Institutional ownership and IPO performance: Australian evidence

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Abstract:
The duo IPO anomalies of underpricing and long run underperformance have inspired a plethora of studies. Yet few have examined the impact of majority investors in IPOs, namely institutional investors. Consistent with previous studies, we found large underpricing which was greatest in those issuers with the highest initial institutional ownership. Yet these issuers experienced the worst long-run underperformance which casts doubts over the informed-trading hypothesis. 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. Our results cast a somewhat different light on institutions' role in IPOs, rather than being a valuable source of price discovery; Institutions may be a force of destabilization in what is already an event wrath with uncertainty.

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1. Introduction

It is commonly accepted that several persistent anomalies accompanies initial public offerings. The first is the underpricing of shares which refer to the common practice that the shares of floated company would trade 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 and Ritter, 1995). The US Stock Exchange and Securities Commission's 1963 special study on security markets was one of the first studies to formally acknowledge the prevalence of IPO underpricing. By examining a sample of 1671 IPOs in the 1959-61 period, SEC (1963) found that 79% of the IPOs experienced positive returns immediately after the issue. Indeed the average underpricing was over 20%. The SEC report would be the first of a litany of studies that documented IPO underpricing (such as Stoll and Curley, 1970; Reilly, 1973; Ritter, 1987; Loughran and Ritter, 1995). The persistence of IPO underpricing has only been matched by the magnitude of the underpricing. In monetary terms, Ritter (2008) estimated 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) estimated that the money left on the table equated to approximately 3 years of profit for the issuers[1].

From the above discussion; one can see that an IPO offer a huge challenge to issuer's management. The issuer must determine an appropriate price to sell their shares in order to avoid excessive transfer of wealth. On the other hand, IPOs offer investors an opportunity to make significant profit from their investment. Indeed the existence and persistence of underpricing appear to offer investor with a simple strategy of making significant profit from subscribing to IPOs. However, the reality is that limit supply of shares, incomplete information regarding young companies and institutional factors governing allocation 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 underperformances of IPOs. Many studies have found IPOs represent very poor long term investments (Ritter, 1991; Loughran, 1993; Loughran and Ritter, 1995). In Ritter's 1991 seminal study on long term underperformance of issuers, he found that in the 3 years following the public issue, 1526 firms in his sample underperformed a set of firms matched by size and industry by 27.4%. Although the magnitude of IPO underperformance display substantial variations over time and across industries, empirical evidence have shown that poor long run performance have 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%.[2]

[1] Although the aforementioned studies are based on the US IPO market, others have shown that underpricing is a worldwide phenomenon (see Aggrawal, Leal and Hernandez, 1993, Loughran and Rydvist 1994, Ibbotson, Sindelar and Ritter 1994, Lee et al, 1996; Álavrez and 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.

[2] 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 Aggrawall, Leal and Hernandez (1993) for Brazil and Chile market,

The combination of short term underpricing and long term underperformance makes IPOs a most interesting research subject. So it is not surprising that there have been a large number of studies devoted to research of the IPO phenomena. Yet few studies have examine whether institution investment directly impact on the IPOs anomalies. This absence appears to be incongruous with the level of institutional involvement in IPOs. Just as institutional investors own the majority of stocks in global financial markets. Institutional investors are also major investors in the IPO market. In fact, Field and Lowry (2005) estimated that institutions invested in 90% of the firms that went public between 1980 and the year 2000. In light of the fact that most IPOs resulted in underperformance, it seems incongruous that well informed institutions should choose to invest in these seemingly poor investments.

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

This paper adds to the sparse literature that has examined the relationship between the two main IPO anomalies. Aggrawal and Rivoli (1990), Welch (1989), Rajan and Servaes (1997) and Álvarez and González (2005) are amongst the few exceptions. Aggrawal 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 take place to exploit these fads but as the interest fades stock prices will gradually revert to fundamental level which manifests 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 and Hwang, 1989 and Welch 1989). Welch (1989) argued that IPO underpricing is the result of signalling. Under this explanation, 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) proposed that underpricing arise from the high divergence of opinions in IPOs at the time of issue. As time past, the level of divergence in a stock falls, the average valuation will decrease which results in the steady decrease in share price and thus results in the poor long run performance of IPOs.

We proposed a different explanation for the relationship between the IPO anomalies based on information cascade (Welch 1992; Ritter 2003). Informational cascade refer to a situation where the investors' decision is not only influenced by their own

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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).

information about the issuers but rather potential investors learn from the purchasing decision of other investors, so a bandwagon or information cascading effect develops (Welch, 1992; Ritter, 2003). It stands to reason that informational cascade induced herding behaviour is most likely in events with 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 action of earlier investors. While Welch's original version of information cascade consider the IPO subscription period, we believe that the presence of high level of informed traders (i.e. institutional ownership) in an issue will also induce a bandwagon effect on the first days of trading. We hypothesised that the presence of institutional investment 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 overshooting of share prices. As the market slowly makes correction in the long run, the issuers' share price falls and IPO underperformance can be observed.

Our paper contributes to the literature in several ways. First, we provide greater clarity on the role and impact of investors in IPOs. Previous studies on institutional ownership and IPOs have mainly focused on the preferential treatment for institutional investors in IPO allocation. Our focus is different; we examine how the presence of institution ownership in issuers will impact on the issuers' returns both in the initial period and over the long run horizon. Second, previous empirical work have found it difficult to discern the cause of the relationship between the IPO anomalies because a number of the main explanations proffered (e.g. fads and heterogeneous beliefs) made the same prediction of a general share price reversal in IPO issuers. Our results shows that the reversal in returns only occurred amongst a selected sample of stocks, the issuers with high initial level of institutional ownership and thus the results provide strong evidence of support for informational cascade in the IPO process.

The structure of the paper is as follows. Section 2 presents provides a review of the existing literature on institutional investors in IPOs. Section 3 presents a brief review of the explanations that has being offered to explain the link between the IPO anomalies. In Section 4 the data sources and methodology used in this study are discussed. Section 5 presents the empirical results and analysis of the initial returns and long run performance of the IPO issuers. Section 6 provides us with the opportunity to summarise the results and suggests opportunities for further work.

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, Tsetsekos and Varna, 1992; Alangar Bathala and Rao, 1999). For example, Alangar et al (1999) showed that firms with relatively high level of institutional ownership tend to have a smaller share price reaction to the announcement of changes in dividends. Empirical studies have also provided strong support for the informed trading hypothesis (Brunnermeier and Nagel, 2004; Ke and Petroni, 2004). 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 the earnings announcement.

Yet there have been few studies on the direct impact of institutional investment in IPOs. Of the current literature, most focused on the alleged favourable treatment that institutions received from underwriters in IPO allocation (see Hanley and Wilhelm, 1995; Aggarwal, Prabhala and Puri, 2002; Boehmer, Boehmer, and Fishe, 2005). Both Hanley and Wilhelm (1995) and Aggarwal et al (2002) found that institutional investors were able to profit from favourable allocation from underwriters. Hanley and Wilhelm (1995) argued that institutions are able to claim a large portion of the short term profit 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 yield higher initial returns than less informed investors. The important question is whether these superior initial returns are simply the results of favourable allocations or is it a consequence of the institutions possessing private information?

2.1(a) Do institutions 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 investment. Hanley and Wilhelm (1995) questioned the notion that institutions possess private information about IPOs. They argued that institution yield higher initial returns solely as a result of preferential allotment in underpriced IPOs. The authors argued that if institutions possess private information, they would use their information advantage to avoid investment in overpriced offerings. Yet the evidence showed that institutional allotment levels were similar for underpriced as well as overpriced offerings. On the other hand, Aggarwal et al showed that book building alone can not explain the difference in initial returns between institutions and retail investors. Aggarwal et al argued that the higher return earned by institutions also reflects their superior access to private information (such as the final offer price relative to the filing range) that helped 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. In order to examine whether institutional investors are truly informed in initial equity offerings, it is imperative to conduct long term studies of the firms that went public.

2.1(b) Institutions, informational advantage and long run performance in IPO investments

Dor (2003) and Field and Lowry (2005) are amongst the very few studies that examined the long run returns of institutional investment in IPOs. Both studies demonstrated that IPO firms which attract higher level of institutional interest exhibit superior long-run returns to their lower level of institutional ownership counterparts. Unfortunately

neither study provided conclusive evidence to support the informed trading hypothesis. Dor (2003) found that both the level of institutional ownership and institutional trading can be used to forecast future returns. Indeed 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 3 years following the issue. Yet Dor argued that the success of the institutions should not be attributed to an information advantage. Rather the institutions invested in stocks with high growth expectations and profited from the subsequent increase in prices. Moreover Dor showed that the institutional investors are only able to achieve superior results in hot market conditions. Thus Dor attributed 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 offered 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 IO counterpart by a four-factor adjusted 1.5% per month in the first quarter after issue. Over a longer investment horizon of 3 years, however, the institutions' edge is reduced 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 argued 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 accredited the superior performance of the institutions to them making better use of readily available public information such as firm and offer characteristics (such as venture capitalists backing and firm age).

However 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, Boehmer and Fishe, 2005; Krigman, Shaw and Womack, 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 in 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 are pessimistic about the long term prospects of the issuers. Studies by Krigman, Shaw and Womack (1999) and Boehmer, Boehmer and Fishe (2005) showed that institutional flips can predict future returns of the issuers. The implication is that institutions have private information that allowed them to predict the future performance of the issuer.

2.1(c) 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 (2004) sample of 419 Australian IPOs ranged from -66% to 734%. Although Field and Lowry (2005) showed that the top 100 IPOs earned over 1000% in the first 3 years, the authors also found that the bottom 100 IPO had a return of -99% over a similar period. Moreover subscribers can be subjected to a winners' curse.

The winner's curse hypothesis suggested that IPOs were underpriced to induce uniformed investors to participate in IPOs (Rock 1986). The idea is that informed investors would only participate in underpriced IPOs which lead significant rationing in hot issues. On the other hand, informed investors would abstain from subscribing to overpriced offerings. As informed investors withdraw from the market, the uninformed investors will suffer heavy losses as they will receive disproportionately high allocation of overpriced offerings. So despite of 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 interests in an IPO should be in proportion to the expected benefits from subscribing to the equity issue. An underpriced IPO should attract greater interests from informed investors such as financial institutions. Similarly an overpriced equity issue should receive little interests from informed investors. This lead to our first hypothesis:

> *H1: If the informed trading hypothesis holds, there should be a positive relationship between the level of institutional ownership at time of initial issue and initial returns for the investors.*

Of course, it may not be possible to differentiate whether institutions earns 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 hypothesised 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: If the informed trading hypothesis holds, there should be a positive relationship between the level of institutional ownership at the time of initial issue and the long term returns of the issuers.*

One key difference between the previous studies on institutional investors in IPOs and this paper is our interests in the relationship between the IPO anomalies. Both Dor (2003) and Field and Lowry (2005) concentrated 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 2 IPO anomalies.

3. Underpricing, underperformance and information cascade

A review of the literature shows a suspiring small number of studies that have linked the duo anomalies of IPO underpricing and long run underperformance. Amongst the first papers in this area were Grinblatt and Hwang, 1989 and Welch 1989. Both studies proposed 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 (firm or insider) will be able to recoup their shares in a future share issue. The signal is make more effective because the substantial costs will preclude poor quality firms from imitation. 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 and Titman 1995). Ritter (2003) argued that underpricing is unlikely to be used to signalling quality unless managers have some restriction in their strategic choice. Second, the premise of signalling relies on the ability to make further furore into the equality market. As Ritter (2003) pointed out the fluctuation in the IPO markets is such that issuers may not have "reasonable assurance" that the window will be open when the issuers wish to make seasoned offerings. Finally, the empirical evidence for signalling is at best mix. In a sample of Spanish IPOs, Álvarez and González (2005) provide support for signalling when they found long run performance is positive related to underpricing and the amount of funds rose in seasoned offerings. Yet other studies such as Michealy and Shaw (1994) failed to find the relationship between under-pricing and seasoned offerings. More alarmingly, Lee Taylor and Walter (1996) found a negative relationship between retained ownership and long run returns which contradicts the prediction of the signalling hypothesis.

In his1991 study, the doyen of IPO studies, Jay Ritter, was amongst the first to theorize 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' overoptimism 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 manifest 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) argued that the poor IPO long run performance 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 presents the most "rosy picture". The implication is that at least some of the poor IPO underperformance can be attributed to overconfidence on the part of the investor. This conclusion is consistent with Purnanandam and Swaminathan (2004) who found that IPO firms are often priced at a value above their seasoned publicly traded counterparts. The authors mused 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) found evidence consistent with the overreaction hypothesis, the portfolio of IPOs with low initial returns outperforms the portfolio of those with high initial returns by about 62.7% over a 2 year period. Yet Lee,

Taylor and Walter (1996) found that the long run returns do not behave in a way to support the fads explanation of IPOS.

Whereas Purnanandam and Swaminathan (2004) demonstrated overvaluation may allow the issuer to set an offer price above the fundamental value of the firm, Others argued long run underperformance may also occur as the result of issuers deliberately setting an offer price that is too low (Rajan and Servaes, 1997). Rajan and Servaes (1997) saw underpricing as a strategic choice by the issuers' management. In this case, the authors argued underpricing is used as a marketing ploy by the issuer. The intuition is that underpricing creates interests in the issue which ultimately create a following by financial analysts. Rajan and Servaes shows that these security analysts systematically overestimate the future earnings of the issuers. In fact, 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 an IPO to have earnings growth above the industry average, there is poor long run performance. On the other hand, if analysts forecasted that the issuers to have below average growth, these firms will have poor initial returns but rebound in the long run.

Yet there are still some doubts over the theoretical plausibility of the previous papers. For example, Rajan and Servaes (1997) used analysts' sentiment as a proxy for market sentiment. The implication is that security analysts can impart significant influence over investors. At first glance, this appears to be a realistic assumption. Afterall a number of studies have shown that analysts' recommendation can influence investors' behaviour (see Irvine, 1994; McNichols and O'Brien, 1996). However it is doubtful that analysts can exert significant influence over all investors, specifically informed and uninformed investors. Studies have shown that informed and uninformed can have different reaction to information (Sias, 1997; Griffin, Topalogou and Harris, 2005). So while it is probable that analysts can exert influence on individual investors, it is unlikely that they can exert significant influence on institutional investors that take up more than 70% of the shares sold in a typical IPO.

We propose an alternative overreaction hypothesis where the source of the initial underpricing (i.e. investor overreaction) stems from the level of institutional interests in an initial equity offering. The level of institutional interests acts as a signal of an issuing firm's quality. Potential investors interpret a high level of institutional interests as a signal that the issuer represents a good investment. This creates additional demand for the stock on the IPO listing day and thus lead to greater initial returns (i.e. greater underpricing).

Unlike the overoptimism explanation proposed by Rajan and Servaes, we believe that the level of institutional ownership can act as a creditable signal to 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. Informational cascade refer to a situation where the investors' decision is not only influenced by their own information about the issuers but rather potential investors learn from the purchasing decision of other investors, so a bandwagon or information cascading effect develops (Welch, 1992; Ritter, 2003). Welch (1992) speculates that the bandwagon effect often dominates the private information of the original investors as potential investors simply imitate the action of earlier investors. Empirical studies have

provided 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 highlight the possibility of cascade in the market when he noted that a survey has suggested that only 26% of the respondent claims 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 more susceptible to informational cascade.

While Welch's original version of information cascade consider the IPO subscription period, we believe that the presence of high level of institutional ownership in an issue will also induce a bandwagon effect on the first days of trading. We hypothesised that the presence of institutional investment 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 day and the higher the initial returns for the IPO firm. The important question is whether investors will be able to detect the level of institutional interests in an issue? We believe that institutions will be able to form an estimate of the level of institution 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 institution investor can deduce high level of institutional investment from other institutional investors if it received fewer shares than desired allocation of shares or pay a relatively high final offer price relative to the offer range.[3] 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 results of inferring information from other institutions' trades.

Informational herding effect can have a large impact on the market price of a stock (Shleifer, 1986; Nofsinger and 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 causes large increase in stock prices. The author found that these firms earn an excess return of 3% on the announcement day. The question is whether the proposed informational herding (cascade) will push the share prices above fundamental value or increase the speed of price adjustment.

In spite of earlier evidence that herding (especially institutional herding) did not have significant destabilizing effect on stock prices (Lakonishok, Shliefer and Vishny, 1992), recent studies indicate that institutional herding can have significant impact on stock price (Wermers, Nosfinger and Sias, 1999). 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 investor have a greater impact on price than herding by individual investors. We hypothesized that the presence of institutional investors in the issuer induces informational herding and pushes the stock prices beyond the fundamental in the short run (i.e. initial returns). Our Hypothesis is as follows:

[3] 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.

H3: If the information cascade hypothesis holds, there should be 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 is manifested by the stock market underperformance of many issuers. So the hypothesis is as follows:

H4: If the information cascade hypothesis holds, there should be a negative relationship between the level of institutional ownership at time of initial issue and the long term returns of the issuers.

4. Data and Methodology

4.1 Data

The paper examines data for a set of initial public offerings (IPOs) transactions from the Australian Stock market from November 1995 to December 2004. The initial public offering transaction details are sourced from Thomson Financial Banker One. Returns data are calculated calculated from the Total Returns Index (RI) that is sourced from DataStream. Company financial data are acquired from the Connect4 service and DataStream. This paper was made possible through the use of a unique set of daily ownership data that was provided by Securities Industry Research Centre of Asia-Pacific (SIRCA). Institutional ownership level calculated from the Clearinghouse Electronic Sub-register System (or CHESS) of the Australian Stock Exchange[4].

4.2 Sample selection and characteristics

The initial data set contained all initial public offerings between November 1995 and April 2004.[5] In the sample selection, we excluded any issuers that were not a constituent of the All Ordinaries Index. By restricting our sample to stocks within the All Ordinaries Index, our intentions are to examine the IPOs that are of greatest economic importance and to increase the probability that the sample contained only the stocks that are sufficiently large to attract interests from institutional investors. Other criteria for inclusion in the sample were that we must 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 1 contains the descriptive statistics for the sample. An examination of table 1 shows average proceeds was $125million. Note the high standard deviation of $258million is indicative that the sample contains issuers from a wide spectrum of the market. One other interesting aspect of our sample is that on average, the issuers did not appear to suffer from long term underperformance which is inconsistent with past studies from Australia and aboard.

[4] To protect the identity of the equity holders, the ASX only released the ownership data in an aggregated format: namely the percentage of stock held by institution and the proportion of stock held by individual investors. The institutional ownership is the sum of the shareholdings owned by Banks, Other Deposit Taking institutions, Nominees, Insurance companies, Superannuation funds, Trusts, Governments and incorporated companies. In other words, institutional ownership levels reflect the percentage of a company that is not held by individual shareholders.

[5] The original sample contained 666 initial public offering issued onto the Australian stock market.

Insert Table 1

Next we turn our attention to the average level of institutional ownership which was just 26.28%. This is significantly lower than the average initial institutional allocation of 70% that was reported by the Hanley and Wilhelm's US study. The very high level of individual share ownership in Australia may be the cause for the substantial difference in average institutional ownership. We will examine the impact of institutional ownership in greater detail in the empirical analysis in section 4.

4.3 Methodology

In order to examine the hypotheses, we employed 2 different methods. Firstly, we will examine these hypotheses at the portfolio level. We created portfolios based on both IO level and institutional ownership flows (changes in institutional ownership). We believe that the use of a portfolio method provide a realistic approach in analysing the performance of institutional investors. This is especially true in assessing the validity of the informed trading hypotheses. Since 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 at the firm level (i.e. cross section analysis). Our interest lies in examining the marginal effect of these variables in both the short term and long term performance of the issuers.

4.3(a) 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 by the following formula:

$$Initial\ \mathrm{Re}turns_i = \frac{Clo\sin g\ \ Price\ listing\ \ day - Offer\ \mathrm{Pr}ice}{Offer\ \mathrm{Pr}ice}$$

This is the same method employed in a number of IPO studies (Ritter, 1987; Loughran and 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 excess return of the firm's return over the market return. For the purpose of this study, we defined the All Ordinaries Index 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 2 year event window.

5. Results

5.1 Initial public offerings: further evidence of underpricing.

Table 2 shows the initial returns of the issuers. Column 1 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.

Insert Table 2 and Table 3

5.2(a) 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. In columns 2 to 4, we reported 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 showed higher initial returns for issuers that attract higher levels of institutional (Hanley and Wilhelm, 1995; Aggarwal et al, 2002). However our results contrasts with Field and Lowry's findings which documented the firms with the highest level of institutional ownership experienced relatively small initial returns in comparison to the rest of the sample.

Table 2 also revealed several other interesting and potentially important characteristics in the institutional terciles. Firstly 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 trend between the gross proceeds and institutional ownership. We believed 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 relative small firms in our sample, these issuers should not be regarded as small per se.

That being said, we recognise the possibility that 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 argued that smaller issuers needed to offer greater underpricing to compensate potential investors for "ex-ante" uncertainty or risks. So it is possible that the institution investors were only able to realise a greater returns because they purchase these smaller and more risky issues. In order to clarify these issues, we conducted cross section analysis on the initial returns. While the results are not reported in this paper, we found a negative but insignificant

relationship between size and initial returns. So we concluded that the "size effect" is unlikely to have played a major role in the institutional investors' success at investing in IPO.

So far the findings are consistent with both the informed trading hypothesis and the overreaction hypotheses. We now turn our attention to the long run performance of the issuers.

5.2(b) Analysis of IPO long run performance

Table 4 reports the long term stock market performance of the issuers. The table contains several measure of long term performance, the issuers' cumulative abnormal of returns for 1 year and 2 year.

Insert Table 4

Table 4 shows no evidence of general long term underperformance across the entire sample. For the purpose on this discussion, we will concentrate on the 2 year CAR. The average cumulative abnormal return in the sample was 12% over the 2 year period. In other words, the average issuer outperformed the All Ordinaries Index by 12% in the 2 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. There are several reasons 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 1/3 smaller than our sample average, Bayley et al reported that the median proceeds was just $8million dollars. In other words, the vast majority of their issuers were very small firms. Since empirical evidence has shown that these small firms are most susceptible to underperformance, we believe that Bayley et al's finding of underperformance is driven by the poor returns amongst these small firms. Moreover the effect of the technology bubble may also have contributed to the poor underperformance of Bayley et al's sample. That study drew its sample of 419 IPOs from 1996 to 1999 which included the period of the tech bubble. The technology bubble saw many "technology" stocks came onto the market with much hype and expectation. Many of these stocks achieved very high returns in the initial period but ultimately failed. Any study of stocks returns from this period is susceptible to long term reversal of returns.

Our findings are consistent with Brav, Ceszy and Grompers (2000), Jelic, Saadouni and Briston (2001) and Eckbo and Norli (2004). All of these studies failed to find any evidence of IPO underperformance. Brav et al (2000) found that after controlling for risks factors, issuers did not underperform in comparison to the seasoned counterparts. Similarly Jelic, Saadouni and Briston (2001) found positive buy and hold returns for issuers for 3 years after the issue.

5.3Institutional ownership and IPO long run performance

Now we turn our attention to the influence that initial institutional investment have on the long run performance of IPOs. From table 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 level of initial institutional investment. In fact, the firms with low level of institutional ownership

outperformed both the market and the firms with high level of institutional ownership. Over the 2 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 mentioned in section 2, Dor (2003) found that a portfolio of high institutional ownership firm was able to outperform the market by 1% over the 3 year period. Similarly Field and Lowry (2005) found that a portfolio of issuers with high institutional interests was able to outperform their low IO counterparts. We should noted however that Field and Lowry's results showed that the IO portfolio's performance begin to degrade for longer investment horizons. For a 3 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.

5.4 IPO underperformance and the informed trading hypothesis

So far the results of the long-run portfolio analysis do not support the informed trading analysis. However we are aware of the possibility that these findings may be subject to downward bias because of the 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.

Insert Table 5

An examination of table 5 revealed there was a negative and significant relationship between initial institutional ownership and the long run performance of the issuers. The coefficient of -0.0085 suggest that an increase of 1% in total institutional ownership will reduce the 2 year CAR by 0.85%. So the level of institutional investment is a poor predictor of the issuers' future returns. Our results indicate that institutional investors do not appear to have any private information about the issuers in the period prior or immediately after the equity issue. These findings are consistent with Hanley and Wilhelm (2005) which argued that institutional investors' success in IPO investment is solely the results of favourable allocation from the underwriter.

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 in the first month after the IPO issue. So this variable is a measure of all trades including any possible flipping that occur in the issuers in the first month after the issue. A positive and significant coefficient suggested that post issue institutional trading is a good predictor of the future performance of the issuer. The results are consistent with Dor (2003) who showed that the institutional trading (immediately after the IPO) can predicted future returns up to a period of 6 quarters.

A closer inspection of table 4 further illuminated 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 2 year after the initial

listing day, the average institutional ownership increased almost sixfold from 6.12% to 35.79%. The results implies that institutions are able to cash in on the high long-run CAR (excess returns) of the low IO tercile. While the evidence that institutions also increased holdings in the high initial institutional ownership tercile of IPOs, the average increase is modest.

So the tests of the informed trading hypothesis revealed conflicting results. 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 institutions were very successful in their trading activities in the month immediately after the listing date. The question is whether and how did the institutions gather additional information about the issuer in the period immediately after the issue?

One possible explanation is that institutions utilise their close relationship with the underwriters to gain access to favourable allocation in the most underpriced IPOs. Once the stocks have been listed, institutions will look to divest holdings in any overpriced issuers at a handsome profit. Put simply, institutional investors may "flip" their IPO allocations. We are aware that the flipping activity may be the driver behind the success of institutional trading in the month post listing. We like to make several comments on this point. First, Bayley et al (2006) showed that flipping can not predict long run performance of Australian IPOs. More importantly, the act of flipping a stock requires the institution to form a firm opinion on the issuer. An institution will only sell a stock if they are pessimistic about the future outlook of the issuer. So irrespective of whether flipping was the reason for the success of the institution's trading in the month post listing, our results still indicated institutional investors exhibited superior judgement in their investment of posts IPO firms.

5.5 IPO underpricing, underperformance, overreaction and information cascade

Finally we turn our attention to testing the overreaction hypotheses such as "fads" or speculative bubbles as an explanation for the IPO anomalies. On a sample wide basis, the results from Table 2 and Table 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 2 years after the equity issue. This is inconsistent with a number of Australian (see Lee et al 1996 and Bayley et al 2006) and international IPO studies that documents reversal in returns (see Ritter, 1991; Aggarwal, Leal and Hernandez, 1993; Álavrez and González, 2005).

A closer examination of Table 4 reveals a somewhat different story. After we sort the sample by the initial institutional ownership, however, we noted a dramatic returns reversal for the tercile with high level of initial institutional ownership. The high IO tercile that experienced an average market adjusted return of 70.93% on listing date proceeded to underperform the market by 21.42% over the next 2 years. This provides prima facie support for the information cascade hypothesis for issuers that attract high institutional interests. These results prompt us to ponder the cause of the reversal.

Again we consider that possibility that the poor performance of the high IO tercile may be driven by a size effect. Previous studies have shown that small issuers are conducive to IPO underperformance (Brav and 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 6. As we can see from model 1, 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 significant impact on the performance of the issuers.

Insert Table 6

It is important to note that the cross sectional analysis indicates a strong reversal in stock returns across the entire sample. Model 1 of table 7 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 suggested 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' level of institutional ownership at the date of listing.

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. Firstly, the coefficient associated with initial institutional ownership has reduced to -0.0044 and it is no longer statistically significant. Moreover the coefficient associated with initial returns has become 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 initial returns and interaction variable. Since the coefficient on the interaction between initial returns and 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 for any issuer with an institutional ownership level below 31.1% the issuer would not experienced any reversal in the long run returns. Put simply, the results reaffirm the notion that reversal in returns only occurs in the third tercile of the sample with the highest level of institutional ownership[6].

In summing up, we can report that the results provide very strong support for the information-cascade driven overreaction hypothesis based on information cascade. Our results are consistent with 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. In so doing, 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. In the short term, the only obvious symptom of these excesses is high initial returns. As the market adjust in the long run, the issuers with high initial institutional investment will experience underperformance.

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

The results allowed us to rule out a number of completing hypothesis for the IPO-related anomalies. The positive relationship between underpricing and underperformance contradicts the prediction of the signalling hypothesis (see Welch, 1992 and Álavrez and González, 2005). The absences of a general reversal of returns across the entire sample allow us to discard the fad (Aggarwal and Rivoli, 1990) and heterogeneous belief explanations (Miller 1976). None of these hypotheses can provide a satisfactory explanation for a reversal in returns that only occur in a subsection of issuer, namely the firms with high level of institutional ownership.

6. Summary and Conclusions

In spite of a plethora of research, we still have not reached a consensus on the cause of high underpricing and poor long run performance of IPO issuers. In this study, we have attempted to cast more light on the IPO puzzle by investigating the impact of institutional investors in IPOs. Being the majority investors in the stock markets worldwide, Institutional investors are crucial in the IPO process. Yet there are few studies into how & whether the presence of institutional investors impact on the IPOs and in particular, 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 doubt on the notion that institutional investors have an information advantage in IPOs.

Our study 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 under-performance of issuers. In other words, issuers that experienced the greatest initial returns have a tendency to experience the greatest underperformance. The apparent reversals in stock returns have bought forth a number of explanations including the overreaction hypotheses (i.e. fads or speculative bubbles), heterogeneous expectations and the marketing event explanation (Rajan and 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 level of institutional ownership will experience high initial returns and long run under-performance. We believed 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 will return to the fundamental level which will manifest the apparent underperformance.

It is well established that Institutional investors' participation plays an essential role in the IPO market. Not only are institutions the major investors in IPOs, they are also major contributor in the book-building process and more importantly, 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 in IPOs. Rather than contributing to the price discovery process with their large resources of

information and talent, Institutions may be a force of destabilization in what is already a process wrath with uncertainty.

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

The following table contains descriptive statistics for the 68 IPO transactions within the sample. 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 is not owned by individual investors. The mean aggregate percentage holdings are reported as percentages. SIZE is the gross proceeds of the issue measured in millions. Offer price is the price at which the shares were issue in the IPO. Total Shares issued represents the total number of shares issued in the offering. CAR250 is the 250 day cumulative abnormal returns for the issuing firm, while CAR500 is the cumulative abnormal return for the 500 day post-listing period. . To derive abnormal return, the issuing firm's returns are benchmark against the All Ordinaries Index in the corresponding period.

Variable	Mean	S.D.	Max.	75%	Median	25th %	Min
Institutional Ownership Level	26.28%	22.03%	97.50%	36.49%	17.04%	8.65%	0.48%
Size ($millions)	125.11	285.98	1707.59	99.04	28.41	8.03	0.63
Total Shares issued	83.76	137.58	775.30	83.96	40.00	18.38	0.41
Offer Price	$1.64	$2.31	$19.00	$1.86	$1.15	$1.00	$0.01
CAR250	0%	58%	132%	30%	2%	-24%	-179%
CAR500	12%	79%	189%	60%	8%	-30%	-217%

Table 2 Institutional Ownership Tercile

The table classifies transactions into 3 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 with 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 issue in the IPO. Total Shares issued represents the total number of shares issued in the offering.

		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

Table 3: Analysis of the effects of Institutional Percentage Holdings in Initial Public Offerings

This table reports investigate the effect that institutional investors' holding on the IPO firm's performance 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 is not owned by individual investors. The mean aggregate percentage holdings are reported as percentages. The table classifies transactions into 2 groups: IPO transactions by firms with low level of institutional ownership and IPOs by firms with high 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 with that are in the tercile with the lowest institutional holdings. The two measures of initial returns are EW(Issue Date) and EW(0, 3). 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 on Issue Date	Initial Abnormal Return	
			Initial Return	EW(0,3)
Full Sample	68	26.28%	37.35%* (t = 1.69)	38.88%* (t =1.75)
Low Level of Institutional Ownership	23	6.12%	17.52%*** (t = 2.85)	17.79% (t = 0.96)
High Level of Institutional Ownership	23	51.85%	70.64% (t =1.13)	70.93% (t =1.13)
Difference (High IO less Low IO)			53.12%	53.14%

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

This table reports investigate the effect that institutional investors' holding on the IPO firm's performance 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 is not owned by individual investors. The mean aggregate percentage holdings are reported as percentages. The table classifies transactions into 2 groups: IPO transactions by firms with low level of institutional ownership and IPOs by firms with high 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 with that are in the tercile with the lowest institutional holdings. The two windows are the 1 year following the IPO and 500 trading days after the IPO. Consistent with convention in IPO long term studies, the measures 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.The two measures of initial returns are EW(Issue Date) and EW(0, 3). 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 * denotes statistical significance at the 1%, 5% and 10% level 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%***

Table 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 undergoes 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 1 year following the IPO and 500 trading days after the IPO. Consistent with convention in IPO long term studies, the measures 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 1 month post IPO listing and after 2 yrs of listing. Year dummies are included but not reported in the regression. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively.

	Model 1	
	Dependent Variable CARi [1,500]	
	Coefficient	**p-value**
INSTUTIONAL OWNERSHIP	-0.0085*	(0.0655)
INSTUTIONAL OWNERSHIP CHANGE	0.0134**	(0.0440)
SIZE	0.0007	(0.5295)
OFFER_PRICE	-0.1237	(0.2480)
TOTAL SHARES OFFERED	0.0000	(0.5691)
R-square	0.181	

Table 6: 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 undergoes 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 1 year following the IPO and 500 trading days after the IPO. Consistent with convention in IPO long term studies, the measures 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 1 month post IPO listing and after 2 yrs of listing. Year dummies are included but not reported in the regression. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively.

	Model 1		Model 2	
	Dependent Variable CARi [1,500]		Dependent Variable CARi [1,500]	
	Coefficient	p-value	Coefficient	p-value
INSTUTIONAL OWNERSHIP	-0.0092**	(0.0434)	-0.0044	(0.3324)
INSTUTIONAL OWNERSHIP CHANGE	0.0107	(0.1041)	0.0085	(0.1754)
INITIAL RETURN	-0.1070**	(0.0429)	0.8057**	(0.0179)
INSTUTIONAL OWNERSHIP*INITIAL RETURN			-0.0259***	(0.0071)
SIZE	0.0005	(0.6522)	0.0013	(0.2247)
OFFER_PRICE	-0.1233	(0.2372)	-0.0421	(0.6815)
TOTAL SHARES OFFERED	0.0000	(0.6667)	0.0000	(0.2332)
R-square	0.2358		0.3248	