent with the earlier portfolio analysis. There is a negative but insignificant coefficient for the level of institutional ownership and the long-run stock market performance of the bidders. The results are consistent with previous findings that institutional ownership level tends to have a weak negative effect on the post-merger performance of the bidding firms. Chen et al. (2006) have previously found a negative relationship between institutional ownership and the three-year cumulative abnormal return for bidders. So the results do not provide support for the monitoring hypothesis.

Now we turn our attention to the two profitability measures: change in return on equity and change in return on assets. We note that the level of institutional ownership does not have any apparent influence on the change in the profitability of the post-merger operating performance of the bidders. Although the coefficient associated with the institutional ownership variable has the desired positive sign, the positive value is relatively small and statistically insignificant. This indicates that a bidder's institutional ownership level does not have any significant influence on the post-merger performance on a firm level.³⁵

³⁵ In fact, Chen et al. (2006) reported a negative but insignificant relationship between the level of institutional ownership and long-run operating performance in firm level regression analysis.

On the balance of the evidence presented, we find strong support for Hypothesis 1 which postulates that there is a positive relationship between institutional ownership level and the bidders' short-term stock market performance. Although we presented some evidence that that the high institutional ownership bidders exhibited superior post-merger operating performances to their low institutional ownership counterparts, we do not find any evidence that that the superior performance translates to higher stock returns. Both portfolio analysis and multivariate regression results indicate that institutional ownership may have a small negative impact on the bidders' long-run stock market performance. The findings lead us to question the efficacy of institutional monitoring of corporate managerial decision making and to pose the question of whether institutional investors prefer to make informed trading decisions to realise superior profits at times of major corporate restructuring such as mergers and acquisitions.

6.5.7 Evidence of the informed trading hypothesis

6.5.7.1 Institutional ownership flow and announcement returns

In order to examine the trading hypothesis, we examine institutional ownership flow in the lead-up to the merger announcement. As mentioned in the previous section, one of the shortcomings of the prior studies (such as Chen et al. 2006; Ashraf & Nayarannan 2006) is the reliance on quarterly data that fails to examine the institutional ownership flow in the most crucial period, the period immediately prior to the merger. Firstly, we will examine the performance of institutional ownership flow on a portfolio level by building portfolios based on the size of changes in institutional ownership in the 20 trading days leading up to the merger announcement. We divide the data into terciles based on changes in institutional ownership flow and compare the results of the two extreme portfolios – the tercile of bidders that experienced the greatest increase in institutional ownership (to be known as “high IO change”

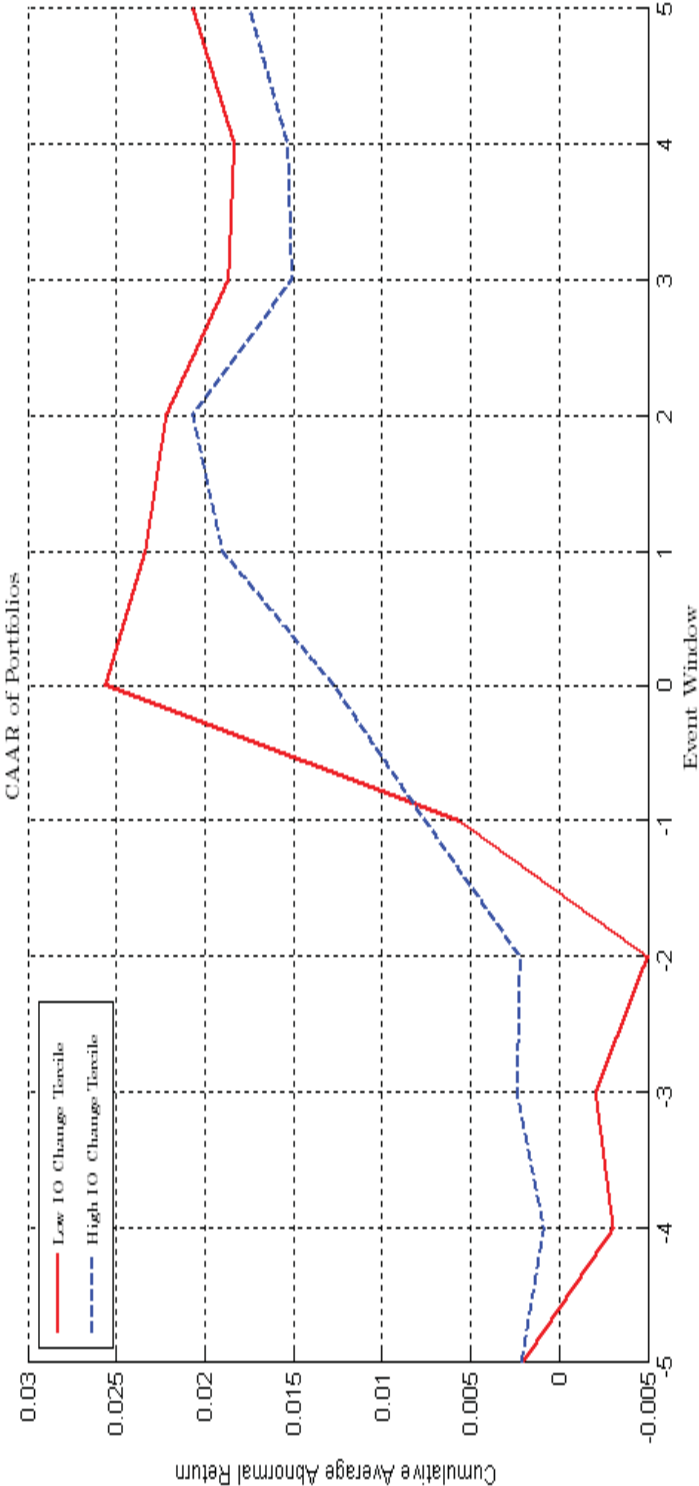
portfolio) and a “low IO change” portfolio that encompasses the bidders that experienced the greatest decrease in institutional ownership in the 20-day period.

Figure 6.3 shows the portfolio results for the portfolio built on changes in institutional ownership around the merger announcement period. Surprisingly, the low IO change portfolio outperformed the high IO change portfolio over the 11-day event period. This is a most surprising result. In spite of the fact that there was only a small difference between the findings for the two portfolios, the expectation would be that the portfolio built on the basis of bidders that experienced the greatest increase in institutional ownership would exhibit superior performance. In chapter 4, we showed that a portfolio built on an increase in IO exhibited a monthly abnormal return of approximately 3 %. Based on the evidence presented in Figure 6.3, the performance of the “high IO change” portfolio fails to support Hypothesis 4 and can only be regarded as a significant rebuttal to the informed trading hypothesis. On the evidence presented, there is little support for Hypothesis 4 which suggests that institutional trading yields a higher return around the time of the announcement.

However it may be important to consider that the 11-day event window may not be adequate to capture the returns that institutional investors can gain from the merger. We believed an examination of a longer event window would be useful for several reasons. First, the trading hypothesis implies that institutional investors are more informed than the average investors. So they are more likely to have knowledge of the existence of potential economic benefits (or losses) associated with the merger bid. Previous empirical studies have documented abnormal returns up to a month prior to the merger announcement which suggests that insiders have knowledge of the merger prior to the announcement. Since institutional investors are amongst the most informed investors in the market, they are likely to be informed and trade on this information well before the announcement date.

Figure 6-3 Performance of institutional ownership flow portfolio for the period (Event Window {t-5, t+5})

This figure shows the cumulative abnormal return of portfolios that are formed on the basis of the changes in institutional ownership in the 20 trading days prior to the merger. We examine the changes in institutional ownership of the 123 bidders in the sample of mergers and acquisitions. The portfolios were formed sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) in the bidding firm in the 20 days leading to the merger announcement. All the bidding firms are sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest 1/3 being designated as the “Low IO Change” portfolio and those in the highest 1/3 being designated as the “High IO Change” portfolio. After formation, each portfolio is held for the duration of the event window and is then liquidated. Excess return is defined as the stock’s returns in comparison to the benchmark return (i.e. All Ordinaries Index). An average abnormal return is calculated daily. The cumulative abnormal return is the sum of the daily abnormal return for each portfolio.



Second, a longer event window may be more appropriate because it is a more realistic reflection of the investment horizon of institutional investors. Due to the volume of their trade, institutions would face great difficulties in buying and selling stocks within a short time period due to the price impact of their transactions (Sias et al. 2001; Chiyachantana et al. 2004). The price impact associated with their trades may substantially reduce any profits that are accrued over the investment period. So institutions are likely to time their transactions and spread large transactions over a period of time. All these considerations suggest it is likely that institutions require a longer time frame to execute their transactions and thus a longer window may be more appropriate.

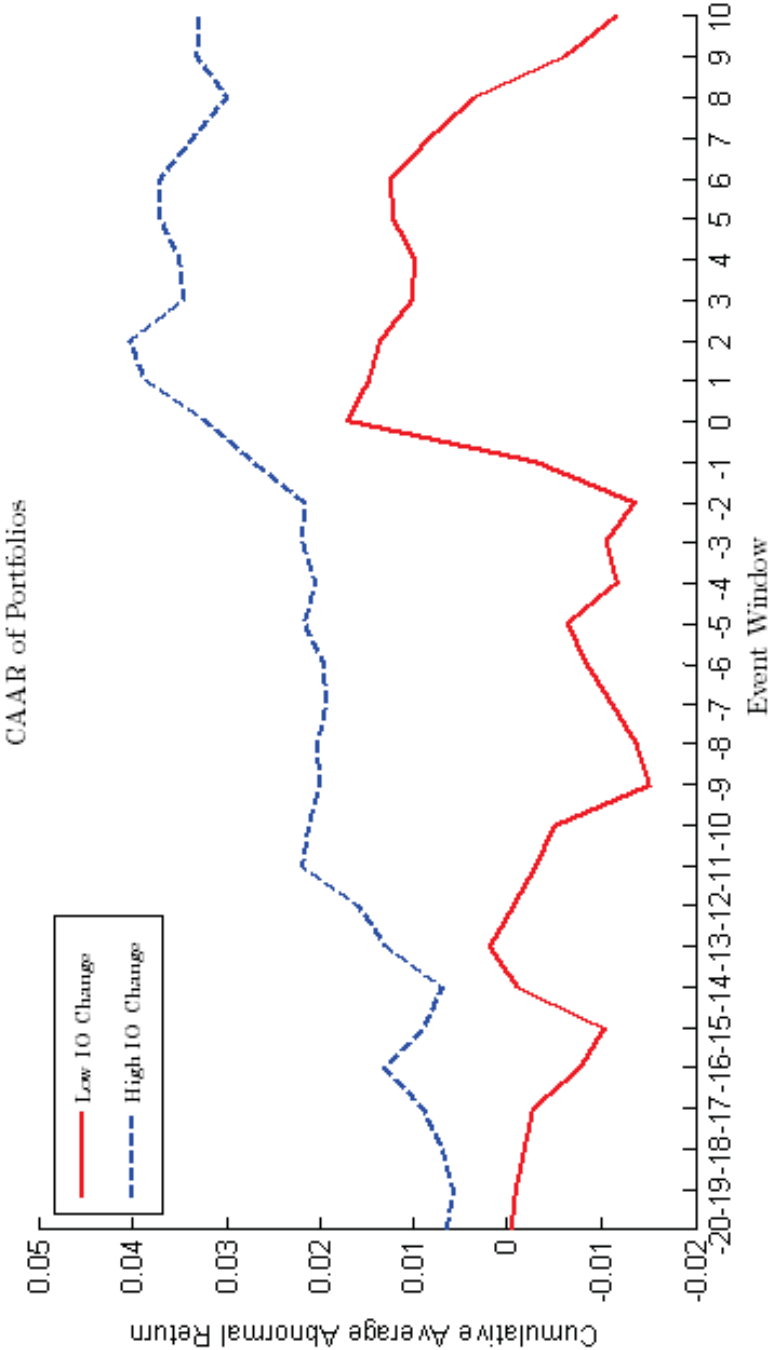
For the reasons given above, we extended the event window to 31 trading days which encompasses the period of 20 days prior to the announcement to 10 days after the merger announcement. The portfolio results are reported in Figure 6.4. An examination of Figure 6.4 reveals a somewhat different story. The “high IO change” portfolio outperformed the “low IO change” portfolio by over 4.5 % in the 31-day event window. It is also evident that “high IO change” portfolio has a higher cumulative abnormal return throughout the event period. Indeed the shape of the two curves of cumulative average abnormal return provides very important insights. Figure 6.4 shows that the “high IO portfolio” experienced a steady increase in cumulative average abnormal returns throughout the period. It is notable that there is a relatively small market reaction to the news of the merger. On announcement day, for instance, the bidders within the “high IO change” portfolio experienced an average abnormal return of just 0.5%. In comparison, the “low IO change” portfolio had an abnormal return of almost 2% on announcement day. This smaller reaction to the merger announcement is a strong indication that the market (and in particular, the informed investors) may have already factored in the merger transactions prior to the announcement. In other words, informed

institutional investors may have already bought into the value-increasing transactions which explains the smaller share price reaction to the merger announcement.

Of course it is important to consider the possibility that the institutions may not be informed and they fail to buy the bidders that earned the highest abnormal returns around the announcements period. We believe that that Figure 6.4 dispels this argument. Although the bidders that were sold by institutions experienced larger abnormal returns in the period around the merger announcement, they suffered a large reversal in the period between 6 and 10 days after the merger (see Figure 6.4). In the last five days of the event window, the “low IO change” portfolio experienced a negative cumulative average abnormal return of 2%. The large reversal in returns is consistent with both the informed trading and the overreaction hypothesis. Under the informed trading hypothesis, institutions sell down holdings in bidders that are about to make a value-decreasing takeover bid. This is consistent with Figure 6.4 which shows that the “low IO change” portfolio experienced a cumulative average abnormal return of -1% until 2 days after the merger. As the news of the merger filters out into the market, un-informed investors overreact to the merger announcement. The “noise” trading leads to a short, sharp spike in the share price. As the details of the mergers are slowly absorbed by the market, the share price falls and this leads to the large reversal in returns that is evident in the last days of the event window.

Figure 6-4 Performance of institutional ownership flow portfolio for the period (Event Window (t-20, t+10))

This figure shows the cumulative abnormal return of portfolios that are formed on the basis of the changes in institutional ownership in the 20 trading days prior to the merger. We examine the changes in institutional ownership of the 123 bidders within the sample of mergers and acquisitions. The portfolios are formed based on absolute changes in the level of institutional ownership (i.e. institutional ownership flow) in the bidding firm in the 20 days leading to the merger announcement. The bidding firms were sorted based on the absolute changes in the level of institutional ownership (i.e. institutional ownership flow) with those in the lowest 1/3 being designated as “Low IO Change” and those in the highest 1/3 being designated as “High IO Change”. After formation, each portfolio is held for the duration of the event window and is then liquidated. Excess return is defined as the stock’s returns in comparison to the benchmark return (i.e. All Ordinaries Index). An average abnormal return is calculated daily. The cumulative abnormal return is the sum of the daily abnormal returns for each portfolio.



6.5.8 Firm level regression analysis on the informed trading hypothesis

We now turn our attention to the regression analysis to control for other factors (such as bid characteristics) that may also have impacted on both announcement period performance and long-run performance. The regression results are reported in Table 6.9.

6.5.8.1 Institutional ownership flow and announcement period returns

Consistent with the previous analysis, the results fail to show any significant relationship between the bidder's announcement period return and changes in institutional ownership. The statistically insignificant coefficients associated with the institutional ownership flow variables are consistent with the portfolio-level analysis. However our results are contrast with Ashraf and Jayaraman (2007) who found a significantly positive relationship between the institutional ownership flow and the bidder. We have also conducted multivariate on the $EW\{t-20, t+10\}$ event window. Although we have not reported the results, we can confirm that there was also a positive but insignificant relationship between changes in institutional ownership and announcement period returns. On the balance of the evidence presented, we can reject Hypothesis 4, as the evidence suggests that institutional investors are not able to gain higher returns from their trading activities.

Table 6-9 Long Run Linear Regression Analysis on institutional ownership flow

This table shows the results of linear regression models on three measures of the long-run performances of the bidding firms. The sample consists of merger and acquisition transactions between January 1997 and March 2006. The dependent variables are measures of abnormal returns over two short-term event windows. To derive abnormal returns, the bidders' returns are benchmarked against the All Ordinaries Index in the corresponding period. The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	Model 1	Model 2	Model 3	Model 4
	Dependent Variable	Dependent Variable	Dependent Variable	Dependent Variable
	CAR _i {t-5,t+5}	CAR _i {t,t+350}	Change in Return on Equity	Change in Return on Asset
	Coefficient	Coefficient	Coefficient	Coefficient
institutional ownership Flow	0.0050	0.040***	0.0089	0.0104**
DIVERSIFICATION	-0.0190	0.009	0.1967***	-0.0144
SCHEME	-0.0143	0.114	-0.0040	-0.0045
CASH	0.0044	0.081	-0.0153	0.0203
SHARES	0.0171	-0.068	-0.0748	0.0249
IMPLIED RELATIVE SIZE	0.0058	0.007	-0.1472	0.0109
LNMCAP	-0.0054	0.004	0.0700***	0.0021
BROE	0.0445	0.989***	-2.4296***	0.2923***
MARKETTOBOOK	-0.0005	-0.009**	0.0035	-0.0008
Adj R-square	0.01	0.23	0.50	0.24

6.5.8.2 Institutional ownership flow and bidder's long-term performance

Table 6.9 also reports the linear regression result of the bidder's long-term performance measures. From Model 2, it is evident that the coefficient associated with the change in Institutional ownership has a positive and statistically significant relationship with the bidders' long-run cumulative abnormal return. In fact, the results indicate that a 1% increase in institutional ownership (in the 20 days prior to the merger announcement) will increase the bidder's cumulative abnormal return by 4.00% over the 350-day trading period. The results are consistent with Chen et al. (2006) who found a statistically insignificant but positive relationship between the bidder's one-year buy and hold return and changes in IO prior to the merger announcement. Our results strongly support Hypothesis 5, which suggests that institutional investors' trading activities can forecast long-run performances of bidders.

The regression analysis of the two operating performance measures provides further validation for the informed trading hypothesis. The results indicate that a 1% increase in institutional ownership will lead to a 0.86% in the return to equity measure and a 1.03% improvement in a bidder's return to assets. For the returns on asset regression, the coefficient associated with the institutional ownership flow is positive and statistically significant at the 5% level. Again the results are largely consistent with Chen et al. (2006) who found a positive relationship between changes in return on assets and the institutional ownership flow prior to merger. Our results provide strong support for Hypothesis 5, which suggests that institutional trading activities are able to provide a good indication of the future stock market and operating performance of the bidding companies in mergers and acquisitions.

Prior to leaving this section, it is interesting to note that the larger bidders seem to generate the greatest benefits from mergers and acquisitions. This is especially the case in terms of the operating measure, returns on equity, for which the coefficients are positive and very

significant. Contrary to our expectations, transactions which involved diversification also appear to be able improve the profitability of the bidders.

6.5.9 Logit regression analysis

In the final section of our analysis, we used the logit regression model to further test the monitoring and informed trading hypotheses. The use of the logit model examines the effectiveness of institutional ownership and institutional ownership flow at predicting a value-destroying acquisition. The ability to avoid or prevent a value-decreasing merger deal is important for both the monitoring and informed trading hypotheses. We test Hypothesis 3 of this chapter, which suggests that if the monitoring hypothesis is true, it stands to reason that institutional monitoring would restrict bidder's management from making value-destroying mergers or acquisitions. Conversely the informed trading hypothesis predicts that institutional investors will sell down holdings in bidders that are about to conduct a poor M&A deals (Hypothesis 6).

We ran tests for both the announcement period and the long-term post-merger performances. The dependent variable is a dummy variable that equals 1 if the acquirer earns a negative cumulative abnormal return in the post takeover event windows. Otherwise the dependent variable is equal to 0.

The results reported for Model 1 in Table 6.10 present results of the logit regression analysis for the announcement period. It is evident there is support for both the monitoring and informed trading hypotheses. Model 1 shows that there is a negative and statistically significant coefficient associated with the institutional ownership variable. Thus the result is consistent with the monitoring hypothesis which predicts that an increase in institutional ownership would decrease the probability of a value-destroying bid. The results exhibit support for the informed trading hypothesis. Model 1 of Table 6.10 indicates that an increase in institutional ownership would decrease the probability of a value-decreasing merger bid.

The negative coefficient of -0.488 is significant at the 10% level.³⁶ So there is support for both Hypothesis 3 and Hypothesis 6 in the announcement period.

Table 6-10 Logit Regression Analysis for announcement period return

The following table reports the results of logit models predicting the probability of a bidding firm experiencing negative cumulative abnormal return in the long run. The sample consists of mergers and acquisitions transactions between January 1997 and March 2006. The dependent variable is a dummy variable that equals 1 if the acquirer earns a negative cumulative abnormal return in the post-merger event window. Otherwise the dependent variable is equal to 0. To derived abnormal return, the bidder's returns are benchmarked against the All Ordinaries Index in the corresponding period. The coefficients are estimates of the marginal impact on the probability when all of the other dependent variables are equal to their mean values. P-values are reported in brackets. The notations ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.		
	Model 1	Model 2
Dependent Variable	Dependent Variable	Dependent Variable
	Dummy for Value Decreasing takeovers for EW{t-5,t+5}	Dummy for Value Decreasing takeovers for EW{t,t+350}
Variables	Coefficient	Coefficient
INSTITUTIONAL OWNERSHIP	-0.028***	0.025
CHANGE IN IO	-0.543***	-0.119
DIVERSIFICATION	0.697	0.137
SCHEME	0.538	-0.852
CASH	0.015	-0.763
SHARES	-0.015	-0.492
IMPLIED RELATIVE SIZE	-0.433	0.875
LNMCAP	0.147	0.013
BROE	-0.657	-3.391*
MARKETTOBOOK	0.072	0.022
McFadden R	0.17	0.12

On the other hand, Model 2 of Table 6.10 fails to provide conclusive evidence that institutional ownership level or institutional ownership flows are effective in predicting value-decreasing

³⁶ It is evident that the coefficient associated with the change in institutional ownership is much higher than the coefficient associated with the institutional ownership variable. It would be tempting to suggest that there is greater support for the informed trading hypothesis. However it is important to bear in mind that changes in institutional ownership tend to be relatively small in comparison to the effect of the level of institutional ownership within a firm. So it is important to keep this in mind when one interprets the results.

takeovers. The result in model 2 shows that an increase in institutional ownership in the days leading up to the merger announcement will greatly reduce the probability of a poor merger bid. However the negative coefficient is insignificant, so we can only conclude that there is very limited support for Hypothesis 6.

Turning our attention to the bidder and bid characteristics, the results indicate that only the bidder's return to equity prior to the merger is able to reduce a bidder's tendency to make value-destroying transactions. Model 2 shows that the bidder's return on equity at the time of the merger is a good gauge of the long-run stock market success of the takeover. The inference is that managers that are best able to manage companies effectively prior to the takeover are most likely to succeed in the post-merger period.

The results from our logit analysis suggest that there is support for both Hypotheses 3 and 6 that both institutional ownership level and institutional ownership flow can reduce the probability that the takeover announcement is greeted with a poor market reaction. However neither institutional ownership level nor institutional flows are very effective in forecasting long-run value-decreasing deals.

6.6 Chapter conclusion and comments

Overall we were able to discover only mixed support for the monitoring hypothesis. This is a significant setback for those who wish to see the dominance of institutional investors as a panacea for the agency problem that plagues large corporations. The results of our analysis show that institutional monitoring (or more specifically institutional ownership) only appears to be effective during the announcement period, where the presence of institutional investors appears to have a galvanising effect on the market, resulting in bidders with high institutional ownership experiencing significant positive cumulative abnormal returns. However the presence of institutional investors does not appear to benefit the bidders in the long run. In

spite of some evidence suggesting that they were able to generate superior performance, bidders with high institutional ownership were unable to translate the greater operational performance into better stock market performance. This is especially true for the high risk bidders, low Tobin's Q bidders. In the low Tobin's Q subsample, the market reacted very favourably to takeover announcements by bidders with high institutional ownership. Ultimately, however these bidders recorded the most disappointing in the long run stock market performances.

The results in our study show that institutional investors prefer to trade rather than perform a monitoring role. Institutional ownership flows immediately prior to the takeover announcement is the most useful of the characteristics we tested for predicting future performance of the bidders. Bidders that experienced the greatest increase in institutional ownership generated superior long-run stock market and performances. As collaborating evidence, we also found significantly better operating improvement in the portfolio of bidders that were subject to most institutional investment.

Our results pose a challenge for future studies. With the benefit of using Australian daily institutional ownership data, we were able to examine the impact of institutional ownership level and flow right up to the day of the merger announcement. Our findings leave quite a conundrum for both market participants and regulators. There are few parties with greater skills and incentives to monitor the action of corporate managers than large influential investors such as institutional investors. If institutional investors are unwilling or unable to take on the responsibility of monitoring the actions of corporate managers, then who will fill this most important void in corporate governance? Our results also pose the question of why institutional investors are unwilling to take on monitoring. Are there institutional impediments that prevent or reduce the institutional investors' incentive to conduct monitoring services? Alternatively, is it viable for regulators to offer greater incentives to these institutions in order

to induce greater monitoring? Future research can address these questions, lest we lose this most important element in corporate governance.

7 Chapter 7 Institutional Investors and the turn-of-the-year effects

7.1 Chapter Introduction

Institutional investors' ever-increasing stake of the share market raises the question of whether they are beneficial to the capital market. A central concern is whether institutions contribute to the efficiency of capital markets around the world. Some observers claim that the presence of institutional investors accelerates the speed of market adjustment back to the fundamental price (Cohen et al. 2002), indeed some studies have shown that institutional investors have already reduced the adverse impacts of well-known market anomalies such as the Monday seasonal effect (Kamara 1997; Chan et al. 2004) and size effect (Gompers & Metrick 2001). Yet others question the benefit of increased institutional investor participation in the market. For example, Webb et al. (2003) argue that an increase in institutional investors' participation in the market can create anomalies in the operation of the capital markets by increasing costs and creating free-rider problems.

We seek to further explore the impact of institutional investors on financial markets through a study of the January Effect. The January Effect (also called the Turn-of-the-year Effect) refers to the documented evidence that shows the average monthly returns of stocks is higher in January than in any other month of the year. Since its first formal discovery by Rozeff and Kinney in 1976, the January Effect has been documented in the US stock markets as well as many other financial markets around the globe. Unlike many other anomalies that have quickly faded into oblivion, the January Effect appears to have stood the test of time. For example, Lynch et al. (2011) showed that stock returns were 3.4% higher in the first 10 trading days in January when compared to the last 10 trading days in December. Indeed the differential in returns was substantially higher in small and poorly performing stocks.

Our interest in the January Effect lies in the possibility that the actions of institutions contribute to the anomaly. Researchers have argued that “window-dressing” by institutional investors is a major contributor of the January Effect (Haugen & Lakonishok 1988; Athanassakos 1992; He et al. 2004). According to this explanation, the high abnormal returns of stocks in January are caused by institutional trading for the purpose improving the appearance of their portfolio prior to the important reporting period Lakonishok, Shliefer, & Vishny (1991). Lakonishok et al. (1991), Athanassakos (1992), and Porter et al. (1994) are among many studies that have offered empirical support for the window-dressing hypothesis.

In this final study, we aim to cast further light on the Turn-of-the-year anomaly through a study of the Australian share market. First, we seek to determine whether a January Effect and/or a Turn-of-the-year Effect exists in the Australian stock market. Should there be evidence of Turn-of-the-year anomalies, our aim is to investigate whether the actions of institutional investors aid and abet them (i.e. the January and Turn-of-the-year Effects) in Australia. To our knowledge, only one other Australian study has examined the cause of these anomalies. Obviously a study of the January Effect using Australian data is founded on a different theoretical basis to studies abroad. Whereas many other countries around the globe have a fiscal year that concludes in December (i.e. the fiscal year and the calendar year are identical), the financial year in Australia runs from 1 July to 30 June of the next calendar year. This is a significant difference because many of the explanations for the January Effect are based on January being the first month of a new fiscal year. Far from being a disadvantage, we believe that the fact that this does not hold for Australia offers a unique opportunity to test the major competing explanations for the January Effect. In past empirical studies, researchers had problems in analysing the results because the main theories (tax loss selling and window-dressing) make largely the same predictions about investor behaviours. In a study using

Australian data, however, we are able to run a 'clean' test of the window-dressing hypothesis as an explanation for the January Effect.³⁷

7.2 Literature Review

7.2.1 The discovery

For more than 70 years, researchers have documented that stocks have exhibited large price increases (and high returns) at the start of the calendar year. This anomalous stock market pattern has become known as the Turn-of-the-year Effect. Wachtel (1942) was one of the first researchers to detect the presence of a Turn-of-the-year Effect when he examined the Dow Jones Industrial average from 1927 to 1942 and found that stock prices exhibited consistent upward movements in January. Two decades later, Zinbarg and Harrington (1964) confirmed this tendency for the market to rise in January. The first Australian evidence came from Weston (1970) who found that in 26 out of the 31 years he examined, the Australian All Ordinaries advanced in January.

These apparently anomalous patterns in stock market movements paved the way for many studies on seasonality in stock markets (Grainger & Morgenstern 1963; Zinbarg & Harrington 1964; Brailsford & Easton 1989; Gaunt & Gray 2003). Keim (1983) demonstrated that the January Effect may in fact be a manifestation of the small firm effect. He showed that almost 50% of size effect³⁸ occurs in January. Subsequently Roll (1983) and Reinganum (1983) amongst others have also provided evidence that the January Effect (i.e. the Turn-of-the-year effect) is largely a small firm effect.

³⁷ We acknowledge that the presence of foreign institutional investors in the Australian stock market may lead to a "tax loss" motive for the trading in December and January. However we do not believe the proportion of foreign investors is sufficiently large to generate a market-wide anomaly like the January Effect.

³⁸ The size effect refers to the fact that small firms tends to generate higher returns than their large firms (Roll 1983)

It has been almost four decades since the work of Keim and company; Ritter (1988), Seyhun (1988), Ogden (1990), Bhardwaj and Brooks (1992), Sias and Starks (1997) and Schwert (2003) are amongst numerous studies that have documented the existence and persistence of this January anomaly (or Turn-of-the-year anomaly). Moreover Gultekin and Gultekin (1983), Reinganum and Shapiro (1987), Kato and Schallheim (1985) and Lee (1991), amongst others, have shown that the January Effect is not just an anomaly in the US market but a worldwide phenomenon. In the next section, the paper will canvas some of the international evidence on the turn-of-the-year effect and examine the Australian experience in some detail.

7.2.2 Turn-of-the-year Effect: international studies

Hitherto we have focused mainly on studies from US stock markets. However the Turn-of-the-year Effect is a global phenomenon. Gultekin and Gultekin (1983) examined data from the stock markets of a number of major industrial countries (including Canada, France, Germany, Japan and the United Kingdom) and found that stocks tend to have abnormally high returns in January. Other international studies to report seasonality in monthly returns include Reinganum and Shapiro (1987) for the London Stock Exchange, Kato and Schallheim (1985) and Jaffe and Westerfield (1985) for the Japanese stock market, Koutianoudis and Wang (2002) for the Athens stock exchange and Lee (1991) for Japan, Singapore, Korea and Hong Kong.

A major contribution of these international studies is the recognition that stock return seasonality is not purely a January Effect. Rather, each market tends to have its own distinctive pattern of seasonality in returns. For example, Lee (1991) found that the markets in Singapore, Hong Kong and Japan all displayed the familiar high monthly return in January. However unlike the US market where there is a significantly lower return in the month of December, these Asian markets all experience positive and significant returns in December. The discovery of such distinctive patterns of seasonality gives credence to Officer's (1975) view that stock market seasonality is related to the economic conditions of the country. Perhaps the most

obvious example of an economic condition (or characteristic) impacting on the stock market is the timing of the financial (or fiscal) year. For many economies around the world, the financial year ends in December, so it is not coincidental that most industrial countries have market seasonality that appears to be tied to the calendar year (Gultekin & Gultekin 1983). However there are notable exceptions to this norm. Australia for instance, has a financial year that concludes in June and research has shown that the Australian stock market experiences high returns in both January and July, the beginning of its financial year (Gultekin & Gultekin 1983; Brown et al. 1985; Brailsford & Easton 1989; Gaunt & Gray 2003; Marrett & Worthington 2011; Henker & Paul 2011).

7.2.2.1 Turn-of-the-year Effect: the Australian evidence

In Australia, the earliest works that detected the Turn-of-the-year Effect were focused on seasonality in the stock markets. The emphasis on seasonality (rather than just the January Effect) is fortunate because the Australian tax year ends in June. In light of overseas experiences that shows seasonality tends to occur at the turn of the financial year, logic would suggest that anomalous returns should occur in the June–July period for the Australian market. Praetz (1973) was amongst the first works to document the presence of seasonality in returns in the Australian Stock Exchange. Praetz (1973) studied the movements of a number of share indices (including the All Ordinaries Index) in the period of 1947–1968. He found that all the indices displayed a discernible seasonal pattern. There were two peaks (January–February and July–August) and two troughs (March–April and November–December). The peaks in July and January became the focus of Turn-of-the-year research in Australia.

Officer (1975), Brown et al. (1983), Brailsford and Easton (1989) and Gaunt and Gray (2003) are amongst the studies that have documented seasonality in returns and more specifically, the Turn-of-the-year Effect in Australia. Brown et al (1983) using data from the Australian Stock Exchange (ASX) found that investors can obtain larger returns in January and July. Consistent

with results of Keim (1983), the Turn-of-the-year Effect was especially strong for the month of January. In that month the portfolio of the decile containing the ASX's smallest firms has an average monthly return of 8.86% compared to just 3.39% for the portfolio of the largest decile. More recently, Henker and Paul (2001) studied a sample of stocks from the ASX between December 1995 and January 2001. Using a feasible generalised least square regression method, they found that small cap stocks (the decile containing the ASX's smallest stocks) have higher returns in the months of January and July. Marret and Worthington (2011) were also able to confirm seasonality in returns but documented somewhat different findings for the January Effect. The authors reverted to an examination of stock indices performances and found that only small cap stocks and the telecommunication industry experienced higher returns in January. Yet they did not detect higher returns for small stocks in July. On the contrary, the small ordinaries index underperformed the general market (All Ordinaries) by over 2.5% in July.

Despite some discrepancy in the documented patterns, the evidence indicated that a Turn-of-the-year Effect exists in Australia. The challenge for this chapter is to cast further light on the seasonal pattern of returns and establish whether the Turn-of-the-year Effect is still persistent in the Australian market in the period post 1998. Before we attempt to canvas some of the explanations for the January Effect, the next section will address the issue of persistence and examine recent developments.

7.2.3 Turn-of-the-year Effect: persistence and significance

Logic would suggest that the discovery of seasonality in returns should attract arbitrage trades that would rapidly eliminate the market anomaly. This has led many to question whether the January Effect could persist. Mehdian and Perry (2002), Gu (2003), Szekmary and Keifer (2004) and Masquaring et al. (2006) amongst others have provided evidence that the January Effect is disappearing. Masquaring et al. (2006) presented indirect support of the arbitrage argument.

Their study compared the average daily returns in January prior to the release of Rozeff and Kinney's study (from 1960 to 1976) and the period after its release (from 1976 to 2003). They found that the average daily return in the earlier period was 0.14% compared to just a statistically insignificant 0.03% in the 1976-2003 period. One shortcoming of the arbitrage argument is that it does not take account of the transaction costs involved in making such trades. If the transactions costs are high, then such trades will not be viable. Previously Roll (1983) has predicted that the high transaction costs and low liquidity amongst the small stock would hinder any attempt to make arbitrage profit from the January Effect. In the last two decades, however, financial innovations have drastically lowered transaction costs. One such innovation is the introduction of stock index futures in the financial markets around the globe. Szekmarty and Keifer (2004) show that after the introduction of stock index futures there was no further evidence of the January Effect.

Yet there is no consensus on whether the January Effect is persisting. Numerous studies have shown that the January Effect still exists (Gaunt & Gray 2000; Koutianoudis & Wang 2002; Schwert 2003; Pietranico & Riepe 2004; Marrett & Worthington 2011; Henker & Paul 2011). For example, Pietranico and Riepe (2004) found that the smallest decile portfolio had an average return of 7.43% in January. A strategy based on taking a long position in the smallest decile portfolio and shorting the largest decile portfolio would have realised a return during January of 8.04%. Moreover Griffith and Winters (2005) show that the January Effect is present in many other money market instruments (including banker acceptances, negotiable certificates of deposits and euro dollar deposits). Elsewhere Starks, Yong and Zheng (2004) also found evidence to support the January Effect in municipal closed end funds. In Australia, both Marrett and Worthington (2011) and Henker and Paul (2011) also found evidence of the persistence of the January Effect.

So the balance of the evidence suggests that the January Effect has persisted. This raises the question of whether it is economically important (i.e. significant) and whether investors can profit from the Turn-of-the-year Effect. Many have also questioned economic significance of a trading strategy based upon anomalies (Zindbarg & Harrington 1964; Roll 1983; Bettman et al. 2011). Both Roll (1983) and Bettman et al. (2011) argue that the trading profits are insignificant after one takes into account of transaction costs and liquidity.

On the other hand, some studies have shown that realising arbitrage profits is possible (Koutianoudis & Wang 2002; Gaunt & Gray 2003). Koutianoudis and Wang (2002) examined data from the Athens Stock Exchange for the period from 1992 to 2001. They showed that an investment strategy based on the January Effect would have earned a return of 325.96% over ten years. This return is over 120% higher than the return of a buy and hold strategy of the AGI index for the comparable period. Using Australian data, Gaunt and Gray (2003) showed that a strategy of investing in the stocks with the worst performance in June (the end of the Australian financial year) and selling the stocks that have experienced the highest June returns would yield in excess of 6% in one month. The authors argued that such returns would far outweigh any transaction costs. Moreover financial innovation (such as index futures) should make it even easier (less costly) to derive a profit from the January Effect. Contrary to the evidence presented by Szekmary and Keifer (2004), Marrett and Worthington's results indicate that even after the advent of index derivative instruments, it would still be possible to profit from a strategy based on the January Effect. Using a sample of 2635 end-of-day observations from the Australian market, they showed that the daily returns for small stocks was 0.0853 per cent per day compared to 0.041 for the All Ordinaries Index. This is equivalent to annualised excess returns of 11.65%. Given that it is relatively simple to short indices, it seems likely that it would be possible to derive substantial returns even after transaction costs are taken into account.

Given the balance of the evidence suggests that the Turn-of-the-year Effect is economically significant, further research in the area is imperative. In the next section, we examine the evidence that institutional investors may have contributed to the January Effect and the explanation proffered for the Turn-of-the-year Effect.

7.2.4 The role of institutional investors in the January Effect

Retail investors are often castigated as being “noise” in the financial markets (De Long et al. 1990). The inference is that their trades are ill-informed and unpredictable; creating risks that deters arbitrageurs from actively trading against them (De Long et al. 1990). The absence of arbitrage trades can lead to mispricing that is necessary for the formation of anomalies such as price bubbles and the Turn-of-the-year Effect. However some recent studies have cast doubts on whether retail investors are responsible for the anomalies (Henker & Henker 2010; Henker & Paul 2011). Henker and Henker (2010) studied data from the Australian stock market. They showed that retail investors’ actions do not exert a significant impact on prices and thus concluded that retail investors are not responsible for mispricing. Henker and Paul (2011) provided further evidence of retail investors’ innocence. Henker and Paul also examined the January returns of small stocks in the Australian stock market and found that there is no significant relationship between retail investors’ trading and the stock returns in January. Henker and Paul’s (2011) findings are not surprising when one considers that the Australian financial system concludes in June. So there is little or no incentive for retail investors to conduct trades in January to minimise their capital gains tax liability. After one takes into account of the fact that institutional investors are responsible for the vast majority of trades in the financial market, it become imperative to pose the question of whether institutional investors’ actions are responsible for the Turn-of-the-year anomaly

Sias and Starks (1997), Ng and Wang (2004), Sikes (2008) and Lynch et al. (2011) have previously examined the contribution of institutional investors to the January Effect. Sias and

Starks (1997) examined data from 1978 to 1992 and found that the January Effect is stronger amongst stocks dominated by retail investors. These individual dominated stocks experienced lower returns in the last days of December and generated higher returns in January than the institutional investors' dominated counterparts. They concluded that individual tax loss selling by retail investors was responsible for the January Effect.

Ng and Wang (2004) also found evidence to suggest that tax loss selling contributes to the January Effect. However they showed that the evidence of retail tax loss selling does not preclude the possibility that institutional investors' actions (namely window-dressing and risk shifting) also play a role in the anomalous returns in January. Ng and Wang studied institutional investors' trading at the turn of the year and found that institutions tend to sell more losers' stocks at the end of the year (window-dressing) and buy more small stocks at the beginning of the financial year. The latter trades include the purchase of both "winners" and "losers" stocks which is consistent with institutions loading up risks in the portfolio. To further highlight institutional investors' role in the January Effect, Ng and Wang showed that the magnitude of the January Effect is proportional to institutional trading. The Turn-of-the-year Effect is greatest when there is high institutional selling of small loser stocks and weakest when there is high institutional buying of small loser stocks.

Consistent with Ng and Wang (2004), Sikes (2008) also found that institutional investors' activities contribute to the Turn-of-the-year Effect. However she showed that the motive behind the institutions' trades was the minimisation of capital gains tax, rather than changing the appearance of the portfolio. Sikes segregated the institutions in the samples into two distinct groups, the first being institutions who had reasons to conduct window-dressing but no tax driven incentives and the second group being institutions who had incentives to minimise tax liability but did not need to window-dress. Sikes found that the January Effect was only present in the sales of the institutions with an incentive to conduct tax related selling.

On the other hand, several recent studies have questioned whether institutional investors play a significant role in the Turn-of-the-year Effect (Bohl et al. 2006; Lynch et al. 2011). Lynch et al. (2011) presented evidence that undermines the notion that institutional trading has an effect on the Turn-of-the-year Effect. Lynch et al. showed that the anomalous returns pattern was much greater in the stocks with no institutional trading and concluded that institutional investors play only a limited role in the January Effect. Bohl et al. (2006) went further in suggesting that the influx of institutional investors into the Polish stock market had significantly reduced the magnitude of the Turn-of-the-year Effect. They concluded that the January effect have been arbitrage away by Polish and Hungarian pension funds flourished after reforms to the Polish and Hungarian pension system.

7.3 Competing theories, conflicting results and hypothesis formation

We will attempt to investigate the role that institutional investors play in the Turn-of the-year Effect through an examination of the two most sighted explanations for its existence.

7.3.1 The Tax Loss selling Hypothesis

The tax loss selling hypothesis suggests that the January Effect is caused by investors selling stocks that have performed poorly during the financial year (which in many markets suggests selling in December) and repurchasing them at the beginning of the next financial year (Wachtel 1942; Dyl 1977; Reinganum 1983; Schultz 1985). This explanation is based on the idea that investors will attempt to reduce their capital gains tax liability by selling the stocks on which they have experienced capital losses during the financial year. These stocks, hereafter referred to as “losers”, will be sold at the end of the financial year in order to realise capital losses which can then be used to offset realised capital gains and thus reduce the investor’s capital gains tax liability. As a result of tax loss selling, the supply of the selling stock will be

greater than the demand for these stocks. The resultant selling pressure means that the stocks will be traded at the bid prices (Keim 1989; Bhardwaj & Brooks 1992). In the process, stock prices fall to artificially low levels and the stock's December return will be very small or negative. Since small stocks are the stocks that are most likely to have the greatest price movements throughout the year, small stocks are most likely to be subject to tax motivated selling pressure. Thus small stocks are expected to experience the largest falls at the end of the financial year. At the beginning of the next financial year, such selling pressure will cease. Moreover investors who have sold the stocks for the sole purposes of tax advantage may also repurchase some of these stocks to balance their portfolio. The combination of these factors means that the prices of those stocks will quickly rebound back to their equilibrium level and this explains the high abnormal return at the beginning of the financial year.

Empirical studies have provided strong support for the tax loss selling hypothesis. Evidence of the tax loss selling hypothesis can generally be placed into two categories. First, studies have shown that stocks with the greatest potential for tax loss selling are associated with greater volumes of trade in December (Dyl 1997; D'Mello et al. 2003). The logic is that the tax motivated transactions should increase the overall level of transactions on the loser stock at the end of the financial year. Studies of the January stock returns provide the other major support for the tax loss selling hypothesis. Researchers have shown that the stocks that perform poorly in the year prior to December experience high returns in January (see Roll 1983; Reinganum 1983). Perhaps the most compelling evidence in support of the tax loss selling explanation was provided by Reinganum (1983) who constructed portfolios based on stocks' potential for tax loss selling. Logically the stocks with the greatest potential for tax loss selling are the firms that have experienced the largest drop in price throughout the financial year.

Yet there remains doubt about whether the tax loss selling explanation can provide a full explanation of the January Effect. From an empirical perspective, there are three areas of concern over tax loss selling as an explanation for the January Effect. Firstly, studies have shown that there is a general increase in the prices of small stocks in January (Brown et al. 1983). In particular, small stocks with a low potential for tax loss selling (i.e. stocks that appreciated in price over the last 12 months) also experienced high returns in January (Reinganum, 1983). Second, the tax loss selling explanation has also been called into question by evidence that the January Effect has been found to exist in the absence of capital gains tax (Berges et al. 1984; Reinganum & Shapiro 1987).

7.3.2 The Window-dressing Hypothesis

The “window-dressing” hypothesis seeks to explain the Turn-of-the-year Effect by actions of institutional investors (Haugen & Lakonishok 1988). Under this explanation, the high abnormal return of stocks in January is caused by institutional trading rather than individual investors’ actions. The idea is that institutions will trade for the purpose of the composition of their portfolios so as to increase their holdings of winner stocks and well known stocks (Lakonishok et al. 1991; Jansson 1983). As Lakonishok et al. (1991) pointed out, the performance of an institution cannot be measured by returns alone. Rather, stake holders evaluate the performance of financial institutions by a boarder set of criteria, including the composition of their holdings. Under these circumstances, institutions have an incentive to systematically alter the appearance of their portfolios prior to the reporting period. It is important to recognise that window-dressing trades are not just confined to the end-of-year financial report but it is considered to be the most important reason. Thus there should be greater window-dressing portfolio rebalancing at the end of the financial year. Window-dressing will also involve selling losers in December which will create an anomalous returns pattern of low December returns and high January returns.

The empirical support for the window-dressing hypothesis is mixed. Lakonishok et al. (1991), Athanassakos (1992) and Powell and Weaver (1994) are amongst the studies that have provided support for the institutional window-dressing hypothesis. Lakonishok et al. (1991) provided indirect support for the window-dressing hypothesis. Lakonishok et al. (1991) found support for the window-dressing hypothesis. The authors found that pension funds have a tendency to sell losing stocks at the approach of each of the quarterly reporting periods with the greatest trading activity coming at the end of the financial (and calendar) year which marks the conclusion of the most important reporting period. Although the main theme of the study focuses on the occurrence of window-dressing activities, the results indicate that window-dressing may also be responsible for the anomalous returns behaviour at the turn of the financial year.

Athanassakos (1992) examined whether institutional investor's behaviour had a direct influence on the stock returns at the turn of the year in a study on the Canadian stock market. The author showed that both the activities of individual investors and institutional investors' actions can influence stock returns. However it is important to note that individual shareholders' actions do not have a significant impact in the first quarter. In other words, first quarter stock returns are dependent on the actions of institutional investors. Athanassakos demonstrated that the strength of the January returns is proportional to the amounts of funds that institutions invested in the stock market. Higher first quarter returns are associated with higher levels of equity investments by the fund managers. Thus he concluded institutional investors' window-dressing activities are responsible for the first quarter seasonal effect and 'by deduction for the January anomaly' (Athanassakos 1992, p.77). Porter et al. (1994) showed that institutional investors do have a tendency to increase ownership in small stocks in the first quarter of the fiscal year. Thus the results are consistent with an institutional window-dressing explanation of high January returns for small firms.

The main criticism of the window-dressing hypothesis is that institutions should window dress at all reporting times and not just the turn of the year. Chen and Singal (2001) examine the NYSE, AMEX and the NASDAQ from 1993 to 1999. They reported that they did not find abnormal trading patterns in the other reporting periods of the financial year. The authors also found that the average return in the first five trading days in July was just 0.5%. More importantly, in direct contradiction to the window-dressing hypothesis, there was a positive relationship between company size and return. Others have argued that the window-dressing explanation is not plausible due to the high costs involved. Apart from the transaction costs of these trades, institutions will also suffer additional capital losses because they are forced to sell in a period of excess supply of shares on the market. Thus it seems unlikely that all financial institutions, especially private equity managers, will conduct this welfare reducing activity.

There are also several significant differences between the US and Australia that may impact on the theoretical underpinning of the window dressing. Firstly, unlike the SEC imposed 13F requirement in the US market, there are no legal requirements for funds to report the portfolio holdings in Australia. That being said, most funds report their portfolio holdings to institutional clients and consultants on a regular basis (Gallagher and Pinnuck 2006). A second and related question is whether having a financial year that concludes in July will alter the time of year when institutional possess the greatest incentive to conduct window dressing. US studies have shown that window dressing trade are conducted prior to each reporting period with the most window-dressing trades taking place prior to the end-of-year financial report (Lakonishok *et al.* 1991, He, Ng and Wang 2004). The inference is that at year end is the time when investor is most likely to “take stock” and evaluate the performance of the investors. Logic would suggest that Australian investors would also have a greater propensity to evaluate

the performance of their portfolio at the end of the financial year. We will further investigate this issue in our empirical analysis.

7.3.3 Hypothesis Formation

For tax loss selling or window-dressing to be a valid explanation of the Turn-of-the-year Effect, tax related selling or window-dressing activities would have to involve institutional investors selling losing stocks at the conclusion of the financial year. The resultant price pressure should further push down the share price of the loser stocks in the month of June. This argument leads to the following hypothesis:

H1. A positive and significant relationship exists between the returns in June and the prior period returns.

If the window-dressing hypothesis is valid, then upon the turn of the financial year, the price pressure would cease and the stocks that were subject to window-dressing or tax loss selling should experience a significant increase in price (or positive returns). Since the stocks that were subject to tax loss selling should be the poorly performing stocks in the period up to May, we would expect the following to hold:

H2. A negative and significant relationship exists between the stock return in July and the prior period returns.

Our measure of prior period returns are the returns in the 11 months up to and including May (or November for the January period). We have excluded the returns in June to eliminate any possibility that window-dressing activities (or tax loss selling) in June could contaminate the results. A negative relationship would indicate that the stocks with the greatest potential for tax loss selling (or window-dressing transactions) tend to rebound in the stock market.

If Hypothesis 1 and Hypothesis 2 hold, then we would have established prima facie evidence to support both the window-dressing and the tax loss selling hypothesis. Roll (1983) and

Reinganum (1983) have used similar methods to support the tax loss selling hypothesis. Of course, the major challenge for empirical studies should become apparent at this point. That is, both the tax loss selling and window-dressing hypotheses make the same prediction. That is, investors will sell losers which will lead to price decline and low returns at the conclusion of the financial year. At the start of the next year, the selling pressure ceases which will translate to high returns in January. In other words, both explanations predict a negative relationship between the returns in January (or July) and the returns in the prior period. Thus it is not surprising that previous empirical studies have often had difficulties in disentangling the two effects.

Fortunately a study that utilises Australian data has a major advantage because the January Effect cannot be caused by any tax related transactions. Therefore in the event that H1 and H2 hold, the January Effect can only be attributable to window-dressing. Yet both the tax loss selling and window-dressing hypotheses are valid explanations for the Turn-of-the-year Effect in the June-July period. In order to determine the true cause of the Turn-of-the-year Effect, we will directly analyse the investment choices of the institutional investors in the June-July period.

Next we turn our attention to the investment choices of the institutional investors in these periods. Investors' investment choices within a certain period are estimated by the change in the level of ownership between the start of the month and the level of ownership at the end of the month. For example, if the level of institutional ownership in ANZ was 55% at the start of June and the level of institutional ownership dropped to 52% by the end of June, then it could be assumed that institutional investors had sold shares in ANZ in the period.³⁹ In other words,

³⁹ A possible limitation of this method of estimating transactions is that trades between investors of the same type will not be detected. For example, if a financial institution decided to sell its 10% holdings in BHP to other financial institutions, there would be no net change in the level of institutional ownership, so the trade would not be detected by this method. However it is unlikely that such trades would have a significant impact on the results.

we are looking at the actions of the institutional investors as a group. If a stock has performed poorly, for instance, we believe at least some of the institutional investors who own the stock will decide to sell it for the purposes of window-dressing (or tax loss selling). Our aim is to examine what causes a change in the level of institutional investment in the period of interest.

Under both theories, institutional investors will look to reduce holdings of poorly performing stocks or less desirable stocks (i.e. value stocks) prior to a reporting period. Therefore if the window-dressing hypothesis is valid, then the following should hold:

H3. Institutions will reduce holdings in stocks that performed poorly in the 11 months prior to the month of June. There will be a positive and significant relationship between the changes in institutional ownership in June and the returns in prior period.

H4. Institutions will reduce holdings in stocks of certain characteristics (such as small stocks and value stocks) in June.

Hypothesis 4 is noteworthy because we have deliberately included some company characteristics such as company size, market-to-book ratio, price-to-earnings ratio and the stock price to establish the type of stocks that are bought and sold by institutional investors as a group during the month. Of particular interest is whether institutional investors alter their investment choices as the market changes. For instance, if institutional investors buy more glamour stocks in June during a bear market, then we would have established evidence of window-dressing activities. Indeed, window-dressing may be driven by a need to move to being true to label (i.e. investment style). For example, assume a growth manager has a lot of value stocks – then before the reporting date then he may want to sell a fair number of them so he moves back to appearing to be more a growth manager. Indeed, this is an interesting possibility because if growth stocks have been performing badly and so the growth manager has drifted to holding more value stocks, then window-dressing could mean (i) selling growth

stocks because they have performed badly (and so moving even more to value stocks), or (ii) selling value stocks and moving to growth stocks so as to appear true to label.

After the reporting date, institutions that have sold shares for window-dressing purposes (or tax loss selling purpose) may re-purchase some of these stocks. The re-purchase of the stocks allows the institutional investors to re-establish their preferred portfolio. Thus if institutional investors' actions contribute to the Turn-of-the-year Effect, we would expect the following hypothesis to hold:

H5. A negative and significant relationship exists between the changes in institutional ownership in June and the changes in institutional ownership in July

7.4 Data and Methodology

7.4.1 Data and Sample Characteristics

This chapter examines data from the Australian Stock Exchange (ASX) from December 1995 to December 2005. We make use of stock returns data, company data and a set of unique share ownership data (see Discussion in Chapter 2). Company accounting data was accessed from the Aspect database through the [Securities Industry Research Centre of Asia-Pacific \(SIRCA\)](#). Share return data was retrieved from Thomson-DataStream and finally share ownership data was accessed through SIRCA. Stock return data and company characteristics data are winsorised at the 1st and 99th percentile.

7.4.2 Sample selection and characteristics

The initial data set contained in excess of 3000 firms. However the sample as restricted to firms in the S&P ASX500 – the largest 500 firms in the Australian Stock Exchange. By limiting the sample to stocks in the All Ordinaries index, we ensured the final sample contains only firms that are of sufficient size to attract both individual and institutional investors. The final

sample only included firms with records of monthly returns, company information (such as price, market-to-book ratio and price-to-earnings ratio) and CHESS shareholdings records for a continuous period of 18 months. The last restriction is important because it is necessary to calculate returns over the 12 months prior to January. We also excluded any firms that did not have monthly returns for a continuous period of 18 months. The final sample contains information from 652 companies over the ten-year period. The sample is pooled across the ten years so the total sample size is 3126.

Table 7-1 Summary statistics of the sample, 1996–2005

The following table details the summary statistics of the sample. The data contains firms from the All Ordinaries Index of the Australian Stock Exchange. The entire pooled sample contained 3126 observations for the period between 1996 and 2005.			
Year	Number of Observations	Market Capitalisation (\$millions)	Median Market Capitalisation (\$millions)
1996	193	902.83	145.42
1997	228	979.45	166.17
1998	257	922.80	152.98
1999	266	1029.09	152.85
2000	288	1305.99	141.07
2001	343	1593.78	140.00
2002	372	1454.79	127.07
2003	390	1319.44	143.00
2004	394	1542.24	190.84
2005	395	1903.69	202.87
Full Sample	3126	1358.48	159.43

7.4.3 Methodology

7.4.3.1 *Testing for the persistence of the turn-of-the-year effect*

This study has two major goals. First we focus on establishing whether there is still a January Effect or Turn-of-the-year Effect in the Australian stock market.⁴⁰ As mentioned in Section 7.2, previous studies have shown that the January Effect (or Turn-of-the-year Effect) is a small firm

⁴⁰ To our knowledge, Henker and Paul (2011) was the last study to use stock-level data to examine the January Effect for the Australian stock market. Their sample period ended in 2001. Our data series extends to December 2006.

effect. Consistent with prior works, we examine the differences in returns between a portfolio of small stocks and a portfolio of large stocks across each month of the year. For simplicity, we will hereafter refer to the difference in returns of the small firms and the returns of the large firms as the “small firm premium”. We adopt a regression technique similar to that used in previous studies (see Schwert 2003; Pietranico & Riepe 2004). Due to the small number of individual firms in the sample, we divided the sample into quintiles (as opposed to deciles which was favoured by other studies) based on the market capitalisation of the firms. For each month, we calculated value weighted portfolio returns for the quintiles of smallest and largest firms. Next we ran the following regressions to determine whether any seasonality existed in the small firm premium:

$$(R_{1t} - R_{5t}) = \alpha_o + \alpha_d \text{Dummy}_t + \varepsilon_t \quad (1)$$

Where R_{1t} is the monthly return on the small-firm portfolio (i.e. Quintile 1) and R_{5t} is the return on the large-firm portfolio (i.e. Quintile 5). The dummy variable, Dummy_t is 1 when the monthly returns occur during the month under examination, and zero for any other month of the year.

The coefficient of the dummy variable, α_d measures the difference in average returns between the small-firm and large-firm portfolios during the month under examination and other months of the year. Our null hypothesis is that there are no significant differences in the small firm premium across each month. The alternative hypothesis is that the small firm premium is significantly higher or lower in the month of interest. So a significant coefficient will provide evidence of seasonality in the small firm premium (and possibly evidence of the turn-of-year effect) in the ASX over this period.

In the second part of the study, we attempt to examine the possible role that institutional investors play in the Turn-of-the-year Effect. We investigate which are the two main competing

explanations of the January/Turn-of-the-year Effect. We investigate the two periods of interest, that is the December–January period and the June–July period separately.

7.4.3.2 Testing for the institutional investors' role in the January Effect:

Our analysis involves a two-step process. First, we examine the characteristics that determine the returns of a particular stock in the months of June and July. We perform multivariate regression on the following equation:

$$\begin{aligned} \text{MonthlyRet}_i = & \\ & \alpha + \beta_1 \text{EleventoDecember}_i + \beta_2 \text{Company Charatersics}_i + \beta_3 \text{Inst Level}_i + \\ & \beta_4 \text{InstFlow}_i + \text{fixed effects} + c \end{aligned} \quad (2)$$

Where MonthlyRet_i represents the monthly return of firm i in the month of interest

Prior11monthRet_i is the returns of firm i in the 11-month period to June (for tests for the June-July period) or the 11-month period to November (for December-January period).

$\text{Company Characteristics}_i$ are the company's traits (including the log of market capitalisation, market-to-book ratio, the price earnings ratio and the stock's price).

Inst Level_i is the level of Institutional Ownership Level of firm i.

Inst Flow_i is the monthly change in the level of Institutional Ownership firm i

Fixed effects are yearly dummy variables

Our interest lies in determining the factors that drive the monthly returns in the period around the end of the calendar year (December–January) and the end of the fiscal year (June–July). Our main interest lies in the relationship between a company's return in the 11-month period

leading up to June and stock returns in June and July respectively. It is fundamental to both hypotheses that stocks that have performed well (badly) prior to December (or June) continue their good (poor) performance in December. The continuation is driven by tax-related selling (or window-dressing activities) at the end of the fiscal and calendar years.

To further examine the Turn-of-the-year Effect, we examine institutional ownership flow in the months surrounding the ends of the years by performing multivariate analysis on equation 2:

$$InstFlow_i = \alpha + \beta_1 EleventhToDecember + \beta_2 Company\ Characteristics + \beta_3 InstLevel_i + \beta_4 PriorInstFlow_i + fixed\ effects + c \quad (3)$$

Where *PriorInstFlow_i* represents the institutional ownership flow for firm *i* in the month prior to the month under examination

Equation 2 allows us to analyse the institutional investors' trading activities at year end (or the beginning of the next year). We include the term *PriorInstFlow* into the regressions that examine the institutional investors' reactions at the beginning of the new year (fiscal or calendar). This term will allow us to detect the presence of any reversing trades as institutions repurchase the stocks that they sold for tax (or window-dressing) purposes .

Finally we introduce an interaction variable, *Asxbear*, into our analysis. We believe that a weak stock market can significantly influence the incentive for window-dressing and tax loss selling activities. A bear market may reduce the incentives for tax-related selling. In a falling market, the profits from share investment fall. So there is less incentive to conduct tax-related trading. We would expect a fall in the amount of tax loss selling in a bear market. On the other hand, institutions are placed under greater pressure to perform in a bear market because their stakeholders demand a higher return. As a result institutions that make bad investment choices (i.e. invest in "losers") are subject to greater penalties. So institutions have a greater incentive to get rid of their losers (and other undesirable stocks) prior to their reporting date.

Thus we would expect the evidence of window-dressing and tax loss selling to be more apparent in a bear market. The analysis of changing investor behaviour in a bear market will become an important part of our study.

7.5 Empirical Results:

7.5.1 Has the Turn-of-the-year Effect persisted in Australia?

In Table 7.2, we table the results for the study of the size premium (i.e. the difference in returns between the smallest stocks and largest stocks) in the Australian stock market. Our aim is to determine whether the Turn-of-the-year Effect still persist in Australia. Table 7.2 shows that there is significant seasonality in returns on the Australian stock market. More specifically, the results show that the difference between the returns of the smallest quintile portfolio and returns of the largest quintile portfolio follows a significant seasonal pattern. Regressions (i) to (iii) of Table 7.2 show that a portfolio built from the smallest 20% of the stocks significantly outperforms a portfolio based on the largest quintile in the months of January and July. The small firm premium was 7.01% and 5.46% in the months of January and July respectively.

Regression (ii) indicates that the small quintile portfolio tends to significantly underperform in the month of June. The above results are largely consistent with the findings of previous Australian Studies of Praetz (1973), Brown et al. (1985) and Brailsford and Easton (1989). Moreover from an examination of equation V, we can see a distinctive pattern of seasonality in the Australian stock market.

Table 7-2 Small Firm/Turn-of-the-Year Effect, Daily Returns, 1996–2005

The following table shows the results of a study of monthly seasonality in the Australian Stock Market. We regress equation (1): $(R_{1t} - R_{5t}) = \alpha_0 + \alpha_D \text{Dummy}_t + \varepsilon_t$ Where R_{1t} is the return to the small-firm portfolio (quintile 1) and R_{5t} is the return to the large-firm portfolio (quintile 5). Dummy_t is an indicator variable which has a value of 1 when the daily return occurs during in the month of interest and 0 otherwise. So α_D measures the difference in average return between small- and large-firm portfolios during the month of interests versus other months in the year. The notations *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively.					
	(i)	(ii)	(iii)	(iv)	(v)
January	0.0701***				0.0606***
February					0.00629
March					-0.0334**
April					-0.03111*
May					-0.02667
June		-0.0630***			-0.0614***
July			0.0546***		0.0464***
August					0.0074
September					0.0007
October					-0.0117
November					0.0137
December				-0.0118	-0.0149
Constant	-0.0947	0.0016	-0.0081	-0.0026	

The results are interesting for a number of reasons. First, they indicate that the small firm premium is greater in January than in any other month of the year. Consistent with the findings of Brown et al. (1985) and Brailsford (1989), the differential in returns (between the smallest quintile and the largest quintile) in the month of January is 1.5% higher than small firm premium for July, the next highest month. In other words, there is at least one month of

abnormally high small firm premium that cannot be explained by the tax loss selling hypothesis.

It is noteworthy that the small firm premium was not present in the month of December. Although this result is largely consistent with previous Australian studies (Brailsford & Easton 1989, Gaunt & Gray 2003), it still presents a conundrum for the window-dressing explanation of the Australian January Effect. Another interesting point is the similarity in the magnitude of the small stock's underperformance in June and its superior performance in July. In previous studies, researchers have often been troubled by the small stocks' high returns after the turn-of-the-year because it was far greater than the fall in share prices in the previous month. In fact a major criticism of the price pressure hypothesis (that is so vital to both the tax loss selling and the window-dressing explanations) is its inability to reconcile the fact that the returns in the new financial year far out-weighed the fall at the conclusion of the previous financial year. As Ritter (1989) pointed out: "The January price rise for small stock appears to be far in excess of any December price decline". (Ritter 1989, p.704) Table 7.2 shows that the differentials in return in June are in fact larger than the differential in returns for the month of July. In other words, the smallest stocks underperformed by a larger degree in June and in spite of an apparent recovery in July, investment in a portfolio of large stocks would still yield a higher return over the June–July period. The relatively small increase in July may be attributed to investors showing greater discretion in the shares that they reincorporate in their portfolio. If investors choose to only reinvest in some of the shares that they sold for window-dressing or tax purposes, then it seems logical that the gains in July should be less than the fall in June.

Finally the figures in the last column of Table 7.2 display the results of a multiple regression that includes a dummy variable for each month. As well as the aforementioned patterns in January, June and July, the results also appear to confirm Praetz's findings of a trough in the market in the months of March and April. The results is made more interesting because

Praetz's study discovered the patterns in returns using stock indices as opposed to the differentials in monthly returns between the small and large capitalisation firms. The evidence of a similar pattern of seasonality in the two studies provides further validation to the view that seasonality in returns is driven by the smallest stocks. Another point of interest is the significant negative returns in March of -3.3%. March coincides with the end of a reporting year and/or financial year for many overseas investors in the Australian share market, and it is possible that the actions of these overseas investors is the driver for the statistically significantly underperformance by small firms.

Overall the results show that the small firm premium displayed a significant seasonal pattern in the Australian stock market. The two periods of seasonality appear to be January and the June-July period. Since Australia has a tax year that concludes in the month of June, we are confident that the evidence shows that a Turn-of-the-year Effect exists in the Australian stock market. Yet our results in Table 7.2 also show that there is a significant small firm premium in the month of January for the Australian market. In other words, the evidence indicates that there is a January Effect as well as a Turn-of-the-year Effect in the Australian stock market. To avoid confusion, we will hereafter refer to the high small firm premium in the January as the January Effect. The anomalous pattern in the small firm premium in the June-July period will be called the Turn-of-the-year Effect.

7.5.2 Are institutional investors responsible for the January Effect in Australia?

In Section 7.5.1, we have shown that the small firm premium displayed a significant seasonal pattern in the Australian stock market. In the following section, we will examine whether the actions of institutional investors contribute to the seasonality in returns on the Australian stock market. To do so, we will examine the two distinct periods of seasonality independently. Initially an examination is carried out for the December and January period. It is important to note that our results do not show any anomalous returns for the month of December. Rather,

our analysis takes account of December because we believe institutional investors' actions (i.e. trades) in the month of December are partly responsible for the January Effect. Our analysis involves a two-step process. First, we identify the characteristics that determine the level of returns that a firm earns in December. The main item of interest is the relationships between a company's return in the 11-month period leading up to December and stock returns in December and January respectively. The second step of the analysis involves an examination of the actions of institutional investors and individual investors in the respective periods with the objective of determining whether these investors contribute to the Turn-of-the-year Effect in Australia.

7.5.3 The January Effect in Australia: an analysis of the returns.

We present in Panel A of Table 7.3 the regression of Equation 2 for our analysis of the December returns of the individual stocks in our sample. The first point to note is that there is a positive and significant relationship between returns in the 11-month period prior to December and the stocks returns in December. This is consistent with Hypothesis 1.⁴¹ Stocks that perform well in the period prior to December are expected to continue their good performance in the month of December. Similarly, poorly performing stocks are expected to continue their below par performance in December. This is consistent with the window-dressing explanation of the January Effect.

Panel B of Table 7.3 provides regression output for the factors that influence stock returns in the month of January. For all the regressions reported in Panel B, the table shows a strong negative and significant relationship between stock returns in January and the stocks' performance in the 11-month period up to the start of December. The 11-month return

⁴¹ As mentioned in the methodology section, we have described the testing procedure for the June–July period only. However an identical testing procedure is used for the January period. So the hypothesis applies to both the December–January and June–July. Of course, we have used the appropriate variable for each period. In a test for the December–January period, Hypothesis 1 suggests that a positive relationship will exist between December returns and the returns in the 11 months prior to December.

variable excludes the December returns in order to exclude any price effects of institutional window-dressing. Panel B shows that the coefficient for the variable, *EleventhToDecember*, ranges from -0.0253 for regression (i) to -0.0285 for regression (ii). Thus, stocks with the worst performance in the 11-month period prior to December are expected to have the highest return in January. The first thing to note is that the results are consistent with our hypothesis 2, a negative relationship exists between January returns and the returns in the 11 months prior to December. Moreover the results in Panel B are in direct contrast to the results found in Panel A where there was a strong positive relationship between 11 month returns and the December returns. So what is the cause of this dramatic reversal in the relationship between prior returns and the returns in the next period?

The results in Panel A and Panel B are consistent with the window-dressing hypothesis that institutions systematically sell shares that has fallen in prices over the preceding months. The resultant price pressure causes the share price of the losing stocks to fall in this December which would explain the positive relationship between returns in the 11 period prior to December and the stocks returns in December. After the completion of the reporting at the end of the calendar year, institutions seek to buy back the stocks that they have sold for window-dressing purposes in December. In so doing, the stocks that performed poorly in the period leading up to December experience an increase in demand in January and the price of these stocks will climb rapidly in January. Thus the negative relationship between January returns and prior period returns is consistent with the Window-dressing explanation of the January Effect.

Table 7-3 Determinants of Monthly returns in the month of December and January

The following table outline the relationship between the firm’s monthly return and the characteristics of the firm. For both December and January, regressions are performed on equation 2 to identify the factors behind the excess return in that month. Company characteristics such as market capitalisation, market to book ratio, price/earnings ratio and the stock prices are included as control variables. Panel A presents the results of the regression where the dependent variable is the returns in December. Similarly the results of the January returns are presented in Panel B. In the following table, ElevenToDecember represents the returns for the 11 month period up to the start of December. In Model (ii), we incorporate ASXBEAR dummy variable to distinguish the relationship between the monthly and the dependent variables in bull and bear markets. ASXBEAR is a dummy variable which has a value of 1 when the All Ordinaries Index has fallen in the 11 month period prior to December. *, ** and *** denotes statistical significance at the 10%, 5% and 1% significance level respectively.			
PANEL A			
Dependent Variable: December Returns			
		(i)	(ii)
ELEVENTODECEMBER		0.0322***	0.0084***
ASXBEAR*ELEVENTODECEMBER			-0.0002
LOG OF MARKET VALUE		0.0045**	0.0216***
LOG OF MARKET VALUE*ASXBEAR			-0.1524***
MARKET TO BOOK RATIO		0.0013	0.0011***
MARKET TO BOOK RATIO *ASXBEAR			-0.007***
STOCK PRICE		3.74E-06	-9.11E-07
STOCK PRICE*ASXBEAR			-5.57E-05
PRICE TO EARNINGS RATIO		-2.85E-05	-0.0011***
PRICE TO EARNINGS RATIO*ASXBEAR			0.0160***
INSTITUTIONAL OWNERSHIP LEVEL		0.0005*	0.0006***
INSTITUTIONAL OWNERSHIP LEVEL*ASXBEAR			-0.0032***
DEC INST FLOW		-0.0003	0.0009
DEC INST FLOW*ASXBEAR			0.0019
PANEL B			
Dependent Variable: January Returns			
		(i)	(ii)
ELEVENTODECEMBER		-0.0253***	-0.0285***
ELEVENTODECEMBER*ASXBEAR			0.0476***
LOG OF MARKET VALUE		-0.0086***	-0.0082***
LOG OF MARKET VALUE*ASXBEAR			-0.003418
MARKET TO BOOK RATIO_JAN		0.0004	0.0016***
MARKET TO BOOK RATIO_JAN*ASXBEAR			-0.0018
STOCK PRICE		-1.81E-06	-2.40E-06
STOCK PRICE*ASXBEAR			4.60E-05
PRICE TO EARNINGS RATIO		0.0006	0.0006***
PRICE TO EARNINGS RATIO*ASXBEAR			-0.001241
INSTITUTIONAL OWNERSHIP LEVEL		-0.0006***	-0.0006***
INSTITUTIONAL OWNERSHIP LEVEL*ASXBEAR			0.000223
JAN INST FLOW		0.0080***	0.0085***
JAN INST FLOW*ASXBEAR			-0.00333

It is necessary to point out that the results of Panel B are similar to the results found by Roll's 1983 study. Unlike Roll's study, however, the negative relationship cannot be used as support for the tax loss selling hypothesis. As the Australian tax year concludes in June, there should be no tax motivated trading in January. The negative relationship between the returns of the 11 month period and January returns can only be interpreted as support for the Window dressing Hypothesis. In order to validate the window dressing hypothesis, however, it is necessary to examine the institutional investors' trading activities during this period.

Before we do so, we will briefly turn our attention to some of the other characteristics that determines returns in this December-January period. This analysis is important to establish the type of investments that will maximise the investors' returns in the December-January period. Once we have done so, we can then differentiate the investment choices that institutions make to yield a return for their stakeholders and the investments undertaken for the purpose of window dressing. Surprisingly regression (i) in Panel A reports only firm size and institutional ownership levels have any significant influence on a stock's performance in December. One possible explanation is that the prevalent economic condition would have a serious impact on the firm's performance. It has been shown that value stocks are superior performers in bear markets and that a glamour strategy works relatively well in bullish markets. Since the pooled data set contains data from a number of years, we introduced interaction variables to isolate the drivers of returns in bull and bear markets. The interaction variables were created by multiplying the dummy variable of *Asxbear* with each one of the dependent variables. *Asxbear* is a dummy variable which takes on a value of 1 if the market (specifically the S&P ASX500) has fallen in the corresponding period⁴².

⁴² The corresponding period refers to the 11 months prior to December for the January Effect. In relation to the Turn-of-the-year Effect, we refer to the state of the market as the 11 months to June.

The results in Panel A confirmed that the state of the equity market have a significant impact on the relationship between the returns and the stock characteristics. As expected, large and glamour stocks (high Market to book stocks) tend to achieve superior returns in bullish markets. In bearish conditions however, the relationships altered significantly. For example, regression (ii) shows that the relationship there is strong negative relationship between December returns and the log of market capitalisation. The relationship changes from 0.00216 to -0.1308.⁴³ In other words, small stocks show much higher returns in bear markets. Similarly the results also show that the relationship between the market to book ratio and the stock returns is dependent upon the state of the market. Model (ii) of Table 7.3 shows that growth stock performs better in bull markets, while value stocks outperforms in the month of December in bear markets. This is an especially important observation for the analysis on the institutions' investment choices because we will show that institutional investors increase holdings of these lesser performing glamour stocks in bear markets. In other words, we will show evidence that institutions have a tendency to buy poorer performing growth stock in December for the purpose of window-dressing.

Now we turn our attention to the determinants of returns for the month of January. Panel B reports the results of the relationship with the company characteristics and the returns of the stocks in January. Consistent with our previous findings, there is a strong negative relationship between the market capitalisation of the stock and its return and confirm that the January Effect is very much a size effect (Keim 1983; Roll 1983; Reinganum 1983). Panel B also shows that January returns exhibit a significant relationship with both the market-to-book ratio and the interaction variable, market-to-book ratio*Asxbear. Similar to the results for December,

⁴³ In a bear market, the relationship between the log of firm size and December returns can be found by summing the coefficients of the log of market capitalisation and the coefficient associated with the interaction term Asxbear*log of market capitalisation. Thus the total impact of log of market capitalisation on December return is the sum of 0.0216 and -0.1524 which is equivalent to -0.1308.

there is a positive relationship between the market to book ratio and returns in January in an advancing equity market indicating that in such markets high market to book firms tends to earn superior returns in January. However there is an important exception. In bear markets, our findings indicate that there is no relationship between market to book and January returns.

It is also important to note that there appears to be no relationship between January returns and the price of the stocks. This is significant because previous studies (including Bhardwaj & Brooks 1992) have provided evidence that the January Effect was a low price effect as oppose to a small size effect. In other words, low price stocks should experience high returns in January. In Panel B, however, the coefficient of the stock price variable is significant at the 10% level with the positive sign suggesting that it is the higher price stock that have higher returns in January. Our finding is consistent with a January Effect that is driven by small capitalisation stocks rather than low price stocks.

In summary, the analysis of returns for the December-January period shows that there is strong evidence to support the window dressing explanation for the January Effect. In order to prove the window-dressing hypothesis, however, it is imperative that we investigate the actions of the institutional investors over the December-January. In the next section, we turn our attention to the institutional investors' behaviour in the December-January period.

7.5.4 Institutional investors' activities in the December-January period.

In section 7.5.3, we have shown that there is a strong negative relationship between the returns of stocks in January and the performance of the stocks in the 11 month prior to December. In other words, the loser stocks tend to exhibit superior performance in January. This strong reversal in returns provides prima facie support for the window dressing hypothesis in the Australia stock market. We now turn our attention to the actions of the institutional investors in the December-January period. We present in Table 7.4 the regression

output for our analysis on the factors that determines the change in institutional ownership in the December-January period. Panel A of table 7.4 displays the results of the factors that influence changes in the level of institutional ownership in the month of December. The positive relationship between the change in institutional ownership and the returns in the prior 11 months support the notion that institutional investors window dress their portfolio by buying winners and selling losing stocks in December. This is consistent with hypothesis 3. Of course, these results could also be interpreted as the manifestation of a momentum investment strategy utilised by the institution.

In order to further test the window dressing hypotheses, we will now examine characteristics of the stocks that were purchased by the institutions (i.e. increase in the level of ownership). It is important to remember that window dressing does not only involve buying “winning” stocks. Institutions that conduct trades for the purpose of window-dressing reverting back to their label or style. For example, a growth manager who has tilted away from their benchmark may need to reincorporate glamour stocks back into their portfolio. We examined the institutions’ choice of stocks in different market conditions.

The state of the equity market can have a direct influence of the level of window dressing activities. It is generally accepted that the expected returns in the equity market changes over time reflecting changing business conditions. In bear markets, the marginal cost of money is higher and so managers are subject to greater scrutiny from their investment. In this climate, institutions have greater incentives to window dress their portfolio for several reasons. Firstly, Institutional investors who attempt to maximise returns are likely to invest in increase holdings in value stocks because value stocks can produce superior returns in these conditions. In other

Table 7-4 Institutional Ownership Changes for the Months of December and January

The following table outlines the relationship between the firm's monthly return and the characteristics of the firm. For both December and January, regressions are performed on equation 3 to identify the factors behind the excess return in that month. Company characteristics such as market capitalisation, market-to-book ratio, price/earnings ratio and stock prices are included as control variables. Panel A presents the results of the regression where the dependent variable is the returns in December. Similarly the results of the January returns are presented in Panel B. In the following table, ELEVENTODECEMBER represents the returns for the 11-month period up to the start of December. In Model (ii), we incorporate ASXBear dummy variable to distinguish the relationship between institutional ownership flows and the dependent variables in bull and bear markets. ASXBear is a dummy variable which has a value of 1 when the All Ordinaries Index has fallen in the 11-month period prior to December. ASXBear is a dummy variable which has a value of 1 when the All Ordinaries Index has fallen in the 11-month period prior to December. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively.

PANEL A		
Dependent Variable: Institutional Ownership flow for December		
	(i)	(ii)
ELEVENTODECEMBER	0.1834***	0.1815***
ASXBear*ELEVENTODECEMBER		-0.0031
LOG OF MARKET VALUE	-0.0806**	-0.0741**
LOG OF MARKET VALUE*ASXBear		0.0208
MARKET TO BOOK RATIO	-0.0542***	-0.0565***
MARKET TO BOOK RATIO *ASXBear		0.0767***
STOCK PRICE	-0.0001	-0.0001
STOCK PRICE*ASXBear		0.0004
PRICE TO EARNINGS RATIO	0.0439***	0.0470***
PRICE TO EARNINGS RATIO*ASXBear		-0.0654***
INSTITUTIONAL OWNERSHIP LEVEL	0.0084***	0.0084***
INSTITUTIONAL OWNERSHIP LEVEL*ASXBear		0.0001
PANEL B		
Dependent Variable: Institutional Ownership flow for January		
	(i)	(ii)
ELEVENTODECEMBER	0.1104***	0.0908**
ELEVENTODECEMBER*ASXBear		0.2727
LOG OF MARKET VALUE	-0.0164	-0.0111
LOG OF MARKET VALUE*ASXBear		-0.0795
MARKET TO BOOK RATIO_JAN	-0.0059*	-0.0038
MARKET TO BOOK RATIO_JAN*ASXBear		0.0006
STOCK PRICE	0.0025	0.0000
STOCK PRICE*ASXBear		-0.0001
PRICE TO EARNINGS RATIO	0.0041	0.0014
PRICE TO EARNINGS RATIO*ASXBear		0.0170
DECEMBER RETURN	0.1018	0.8694***
DECEMBER RETURN*ASXBear		-1.2280***
INSTITUTIONAL OWNERSHIP LEVEL	0.0074***	0.0072***
INSTITUTIONAL OWNERSHIP LEVEL *ASXBear		-3.4E-05
DEC INST FLOW	-0.1292***	-0.0862***
DEC INST FLOW*ASXBear		-0.4734***

words, institutions would have greater holdings in low market to book stocks, low price to earning stocks and smaller stocks in bear market. The increase holdings in value stocks mean more window dressing transactions are necessary to re-arrange their portfolio prior to the reporting date.

Institutions may also be subject to greater pressure to window dress because the penalties of holding poor performing stocks are greater in lean periods. In a bear market where managers are subject to greater scrutiny, institutions that fail to satisfy the performance criteria of their clients are more likely to lose their clients. Thus we should expect to see greater window dressing in bear markets.

It is important to note that market conditions can have a significant impact on investment choices and the success of investment strategies. This is especially true for investment strategies which are based on exploiting these factors. There is a rich vein of literature that shows factor premiums are dependent on the state of the market (Bhardwaj & Brooks 1993; Tu 2005). For example, Bhardwaj and Brooks (1993) showed that the average returns of the portfolio containing the bottom 5% of stocks was -4.20% in a bear market (where the monthly market returns are less than the median market return) and 9.81% in bull markets. The results translate to a differential of size premium of more than 7%. Tu (2005) noted that the size premium was -0.1% in a bear market but the size premium was 3.4% per year in bull markets. At the same time, Tu showed that a value strategy was much more effective in bear markets than bull markets.

To examine the institutions' choices in different equity market climates, interaction variables were included amongst the independent variables for regression (ii). The results in Panel A confirm that the state of the equity market has a significant impact on the institutions' investment choices. It is important to remember that it is the changes in the investment choices that are most important to our analysis. In bullish markets, Panel A shows that

institutions have a preference for low market-to-book stocks. The coefficient associated with the market-to-book variable is -0.0565 and it is statistically significant at the 1% level. Yet there is evidently a significant switch in investment emphasis in bear markets as shown by the coefficient associated with the Market to book*Asxbear which is positive and significant. In bear markets, the result shows that the overall relationship between market-to-book ratio and the change in institutional ownership becomes positive. The fact that value stocks are significantly better performers in bear markets adds further intrigue into this change in investment choice. Tu (2005) showed that the value premium is more than 10% higher in bear markets in comparison to its impact on good markets. This switch in institutional investors' investment preferences is made more remarkable by the fact that these glamour stocks were poorer performers in bearish conditions (see Table 7.3). This point is backed up by the results in Panel A of Table 7.4. In bull markets, the results indicate a positive and significant relationship between changes in institutional ownership and the returns in December. The change in investment choice is an indication that institutions conduct window dressing in poor market conditions. Our results are consistent with Hypothesis 4, which suggests that institutional investors reduce holdings with certain characteristics in window-dressing activities prior to the end of reporting periods.

It is also important to point out that we are not suggesting that institutions only conduct window-dressing activities in bear markets. On the contrary, we believe that the results demonstrate that window-dressing activities are most apparent in bear markets. Institutions are professional and active investors who would make numerous transactions throughout the course of a month. Our belief is that only some of these trades are for the purposes of window dressing. This is the reason that window dressing is more apparent in bear markets.

To complete the window-dressing explanation, it is necessary for the institutions to reincorporate some of these stocks back into their portfolio. Panel B of Table 7.4 indicates that

institutional investors have a tendency to buy back the stocks that they sold in the month of December. The relationship between the change in institutional ownership in January and the change in institutional ownership in December is -0.0862 . That is, a stock that experiences a 1% decrease in institutional ownership in December is likely to experience a 0.08% increase in institutional ownership in January. To fully appreciate the extent of the reversal, it is important to examine the data for the period where window dressing is most important. In bear markets, regression (ii) of Panel B reports that the overall relationship between the changes in the level of institutional ownership from December to January is -0.56 . In other words, a firm that experiences a 1% decline in institutional ownership in December can expect a 0.56% increase in institutional ownership in January. This dramatic reversal is consistent with Hypothesis 5 and provides the strongest evidence of institutional window dressing in the December-January period.

An analysis of Table 7.4 provides one further piece of evidence to suggest that institutional window-dressing activities contribute to the January Effect. We turn our attention to the relationship between January institutional ownership flow and December returns. Panel B of Table 7.4 shows that there is a positive and statistically significant relationship between institutional ownership flow and December returns in bull markets. In times where there is the greatest need for window dressing (bear markets), we can see that the institutions switch their preferences to stocks that experienced poor returns in December.

In summary, we have provided strong evidence to suggest that institutions conduct window-dressing transactions in the Australian stock market. We will now turn our attention to the June–July period.

7.5.5 Turn-of-the-year Effect for the June–July period.

Unlike the January period, both window-dressing transactions and/or tax loss selling motivated transactions are both possible explanations for the anomalous pattern in the small firm

premium over the June–July period. The Australian tax year concludes in June, so investors may attempt to reduce their capital gains tax liability by realisation of capital losses on stocks that have fallen in value.

7.5.5.1 The Turn-of-the-year Effect in Australia: an analysis of the returns

We report in Table 7.5 the factors that influence firms' returns in the June–July period. The results provide prima facie support for both the tax loss selling and the window dressing hypotheses. Panel A shows stocks that have performed well in the financial year continue their good performance in June. This pattern is consistent with investors selling stocks that have performed poorly in the financial year. Again we will concentrate on Regression (ii) that incorporates the interaction variable to reflect market conditions. Panel A in Table 7.5 shows that the coefficient associated with the 11-month return variable is statistically significant 0.029. A stock that had a return of 10% in the 11-month period up to June is predicted to have a return that is 2.9% higher in June in comparison to a stock that achieved a zero return in the previous 11-month period. In other words, investors buy winners and sell losers in the final month of the financial year. So we have prima facie evidence to support Hypothesis 1.

However Model (ii) of Panel A also reveals a most important finding. In bear markets, there is a negative and statistically significant relationship between the prior 11 months returns and June returns. On the surface, this is inconsistent with Hypothesis 1 and contrary to both the window-dressing and tax loss selling explanations of the January Effect. However we believe that the results are consistent with the prevalence of tax-related selling in June in the Australian stock market. We define bear markets as situations when the S&P and ASX500 have yielded negative returns in the 11 months prior to June. At these times, investors earn lower returns from the stock market which translates to lower capital gains tax liability. So investors would have less tax-related selling of loser stocks. This explanation is consistent with the

Table 7-5 Determinants of monthly returns in the month of June and July

This table outlines the relationship between the firm's monthly return and the characteristics of the firm. For both December and January, regressions are performed on equation 2 to identify the factors behind the excess return in that month. Company characteristics such as market capitalisation, market-to-book ratio, price/earnings ratio and stock prices are included as control variables. Panel A presents the results of the regression where the dependent variable is the returns in June. Similarly the results of the January returns are presented in Panel B. ELEVENTODJUNE represent the returns for the 11-month period up to the start of June. In Model (ii), we incorporate ASXBear dummy variable to distinguish the relationship between the monthly and the dependent variables in bull and bear markets. ASXBear is a dummy variable which has a value of 1 when the All Ordinaries Index has fallen in the 11-month period prior to December. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively.			
PANEL A			
Dependent Variable: Institutional Ownership flow for June			
		(i)	(ii)
ELEVENTOJUNE		0.0137***	0.0290***
ASXBear*ELEVENTOJUNE			-0.0586***
LOG OF MARKET VALUE		0.0124***	0.0122***
LOG OF MARKET VALUE*ASXBear			0.000983
MARKET TO BOOK RATIO		0.0010***	0.0016***
MARKET TO BOOK RATIO *ASXBear			-0.0009
STOCK PRICE		0.0005	0.0005
STOCK PRICE*ASXBear			-0.0012
PRICE TO EARNINGS RATIO		0.0000	3.17E-06
PRICE TO EARNINGS RATIO*ASXBear			1.08E-06
INSTITUTIONAL OWNERSHIP LEVEL		-0.0003***	2.57E-06
INSTITUTIONAL OWNERSHIP LEVEL*ASXBear			-0.0009***
JUNE INST FLOW		1.23E-03	0.000231
JUNE INST FLOW*ASXBear			0.0032*
PANEL B			
Dependent Variable: Institutional Ownership flow for July			
		(i)	(ii)
ELEVENTOJUNE		-0.0256***	-0.0065
ASXBear*ELEVENTOJUNE			-0.0554***
LOG OF MARKET VALUE		-0.0078***	-0.0082***
LOG OF MARKET VALUE*ASXBear			0.0002
MARKET TO BOOK RATIO		0.0005	0.0012
MARKET TO BOOK RATIO *ASXBear			-0.0012
STOCK PRICE		0.0002	0.0001
STOCK PRICE*ASXBear			-0.0001
PRICE TO EARNINGS RATIO		-1.84E-06	-2.12E-06
PRICE TO EARNINGS RATIO*ASXBear			2.17E-05
INSTITUTIONAL OWNERSHIP LEVEL		-0.0002*	-0.0001
INSTITUTIONAL OWNERSHIP LEVEL*ASXBear			-0.0003
JULY INST FLOW		0.0015***	0.0016***
JULY INST FLOW*ASXBear			-0.0011

evidence of a positive relationship between June returns and the previous 11-month returns in bull markets but a negative correlation in bear markets.

Consistent with our expectations, Panel A of Table 7.5 also reveals that large firms and growth firms earn higher returns in June. There is a positive and statistically significant relationship between market capitalisation and June returns which mirrors our earlier findings that large firms outperform small firms in the month of June. The coefficient associated with the market-to-book ratio was also positive and significant which suggests that growth stocks achieve higher returns in June.

Let's turn our attention to Panel B which presents results of the month of July. In Panel B, the results demonstrate a negative and significant relationship between returns in the 11-month period prior to June and the stocks' returns in July. This relationship is especially prominent when we introduce the interaction variables into the equations. In Regression (ii), it is evident that there is virtually no relationship between July returns and stock returns in the 11-months prior to June. Yet in bear markets, we see a very strong reversal for these "losers" stocks in the month of July. The negative relationship indicates that stocks with the highest returns are the stocks that experienced the largest price decrease in the preceding year. In other words, the stocks with the greatest potential for tax loss selling (or window dressing) are expected to yield the highest returns in July. This result provides evidence that confirms Hypothesis 2 holds but offers quite a conundrum. The results suggest stocks that have performed poorly in the 11-month period prior to June exhibit superior performance in both the months of June and July. The results appear to be contrary to the prediction of both the tax loss selling and the window-dressing explanations of the Turn-of-the-year Effect. Prior to drawing a definite conclusion, it is necessary to examine the action of the institutional investors in the June/July period.

7.5.6 Can institutional investors' actions explain the Turn-of-the-year Effect in Australia?

7.5.6.1 institutional investors and Tax loss selling

In Table 7.6, we present the results of our analysis on the factors that influence changes in the level of institutional ownership in the months of June and July. The positive relationship between institutional ownership flow and the returns in the previous 11-month period supports the notion that institutional investors conduct window dressing (or tax related selling) of their portfolio in June. Model (i) reports the results of the pooled data. It is evident that institutional investors tend to increase their ownership in winning stocks in the June period. The coefficient of 0.4464 suggests that for every percentage point in return that a company earns in the 11-month period, the company will experience a 0.45% increase in institutional ownership. In simple terms, institutions buy winners and sells losers which consistent with Hypothesis 3.

Of greater interest are the results in model (ii) when we separate the economic conditions into bull and bear markets. In a bear market, this relationship no longer holds. In fact, regression (ii) of Panel A shows that there is a substantially smaller positive relationship between changes in institutional ownership and the previous 11-month period returns in bear markets. This finding is consistent with our results from the previous section where we documented a negative relationship between June returns and the stocks' previous 11-month returns for bear markets. In bear markets where institutional investors have less need to conduct tax related selling, we detected a much smaller relationship between June institutional ownership flow and prior year returns. The absence of the tax motivated selling in turn reduces the downward pressure on the prices of the loser stocks which may explain the negative relationship between June returns and previous 11-month returns in bear markets.

Table 7.6 Institutional Ownership Changes for the Months of June and July

This table outlines the relationship between the firm's monthly return and the characteristics of the firm. For both June and July, regressions are performed on equation 3 to identify the factors behind the excess return in that month. Company characteristics such as market capitalisation, market-to-book ratio, price/earnings ratio and the stock prices are included as control variables. Panel A presents the results of the regression where the dependent variable is the returns in December. Similarly the results of the January returns are presented in Panel B. ELEVENTOJUNE represents the returns for the 11-month period up to the start of June. ASXBear is a dummy variable which has a value of 1 when the All Ordinaries Index has fallen in the 11-month period prior to December. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively.		
PANEL A		
Dependent Variable: Institutional Ownership flow for June		
	(i)	(ii)
ELEVENTOJUNE	0.2125***	0.4464***
ASXBear*ELEVENTOJUNE		-0.388***
LOG OF MARKET VALUE	-0.0612**	-0.0735**
LOG OF MARKET VALUE*ASXBear		0.0630
MARKET TO BOOK RATIO	-0.0060	-0.0352
MARKET TO BOOK RATIO *ASXBear		0.0391**
STOCK PRICE	3.18E-03	9.46E-03
STOCK PRICE*ASXBear		-0.0340**
PRICE TO EARNINGS RATIO	3.17E-05	0.0004
PRICE TO EARNINGS RATIO*ASXBear		1.73E-05
INSTITUTIONAL OWNERSHIP LEVEL	0.0081***	0.0087***
INSTITUTIONAL OWNERSHIP LEVEL *ASXBear		-0.0015
PANEL B		
Dependent Variable: Institutional Ownership flow for July		
	(i)	(ii)
ELEVENTOJUNE	0.0610	0.2150***
ELEVENTOJUNE*ASXBear		-0.1577
LOG OF MARKET VALUE	-0.0992**	-0.1613***
LOG OF MARKET VALUE*ASXBear		0.2311***
MARKET TO BOOK RATIO_JAN	0.0123	0.0342*
MARKET TO BOOK RATIO_JAN*ASXBear		-0.0349
STOCK PRICE	-2.24E-05	0.0026
STOCK PRICE*ASXBear		-0.0165
PRICE TO EARNINGS RATIO	1.00E-04	0.0001
PRICE TO EARNINGS RATIO*ASXBear		0.0004
JUNE RETURN	0.4215	0.0558
JUNE RETURN*ASXBear		0.7615
INSTITUTIONAL OWNERSHIP LEVEL	0.0194***	0.0249***
INSTITUTIONAL OWNERSHIP LEVEL*ASXBear		-0.0171*
JUNE INST FLOW	-0.0924***	-0.1880***
JUNE INST FLOW*ASXBear		0.3205***

We can detect further evidence to support the tax loss selling hypothesis in Panel B of Table 7.6. Panel B tables the regression on institutional ownership flows in the month of July. Of most interest is the relationship between the institutional ownership flow in June and the institutional ownership flow in July. Consistent with the tax loss selling explanation, we see that institutional investors tend to buy back the stocks that they sold (in June) in bullish capital markets. However, this reversal is not evident in the bear market. The coefficient associated with interaction term, JUNE INST FLOW*ASXBEAR, is strongly positive and statistically significant at the 1% level. So in the absence of tax related sales in June, institutional investors are not required to make the reversing trades that appear to be the main drivers of the relationship between institutional ownership flows in June and July.

7.5.6.2 Window dressing and the Turn-of-the-year Effect

So we have seen evidence that institutional investors conducted tax loss selling in the June–July period. The question is whether institutions also conduct window dressing in this period. Unlike the December–January period, there are little signs that institutional investors’ trades are primarily motivated by window dressing, although there are indications that institutional investors alter their portfolio preferences in bear markets, and make switches in the styles of stocks that they purchase (i.e. they move from value stocks to growth stocks). The coefficients associated with the interaction variables are not statistically significant in most cases. Moreover a review of Panel A of Table 7.6 suggests that institutional investors do not appear to base their trades on stock characteristics in bear markets.⁴⁴ The regression results show that most company characteristics have little or no relationship with institutional ownership in June.

⁴⁴ In a bear market, it is necessary to combine the coefficients of the stock characteristics and the interaction term for those characteristics. For example, the relationship between June institutional ownership flow and the market-to-book ratio is the sum of -0.0352 and 0.0391 which is equal to 0.0039. It is evident that there is virtually no relationship between returns and stock characteristics in bear markets.

The absence of any reversal in institutional ownership flow in bear markets does not support the window dressing hypothesis. Panel B shows that the coefficient associated with the interaction term, JUNE INST FLOW*ASXBEAR, is positive and significant at the 1%. More importantly, combining the coefficients for JUNE INST FLOW and JUNE INST FLOW*ASXBEAR shows that the overall results indicate that institutions tend to increase ownership in the stocks that they have purchased in June. This is contrary to Hypothesis 5 (and the window dressing explanation) which predicts that institutions will conduct more window-dressing activities in bear markets. The results suggest that window-dressing is not the primary motive of institutional investors' trades in the June–July period.

In summary, the results of our analyses for the June–July period suggest that institutional investors conduct tax-related trading in this period. The prevalence of this trading is most obvious when one compares the difference in the institutional investors' trades in bull and bear markets. In boom markets when there is the greatest need for tax-related selling, institutional investors tend to buy back the stocks they sold in June. In bear markets, however, institutional investors reduce their tendency to buy winners and sell losers, and we do not detect any evidence for these reversals in institutional ownership.

7.6 Chapter conclusion and closing remarks

From the evidence presented, it is evident that institutional investors' actions contribute to the end-of-year anomalies in Australia. Firstly our analysis confirms that both end-of-year effects are still present in the Australian market. In this study, we used regression analyses to examine the data from the Australian stock exchange to determine whether there is seasonality in the small firm premium data for the past 10 years. We found that there are very large small firm premiums in the months of January and July. Our findings also show that a portfolio of the firms in the largest quintile significantly outperforms a portfolio of the firms in the smallest

quintile in the month of June. So the results demonstrate that there is a January Effect and a Turn-of-the-year Effect in Australia.

To gain further insights into the causes of end-of-the year effects, we examined the actions of institutional investors in these periods. We found evidence of significant window-dressing activities in the month of December. Indeed window-dressing activities were most obvious in bear markets where there is a greater need for window dressing. After an investigation of the institutional investment decisions in January, we concluded that institutional window dressing contributes to the January Effect in Australia.

Next we turned our attention to the Turn-of-the-year Effect in Australia. In the June–July period, our results showed that tax loss selling transactions take place in the June–July period. Indeed the institutional trading for tax-related purposes appears to have had a significant influence on stock returns in this period. In bull markets, when there are significant incentives for investors to trade for the purposes of tax minimisation, loser stocks underperform in June. However stocks that have performed poorly in the prior 11 months tend to be superior performers in bear markets. Our results suggest that window-dressing is not the primary motive for the investors' actions in the June/July period.

In this chapter, we provided evidence that institutional ownership flows contribute to seasonality in returns in the Australian stock market. The results are disconcerting because they add to the growing stream of literature which shows that institutional investors contribute to market inefficiency. At a time when the size and influence of institutional investors are growing around the globe, these results act as an urgent reminder for policy and regulators. An interesting direct of future research is the examination of regulations and policy options that can align the actions of institutional investors to the interests of the capital markets and ultimately, to the wider economy.

8 Chapter 8 Conclusion:

This dissertation examines the impact of institutional investment. The dissertation was motivated by two factors: (1) the growing size and influence of institutional investment in global financial markets and (2) the many unanswered questions relating to the impact of institutional ownership on stakeholders, on financial markets and on the economy. To this end, we have presented four studies with the aim of providing answers to the following questions: whether institutional investors are superior investors, whether institutional investors' presence and activities improve the efficiency of the financial markets, and what role institutional investors play in important corporate decisions.

Chapter 2 provides a broad review of the literature on the performance of institutional investors, their role in corporate governance and the impact of institutional investors on the economy. Central to our discussion is whether institutional investors are of benefit to their stakeholders and to the effective functioning of financial markets. The overwhelming finding is that the evidence on the impact of institutional investors is inconclusive.

The first study is presented in Chapter 4. This study evaluated the performance of institutional investors to determine whether they exhibit superior skills. Research into the performance of institutional investors has been scarce and previous studies have concentrated on evaluating the performance of a subgroup of institutional investors, namely fund managers. To our knowledge, this is the first comprehensive study of the performance of all institutional investment in Australia. We evaluate the performance of investment portfolios formed on the basis of the level of institutional ownership and institutional ownership flows. Consistent with the literature, the empirical results indicate that institutional investors exhibit skills in their trading activities. The portfolio of firms that experienced the greatest inflow of institutional investors exhibited superior performance throughout the 12-month period. The empirical

findings also suggest that institutional investors have greater skills in their choice of value/growth and small/large stocks.

We further tested the skills of institutional investors in Chapter 5 through an examination of the effect of institutional ownership in initial public offerings. The literature on initial public offerings has highlighted the presence of two major anomalies: high initial underpricing and long-term underperformance. The presence of these anomalies implies that investors can earn a very high return from short-term investment in initial public offerings. However long-term investors are likely to experience significant losses. We examined how the levels of initial institutional investment affected the short-term and long-term performances of these newly listed public companies. Consistent with the notion that institutional investors are better informed, firms with high levels of institutional ownership realised higher initial returns. However the level of initial institutional ownership proved to be a very poor guide of the long-term performance of firms. Issuers with high levels of initial institutional ownership experienced the worst underperformance in the long run. The findings are consistent with overreactions driven by informational cascade in the IPO market. High levels of initial institutional interest generate informational herding that drives these issuers' prices beyond their fundamental value. Over time, market correction leads to long-run underperformance. Our results cast a somewhat different light on institutions' role in IPOs; rather than being a valuable source of price discovery, institutions investors create a climate that contribute to greater mispricing in an event already beset with uncertainty.

Chapter 6 presented the third study of the dissertation and provided an evaluation of the impact of institutional ownership on mergers and acquisitions. Black (1992) stated that the increasing dominance of institutional investors raises expectations that institutional investors can fulfil a vital monitoring role in corporate governance. Chapter 6 aimed to investigate whether institutional investors are willing and able to fulfil the important role of monitor in the

most contentious of corporate decisions, mergers and acquisitions. In an evaluation of a sample of Australian mergers and acquisitions, we found that the bidder's institutional ownership level has a positive impact on the returns in the announcement period. The results suggest that the market believes higher institutional ownership levels increase the likelihood that takeovers add value to the bidder. However the level of institutional ownership had little or no impact on the long-run stock market performance of the bidding firm. The empirical results place considerable doubt on the efficacy of institutional monitoring. On the other hand, our analysis shows that there was a positive relationship between institutional ownership flows (immediately prior to the takeover announcement) and the long-term performance of the bidder. This result indicates that institutional investors prefer to follow the "Wall Street rule" and exit companies that are making poor corporate decisions.

The concluding essay (in Chapter 7) examines whether institutional investor's actions contribute to the Turn-of-the-year Effect. For more than 40 years, researchers have documented the Turn-of-the year Effect in Australia (Weston 1970). Recent evidence has suggested that retail investors may not be responsible for the longstanding turn-of-the-year anomalies (Henker & Paul 2011). Our evaluation of the Australian stock market shows that the Turn-of-the-year Effect has persisted in the Australian stock market. Consistent with the literature, there was a considerable size premium in both January and July. Small firms underperformed in the month of June. Thus the seasonality in returns is consistent the two most sighted explanations of the Turn-of-the-year Effect, namely window-dressing and tax loss selling. Our evaluation of the institutional ownership flows in these periods shows that institutional investors conducted window dressing in the December–January period. In particular, institutional investors tend to buy back the stocks that they have sold in the previous December. Australia's financial year ends in the month of June. So a tax loss selling explanation of the Turn-of the-year Effect is most applicable in the June–July period. We found

strong evidence that institutional investors conduct tax-related transactions and that these trades significantly impact on the stock returns in the June–July period. Our findings in the context of the Turn-of-the-year-effects may reflect the impact of institutional investors more generally.

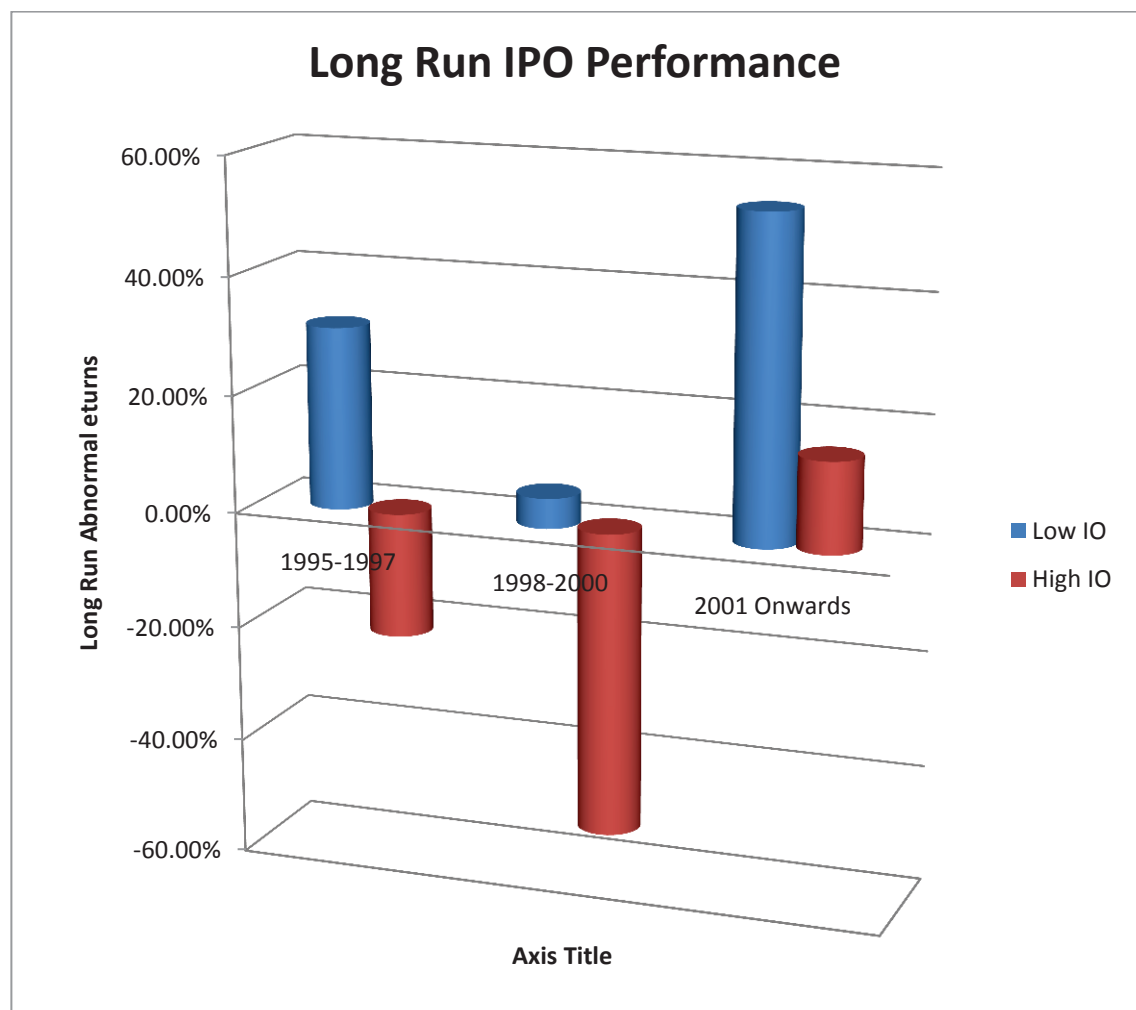
The findings of the four empirical studies have given considerable food for thought for market participants and policy makers. We have established that institutional investors are skilful investors and they are able to generate superior returns in major corporate events such as initial public offerings and mergers and acquisitions. However the pursuit of higher returns may not lead to socially optimum outcomes. The findings suggest that institutional investors' presence can create a climate of that contributes to the boom (underpricing) and bust (underperformance) cycle for the issuers of newly listed companies. Window-dressing and tax-related selling by institutional investors may have also contributed to the Turn-of-the-year Effect in Australia. An interesting line for future research is to determine ways to better align the interests of the institutional investors to the market and the economy.

9 Appendix

9.1 A.1 Long Run IPO Performance by type of investors

Figure A-1 Long run IPO performance by type of investors

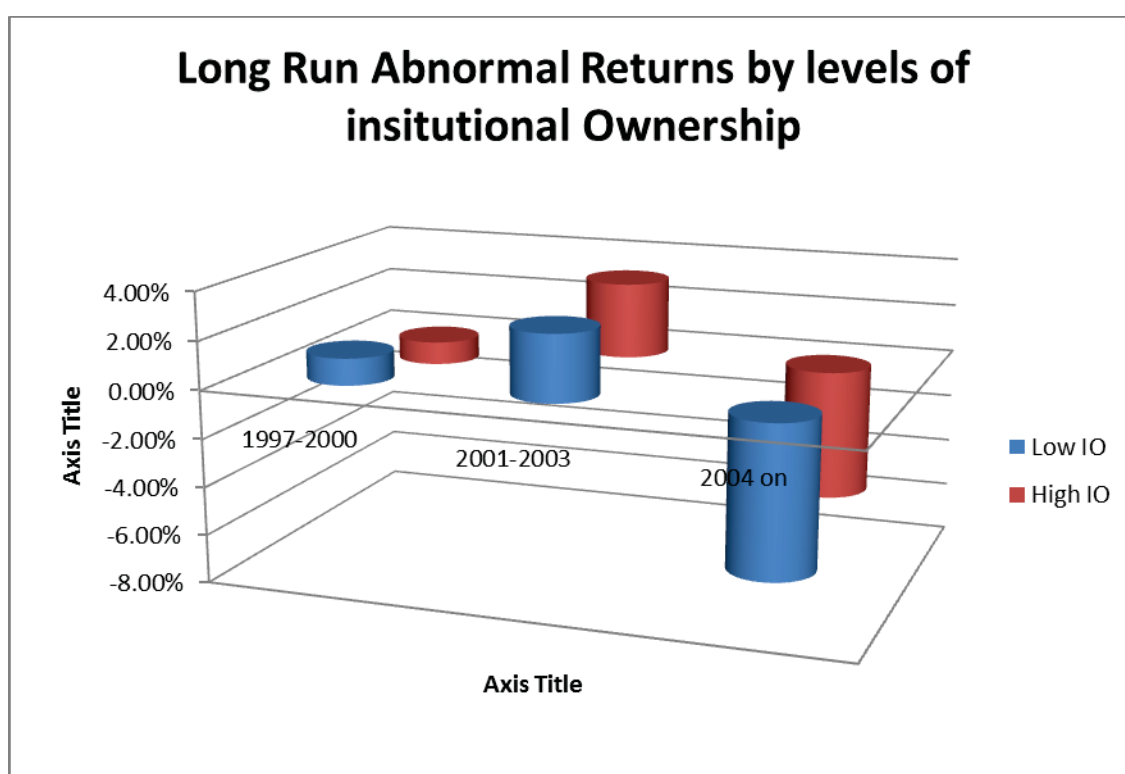
This figure shows the mean cumulative abnormal return of portfolios formed on the basis of the initial level of institutional ownership in the 500 days post listing. “High IO” represents the mean CAR of the issuers that is above the median of the sample. Low “IO” denotes the rest of the issuers in the sample. The figure displays a time series of the mean returns of these samples across time.



9.2 .2 Long Run M&A Performance by type of investors

Figure A- 1 Long run M&A performance by type of investors

This figure shows the mean cumulative abnormal return of portfolios formed on the basis of the level of institutional ownership in the 350 days post the merger announcement. “Low IO” represents the mean CAR of the bidders below the median of the sample. “High IO” represents the mean CAR of the bidders below the median of the sample. The figure displays a time series of the mean returns of these samples across time.



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