Summer 2007

Two Essays on IPO Earnings Management

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TWO ESSAYS ON IPO EARNINGS MANAGEMENT

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A Dissertation Submitted to the Faculty of
Old Dominion University in
Partial Fulfillment of the Requirement for the Degree of

DOCTOR OF PHILOSOPHY

BUSINESS ADMINISTRATION – FINANCE

OLD DOMINION UNIVERSITY

August 2007

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To my family and my homeland, China

ACKNOWLEDGEMENTS

I am especially grateful to my dissertation chair, Dr. Kenneth Yung, for his professional guidance and strong support for my dissertation. I am fortunate to have him as my major advisor and dissertation chair. I would like to thank Dr. Mohammad Najand for his continuous support as the department chair during my PhD studies. I am greatly indebted to Dr. Licheng Sun for his invaluable assistance in my research and very helpful advice in my career. Finally, I thank Dr. Larry Filer for his constructive suggestions for my dissertation and support for my research.

My appreciation is extended to all the faculty and staff of the College of Business and Public Administration, particularly to the faculty who taught me courses, the director of PhD program, Dr. Sylvia Hudgins, and the secretary of PhD program, Ms. Katrina Davenport. Thanks are also given to all other PhD students in the program for their assistance and friendship.

I would like to thank my family for the love and encouragement I have received from them. Special thanks to Jingjing Qin, who provides me with sound advice for my PhD studies and career development.

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Old Dominion University, 2007
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ABSTRACT

This dissertation includes two essays that study initial public offerings (IPO) earnings management. The first essay examines the underwriter's certification and monitoring roles in IPO earnings management; the second essay explores the relation between IPO earnings management and post-IPO institutional ownership.

In the first essay, we investigate the certification role played by underwriters. We hypothesize that there is a negative relation between IPO earnings management and underwriter reputation and that there is a positive relation between underwriter reputation and firm operating performance. In addition, underwriters continue providing monitoring to the firms they take public. Using a sample of IPOs, we obtain results supporting our hypotheses. A weighted least squares regression confirms the robustness of our results.

In the second essay, we address two questions: (1) whether post-IPO institutional ownership is affected by pre-IPO earnings management; and (2) whether the presence of institutional ownership has an impact on stock return. We find that institutional investors are not likely to be deceived or misled by pre-IPO earnings management. Institutional investors seem to be able to identify IPO firms of higher quality and always seek IPO firms with lower discretionary accruals depending on post-IPO information, but the presence of institutional ownership itself has little impact on stock returns.

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INTRODUCTION

IPOs tend to be made by firms with limited operating histories in a primary offering. There is little public information about these firms available to outside investors at the time of the IPO other than that contained in their offering prospectuses. On the contrary, IPO issuers have inside information about their firms. Consequently, an information asymmetry exists between IPO issuers and potential outside investors. Since outside investors have to rely heavily on the IPO issuer's disclosures, an incentive may arise for IPO issuers to manipulate reported earnings in order to increase their proceeds or achieve desired post-IPO ownership structure. Under the asymmetric information framework, this dissertation investigates IPO earnings management from two perspectives. One is the certification role of underwriters in IPO earnings management; another is the relation between IPO earnings management and post-IPO ownership structure.

The first essay aims to examine the certification role of underwriters in IPO earnings management. A stream of prior studies shows that IPO issuers employ opportunistic earnings management before issuing IPOs to obtain some gains, including enhancing initial firm values (e.g. Schipper 1989; Chaney and Lewis 1995; Ducharme et al. 2001). Another stream of researches reports the certification role of underwriters in different aspects such as issuing seasoned equity issues (e.g. Cooney et al. 2003; Jo, Kim, and Park 2007). However, the certification role played by underwriters in IPO earnings management has been largely overlooked. We hypothesize that there is a negative relation between IPO earnings management and underwriter reputation and that there is a positive relation between underwriter reputation and firm operating performance. In addition, we think that underwriters have strong incentives to

continue providing monitoring to the firms they take public due to the lucrative business relationships. Using a sample of U.S. IPOs for the years 1996-2004, we obtain results supporting our hypotheses. A weighted least squares regression confirms the robustness of our results.

In the first essay, we find that IPOs underwritten by high-reputation underwriters have less initial discretionary accruals and there is no significant relation between the discretionary accruals and initial firm value. We also find the post-issue operating performance of IPOs underwritten by high-reputation underwriters unaffected by initial discretionary accruals. For IPOs underwritten by low-reputation underwriters, the initial firm value and post-issue operating performance are both affected by the initial discretionary accruals of the issuers. We consider the possibility that IPO earnings management and the choice of underwriters are endogenously determined. Using an instrumental variable two-stage least squares regression, we obtain consistent results. We find that the initial firm value and post-issue operating performance of IPO issuers are positively related to underwriter reputation. We also find that in the presence of effective certification and monitoring by underwriters, opportunistic earnings management is restrained.

The purpose of IPO issuers' earnings management is not only to increase proceeds, but may be also to achieve a desired post-IPO ownership structure, especially a higher institutional ownership. In essay two, we attempt to explore the relation between pre-IPO earnings management and post-IPO ownership structure. Specifically, we address the following two questions: (1) whether post-IPO institutional ownership is affected by pre-IPO earnings management; and (2) whether the presence of institutional ownership has an impact on stock return.

For the first question, we find that post-IPO institutional ownership is not significantly related to pre-IPO earnings management. The reason is that institutional investors are smart and are not deceived or misled by pre-IPO earnings management. Moreover, institutional investors rely heavily on publicly available information rather than pre-IPO information to make their investment decisions. For the second question, we find that the presence of institutional ownership has little impact on post-IPO returns. The finding is also consistent with that of Field and Lowry (2005) that institutional investors can not predict future returns. Therefore, IPO issuers are unlikely to deceive institutional investors by manipulating pre-IPO earnings. Institutional investors seem to be able to identify IPO firms of higher quality and always seek IPO firms with lower discretionary accruals depending on post-IPO information, but the presence of institutional ownership itself has little impact on stock returns.

Our research contributes to the literature in several ways. First, so far there is no published study that has specifically examined the underwriter's certification role in IPO earnings management. Thus, this dissertation (essay one) is the first attempt to investigate the relation between underwriter reputation and IPO earnings management. Second, we employ three alternative measures of post-IPO operating performance – operating return on assets (ORA), operating cash flow return on assets (OCFRA), and return on assets (ROA). This helps catch the change in post-IPO operating performance from different perspectives. Third, this dissertation (essay two) is also the first attempt to examine the relation between pre-IPO earning management and post-IPO ownership structure. In essay two, we discuss the possibility of manipulating pre-IPO earnings by IPO issuers to achieve a desired post-IPO institutional ownership through the IPO offer price. Finally, our research excludes the potential impact resulting from endogeneity.

ESSAY 1:
THE CERTIFICATION ROLE OF UNDERWRITERS IN IPO EARNINGS MANAGEMENT

1.1. Introduction

The information asymmetries between IPO issuers and outside investors are considerable. Under this condition, IPO issuers may seek to increase their offering proceeds through manipulations of reportable earnings before going public. Prior studies have shown that pre-IPO aggressive earnings (accruals) management not only increases initial firm value, but also decreases subsequent return to investors. For example, Ducharme et al. (2001) find a positive relation between pre-IPO discretionary accruals and initial firm value. They also find a negative relation between initial discretionary accruals and subsequent firm performance. Similarly, Teoh, Welch, and Wong (1998a) report a significant negative relation between discretionary accruals in the IPO offer year and stock returns over a three-year post-IPO period. Teoh, Wong, and Rao (1998) find evidence that IPO firms, on average, have high positive issue-year earnings and discretionary accruals, followed by poor long-run earnings and negative discretionary accruals. Earlier studies by DuCharme (1994) and Friedlan (1994) also find that earnings reported by firms making stock offers contain on average abnormally high levels of accruals around the offer dates. According to Rangan (1998) and Teoh, Welch, and Wong (1998b), stock offer related abnormal accruals tend to reverse in later reporting periods.

An implication of prior research is that IPO firms on average have a tendency to adopt aggressive earnings management. According to this opportunism argument, entrepreneurs, venture capitalists, and managers have incentives to maximize issue proceeds, given the number of shares offered. However, prior studies on IPO earnings management have largely overlooked

the certification role played by the underwriter. Ducharme et al. (2001) include both underwriter reputation and discretionary accruals as explanatory variables of IPO initial firm value, but the authors have not examined the relation between underwriter reputation and IPO accruals. Related studies on seasoned equity offerings have found evidence of a negative relation between auditor quality and earnings management (Zhou and Elders 2004), and an inverse relation between underwriter quality and issuers' accruals (Jo, Kim, and Park 2007). As of today, no published study has specifically examined the effect of underwriter certification on IPO earnings management. Thus, an objective of this paper is to document the relation between underwriter reputation and IPO earnings management. We argue that the certification role played by IPO underwriters has a restraining effect on opportunistic earnings management by IPO issuers. In addition, we also examine a related issue that has not yet been studied in the literature, namely, the relation between underwriter reputation and post-issue operating performance of IPO firms given the presence of earnings management. We argue that underwriters have strong incentives to continue supplying monitoring to the firms they take public such that underwriter reputation is positively related to post-issue operating performance of IPO firms, even after the initial earnings management is taken into consideration.

We find empirical results consistent with our arguments. Using a sample of IPOs between 1996 and 2004, our results show that IPOs underwritten by high-reputation underwriters on average have discretionary accruals that are significantly less than those underwritten by medium- and low- reputation underwriters. Moreover, IPO discretionary accruals are not related to initial firm value when high-reputation underwriters are involved. For IPOs underwritten by low-reputation underwriters, there is a significant positive relation between IPO discretionary accruals and initial firm value. Our results further show that initial discretionary accruals are not

related to post-issue operating performance for IPOs underwritten by high-reputation underwriters. On the other hand, initial discretionary accruals have a significant negative relation with post-issue operating performance for IPOs underwritten by low-reputation underwriters. We attribute this to the reversal of the aggressive initial discretionary accruals among IPOs associated with low-reputation underwriters. We further consider the possibility that IPO earnings management and the choice of underwriters are endogenously determined. Using an instrumental variable two-stage least squares regression (IV-2SLS) approach, we obtain consistent results showing that opportunistic IPO earnings management is restrained by effective underwriter certification and that there is a positive relation between underwriter reputation and post-IPO operating performance even when IPO earnings management is taken into consideration. We consider the positive effect of underwriter reputation on post-issue firm performance an indication that the initial earnings management of IPO issuers does not make underwriters disinterested in the affairs of their clients. To prove that our conclusions are not driven by the larger number of observations in the high-reputation underwriter group, we also perform a weighted least squares regression and find that our results are robust.

1.2. Hypothesis development

1.2.1. *Underwriter certification and earnings management*

Investment bankers play many roles in the underwriting of security issues including production and certification of information, provision of interim capital, and/or supplying distribution and marketing skills. Certification requires the underwriters to bear the liability imposed by the Securities Act of 1933 for ensuring the fairness of the offer price. The role of underwriter certification in reducing information asymmetries and mitigating the adverse

selection faced by outside investors has been extensively studied in the context of IPOs. In a typical model, in return for fees from the issuing firms, investment bankers produce and certify information about the firms that they underwrite. High-prestige investment bankers can have more stringent standards for certification of IPO firm value and can produce superior information about the firms that they underwrite. IPO issuers can signal favorable private information about their own values by choosing reputable underwriters. On the other hand, investors use an investment banker's reputation to revise their estimates of issuing-firm value. Thus, high-reputation investment bankers will represent less risky and higher-quality IPOs, and the use of a high-reputation underwriter is a positive signal about IPO firm value. Since investment bankers are frequent participants in the equity market, they acquire reputation capital that enables them to act as credible certifiers of information. Chemmanur and Fulghieri (1994) find that high-prestige investment bankers, with valuable reputation capital at risk and superior information regarding the issuing firm's prospects, can credibly certify the value of the issues they underwrite. The certification role of the underwriter has been investigated more specifically in papers that have examined the relationship between underwriter reputation and IPO underpricing. In general these studies argue that high-prestige underwriters are able to more fully price issues, reducing the level of underpricing. For example, Logue (1973), Beatty and Ritter (1986), Titman and Trueman (1986), Carter and Manaster (1990), and Carter, Dark, and Singh (1998) find that IPOs managed by more reputable underwriters are associated with less short-run underpricing. The empirical consensus is that IPO underwriters have performed their certification role in general, driven by the desire to protect their hard earned reputation capital.

Managers exercise some discretion in computing earnings without violating generally accepted accounting principles. It is possible that firms use discretionary accounting choices to

manage earnings disclosures around the time of certain types of events. In view of the well-established correlation between earnings and share prices, earnings management activity seems particularly plausible around the time of unseasoned stock issues. According to this opportunism hypothesis, some firms opportunistically manipulate earnings upward before going public and investors are led to make overly optimistic expectations regarding future earnings of the issuers. Thus, issuing firms would be able to obtain a higher share price for their stock issue than they otherwise would. This view of IPO earnings management emphasizes the incentives that entrepreneurs, venture capitalists, and managers have to maximize issue proceeds, given the number of shares offered.

A priori, the opportunistic earnings management of IPO issuers and the certification of underwriters appear at odd with each other. If high levels of abnormal accruals reflect deceptive accounting, we expect the related IPOs to be shunned by investment bankers that have significant reputation capital at stake.[1] As a result, our first hypothesis is that there is a negative relation between underwriter reputation and IPO earnings management. That is, when high-reputation underwriters are involved, IPO issuers become voluntarily or involuntarily less aggressive with earnings management. IPO issuers with minimal incentives for earnings management would select high-reputation underwriters to enhance underwriter certification, thereby signaling favorable information to outside investors. Our hypothesis is consistent with the implications of the results of Zhou and Elders (2004) and Jo, Kim, and Park (2007) on seasoned equity offerings. The negative relation between underwriter reputation and earnings management can also be inferred from the underwriter's monitoring function. Block and Hoff (1999) suggest that underwriters conduct due-diligence investigations to ensure proper information disclosure by issuers and prevent potential legal liabilities. High-reputation

underwriters have more resources and more expertise and are therefore more likely to perform higher-quality monitoring in the underwriting process. Thus, high-reputation underwriters are less likely associated with aggressive IPO earnings management.

Hypothesis 1: There is a negative relation between underwriter reputation and IPO earnings management.

1.2.2. *Underwriter monitoring and post-IPO operating performance*

The certification role of underwriters ends at the IPO, the monitoring function continues in the post-IPO period (Stoughton and Zechner (1998) and Jain and Kini (1999)). Prior studies suggest that investment bankers play a valuable monitoring function in ensuring that managers follow a value maximizing path. Easterbrook (1984) suggests that when a firm issues new securities, its activities are scrutinized by an investment banker or some similar intermediary acting as a monitor for the collective interests of investors of the new securities. Hansen and Torregrosa (1992) suggest that underwriter monitoring improves the issuing firm's performance and reduces agency costs, thereby enhancing firm value. Stoughton and Zechner (1998) argue that given the active and continuing nature of the relationship between investment bankers and institutional investors, they work together in monitoring the affairs of IPO firms. More specifically, Jain and Kini (1999) find that underwriter monitoring is positively related to post-IPO operating and investment performance.

The relation between earnings management and IPO offer price has been examined in the literature. The effect of IPO earnings management on post-issue firm performance, given the certification and monitoring roles played by underwriters, has not yet been studied. Whether aggressive initial earnings management by IPO issuers deters or promotes underwriter

monitoring in the post-issue period is not yet known empirically. We want to address the issue in this study also.

In general, when new securities are issued, issuing firms carefully examine the investment bankers' track record in bringing past issues to the market as part of their lead underwriter selection process. Apart from factors such as pricing and marketing, issuers look to other performance areas such as post-issue price stability, market-making, analyst-coverage, and the ability to underwrite subsequent offerings or conclude corporate restructuring activities. Given the lucrative future opportunities, IPO underwriters have strong incentives to remain engaged in the affairs of the firms they take public and to ensure that managers are following value enhancing strategies. Thus, monitoring by underwriters has the potential to improve post-IPO operating performance. High-prestige underwriters, given their considerable resources, are more likely to supply long-term monitoring in order to continue the business relationships with their clients. Jain and Kini (1999) find that about 75% of lead underwriters assign at least one analyst to track the company they take public. In addition, the presence of institutional investors in the new issues market also promote underwriter monitoring. As implied in Stoughton and Zechner (1998), given the active and continuing nature of the relationship between investment bankers and institutional investors, high-prestige underwriters have strong incentives to work with the institutional investment community in monitoring the affairs of IPO issuers. Thus, we think IPO earnings management may make underwriters more cautious, but is unlikely to drive underwriters away from pursuing profitable relationships with the firms that they take public. The implication that we draw from the above discussion leads to our second hypothesis.

Hypothesis 2: The reputation of the underwriter has a positive impact on the post-issue operating performance of IPO firms, even after the effect of earnings management is taken into consideration.

1.3. Sample and methodology

1.3.1. *Sample selection*

Our initial sample of IPOs is obtained from the IPO database of Hoovers Incorporated. The sample period is from April 1996 to December 2004. Several selection criteria are applied sequentially. The sample excludes financial institutions, utility firms, and ADRs. Also, the sample excludes firms with offer price less than one dollar and firms with offer size less than one million dollars. After matching with the Compustat data files, 367 IPOs have reported information on accruals and other necessary financial data for our analysis.[2] Information regarding reputation of the IPO underwriters is based on the reputation rankings of Carter and Manaster (1990), and updated according to the information on the website of Jay Ritter. We further classify the underwriters into three groups. If an underwriter's reputation rank is greater than or equal to 8.1, the underwriter is in the high-reputation group; if the reputation rank is between 5.1 and 7.1, the underwriter is in the medium-reputation group; and if the reputation rank is less than or equal to 5.0, the underwriter is in the low-reputation group. There are 191 IPOs in the high-reputation group, 138 in the medium-reputation group, and 38 in the low-reputation group.

1.3.2. *Discretionary accruals*

We use the cross-sectional modified Jones (1991) model to estimate nondiscretionary and discretionary accruals of each IPO firm.[3] The cross-sectional method is used because a time series approach is not possible for IPOs. The cross-sectional approach has an additional advantage in that it incorporates changes in accruals resulting from changes in economic conditions for the industry as a whole. Since the cross-sectional regression is re-estimated each year, specific year changes in economic conditions affecting expected accruals are filtered out. Moreover, the common practice by underwriters of comparing market prices and financial information of similar firms when pricing IPO equity further shows the importance of extracting industry-wide economic conditions from abnormal accruals.

Following Teoh, Welch, and Wong (1998a), for each IPO firm, we find at least ten industry-matched firms with the same three-digit SIC code. If we were unable to find ten industry-matched firms with the same three-digit SIC code, we use industry-matched firms with the same two-digit SIC code. For each IPO firm j, we run the following regressions:

$$TAC_{iy} / TA_{iy-1} = a_{0j}[1/TA_{iy-1}] + a_{1j}[\Delta REV_{iy} / TA_{iy-1}] + a_{2j}[PPE_{iy} / TA_{iy-1}] + e_{iy} \quad \text{--------- (1.1)}$$

Where

TAC_{iy} = total accruals (net income before extraordinary items minus cash flow from operations) in year y for the ith firm in the industry group matched with offering firm j.

TA_{iy} = total assets in year y for the ith firm in the industry group matched with offering firm j.

ΔREV_{iy} = change in revenues in year y for the ith firm in the industry group matched with offering firm j.

PPE_{iy} = gross property, plant, and equipment in year y for the ith firm in the industry group matched with offering firm j.

Then the following modifications of the Jones model suggested by Dechow et al. (1995) are used to estimate discretionary accruals (as fractions of lagged total assets):

$$NAC_{jy} = a_{0j}[1/TA_{jy-1}] + a_{1j}[(\Delta REV_{jy} - \Delta REC_{jy})/TA_{jy-1}] + a_{2j}[PPE_{jy}/TA_{jy-1}] \quad \text{------ (1.2)}$$

$$DAC_{jy} = [TAC_{jy}/TA_{jy-1}] - a_{0j}[1/TA_{jy-1}] - a_{1j}[(\Delta REV_{jy} - \Delta REC_{jy})/TA_{jy-1}] - a_{2j}[PPE_{jy}/TA_{jy-1}] \quad \text{------ (1.3)}$$

Where

NAC_{jy} = nondiscretionary accruals for IPO firm j in year y.

DAC_{jy} = discretionary accruals for IPO firm j in year y.

ΔREC_{jy} = change in accounts receivable for IPO firm j over year y.

[Insert Table 1.1 here]

Descriptive statistics for the estimated discretionary accruals are reported in Table 1.1. In Panel A of the table, we can see that between 1996 and 2004, eight of the nine median values of discretionary accruals in the high-reputation group are negative. For the medium-reputation group, six of the medians are negative. However, for the low-reputation group, only four are negative. An initial observation based on these numbers suggests that IPO issuers associated with medium- and low- reputation underwriters have aggressive earnings management. Panel B of Table 1.1 shows that in terms of event time, discretionary accruals of IPOs underwritten by high-reputation underwriters have a negative mean and median in each of the event years between T=

-1 and T=0, and they continue to be negative in the three years after the IPO. For IPOs underwritten by medium-reputation underwriters, the mean discretionary accruals in years T=-1 and T=0 are positive and the median in year T=0 is also positive. While the mean and median values are negative in the post-IPO years, they are small and close to zero. For the low-reputation group, the mean discretionary accruals are all positive except in the year T=2. The median discretionary accruals are positive in event years between T=0 and T=2. In sum, the descriptive statistics suggest that IPO firms hiring medium- or low- reputation underwriters have higher levels of discretionary accruals than those hiring high-reputation underwriters in the pre-IPO and IPO offer years. This observation is consistent with those of Ducharme (1994) and Friedlan (1994) that there are abnormally high accruals around stock issue dates.

[Insert Table 1.2 here]

In Table 1.2, we report results testing the equality of means (medians) of discretionary accruals across different reputation groups. The test results show that for the high-reputation underwriters, the median discretionary accruals are significantly lower than those of the medium-reputation underwriters in all the event years from T=-1 to T=3. The same is true of those between the high- and low-reputation groups except year T=2. Between the medium- and low-reputation groups, the median discretionary accruals show a significant difference only in event year T=1. In short, discretionary accruals of IPOs underwritten by high-reputation underwriters are significantly lower than those of other groups, whereas there is not much difference between those underwritten by medium- and low-reputation underwriters. The results are also consistent with the implication that either high-reputation underwriters have deliberately avoided IPO issuers with high pre-IPO discretionary accruals, or they tend to avoid each other (we address the endogeneity problem in Section 5 of this paper). The fact that the discretionary accruals of IPOs

underwritten by high-reputation underwriters continue to be significantly less than those underwritten by median- and low- reputation underwriters in the post-IPO years suggests that high-reputation investment bankers have been careful in protecting their reputation capital both in short-run and long-run. This finding is consistent with the implications of Carter, Dark and Singh (1998) and Jain and Kini (1999) that underwriter reputation has a long-term significant impact on the operating and stock performance of IPOs. For now, it appears fair to say, based on the above results, IPO issuers hiring medium- or low- reputation underwriters are more likely to adopt aggressive earnings management policies than those hiring high- reputation underwriters.

1.4. Analysis and results

1.4.1. *IPO earnings management and initial firm value*

If aggressive earnings management of IPO issuers represents opportunistic behavior to maximize issue proceeds given the number of shares offered, then there should be a statistically significant positive relation between the accruals and initial firm value. However, this hypothetical correlation could be obscured by the presence of prestigious underwriters who are interested in protecting their reputation capital. We argue that underwriter reputation and IPO earnings management have a negative relation. The presence of high-prestige underwriters has a restraining impact on the aggressiveness of earnings management by IPO issuers due to the underwriter's reputation capital at stake. In this section, we run regressions to empirically examine whether aggressive accruals management of IPO issuers is able to affect initial firm value given the certification role of the underwriter. Based on the lead underwriter's reputation (high, medium, and low), the IPOs are divided into three groups and the following regression is performed on each group.

$$FV_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{------ (1.4)}$$

Where

FV_i = initial firm value of IPO firm i (firm value = offer price times the number of shares outstanding after IPO).

$DAC_{i(t-1)}$ = discretionary accruals of IPO firm i in the year before IPO.

$NAC_{i(t-1)}$ = nondiscretionary accruals of IPO firm i in the year before IPO.

$SG_{i(t-1)}$ = sales growth in the year before IPO.

$OP_{i(t-1)}$ = operating performance in the year before IPO.

$\ln(OS)_i$ = the natural logarithm of the offer size.

$AGE_{i(t-1)}$ = age of the IPO firm in the year before IPO.

SD_i = standard deviation of daily returns from day 6 to day 255 after IPO.

The regression model includes typical explanatory variables related to IPO initial performance. Offer size, age of firm, and standard deviation of daily returns are proxies representing asymmetry information. Sales growth is included to control for any value-relevant information prior to IPO. Unlike some other studies, we choose to exclude auditor-quality as an explanatory variable because of its high correlation with underwriter reputation. Balvers et al. (1988) find that high-reputation underwriters frequently use high-quality auditors in underwriting new issues. The explanatory variable, OP_{t-1}, is sequentially set equal to operating return on assets (ORA), operating cash flow return on assets (OCFRA), and return on assets (ROA). Industry-adjusted measures of the just-mentioned three variables are also used in the regressions. To

obtain industry-adjusted operating performance, we subtract from each firm's raw operating performance the median of a group of firms with matched 3-digit SIC code. If there were insufficient firms (less than 10) in the industry, we use 2-digit SIC to find the matched companies.

[Insert Table 1.3 here]

Table 1.3 reports the regression results. For IPOs underwritten by high-reputation investment bankers, the coefficients of DAC are insignificant in all the regressions. That is, discretionary accruals of IPOs underwritten by high-reputation underwriters do not increase initial firm value. For IPOs underwritten by medium-reputation investment bankers, the coefficients of DAC are also insignificant despite some coefficients of NDAC are significantly positive. For IPOs underwritten by low-reputation investment bankers, the coefficients of DAC and NDAC are significantly positive in all the regressions. The results show that underwriter reputation dampens the effect of IPO earnings management in affecting initial firm value. One interpretation of the results is that high-prestige underwriters are more capable than less prestigious underwriters in restraining the opportunistic earnings management of IPO issuers. However, it is also possible that aggressive IPO issuers deliberately avoid high-prestige underwriters.

1.4.2. *Post-IPO operating performance and underwriter monitoring*

All accruals ultimately reverse since accruals sum to zero within the life of the firm. If the IPO accruals are opportunistically managed, their reversal in subsequent periods may be so large as to dominate any new accruals, resulting in a net reversal of accruals and hence a decline in future earnings. As such, the opportunism argument could be confirmed if post-IPO operating

performance deteriorates precipitously among IPO issuers with aggressive earnings management. The three post-issue operating performance measures used for our investigation are operating return on assets (ORA), operating cash flow return on assets (OCFRA), and return on assets (ROA).

[Insert Table 1.4 here]

Table 1.4 reports the industry-adjusted yearly changes in post-issue operating performance of the IPO firms. The change in mean (median) performance is measured relative to the year before IPO. Continuous deterioration in post-IPO operating performance is consistent with the implication of opportunistic IPO earnings management. It could also imply a lack of underwriter monitoring in the post-issue period. The results in Table 1.4 show that for IPOs underwritten by high-reputation investment bankers, 6 of the 12 median values of the three operating performance measures over the period from years 0 to +3 have significant positive changes. For IPOs underwritten by medium-reputation underwriters, only two median values show significant positive improvement. For IPOs underwritten by low-reputation underwriters, none of the median values of the operating performance measures show significant positive change. Four of the median values have significantly negative changes. A quick observation based on the results in Table 1.4 is that underwriter reputation is positively related to post-IPO operating performance. This observation is consistent with the results of Jain and Kini (1999). These results are consistent with the effects of the reversal of IPO accruals associated with low-reputation underwriters and the value-enhancing monitoring provided by high-reputation investment bankers in the post-issue period.

We perform the following regressions to further examine the effect of underwriter reputation on post-IPO firm performance given the presence of IPO earnings management. The regressions are performed on IPOs underwritten by the three groups of underwriters respectively.

$$AIM1_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (1.5)}$$

$$AIM2_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (1.6)}$$

$$AIM3_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (1.7)}$$

where

AIM1 = average industry-adjusted operating return on assets between years T=1 and T=3.

AIM2 = average industry-adjusted cash flow return on assets between years T=1 and T=3.

AIM3 = average industry-adjusted return on assets between years T=1 and T=3.

OP = industry-adjusted operating performance in year T=-1.

The dependent variable is the average industry-adjusted operating performance measure in the three-year post-IPO period. Using average performance over three years rather than annual performance can smooth out temporal fluctuations due to distortions arising from accrual accounting by the IPO firm

In Table 1.5a, we report regression results for IPOs underwritten by high-reputation underwriters. For all the three industry-adjusted operating performance measures (AIM1 to AIM3), the coefficients of DAC are insignificant in all the regressions. The same is found in

Table 1.5b for IPOs underwritten by medium-reputation underwriters. For IPOs underwritten by low-reputation underwriters, results in Table 1.5c show more than half (six out of nine) of the coefficients of DAC are significantly negative. In Table 1.5c, the coefficients of DAC are not significant when operating performance measure AIM2 is used. In short, for IPOs underwritten by low-reputation underwriters, initial earnings management has a significant negative impact on post-IPO operating performance. This result is consistent with the effect of the reversal of IPO accruals on subsequent firm operating performance among issuers using low-reputation underwriters. The result in Table 1.5a is also consistent with the implication that high-reputation underwriters are not disheartened by the initial earnings management of the firms that they take public. The monitoring that high-reputation underwriters continue to supply improves the post-issue operating performance of their clients. In other words, underwriter reputation has a positive impact on post-IPO operating performance despite the presence of IPO earnings management.[4]

[Insert Tables 1.5a, 1.5b, and 1.5c here]

1.5. Robustness tests

1.5.1. *The endogeneity between underwriter reputation and IPO earnings management*

IPO earnings management and the choice of the lead underwriter could be mutually related. IPO issuers with aggressive earnings management may deliberately avoid high-prestige underwriters if they think the underwriters would monitor their accruals management. Likewise, high-prestige underwriters may also choose to avoid IPO issuers with aggressive earnings management given their reputation capital at stake. To handle this possible endogeneity problem, we use an instrumental variable two-stage least squares regression (IV-2SLS) approach. For the

underwriter reputation, we use an estimated reputation (ER) instead of the actual reputation ranking. Using all the IPOs (including financials, utilities, and ADRs) over our sample period, we perform the following regressions initially.[5]

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + e_i \quad \text{------- (1.9)}$$

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + C_4 SD_i + e_i \quad \text{------- (1.10)}$$

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + C_4 SD_i + C_5 AGE_{i(t-1)} + e_i \quad \text{------- (1.11)}$$

In the above models, AR is the actual reputation ranking of the underwriter per Carter and Manaster (1990). The regression coefficients from each model are then applied to our IPO sample to find the estimated reputation, ER, of each underwriter. We estimate ER using three different methods in order to address the possibility of getting a weak instrumental variable. We then perform the following regressions, using the three alternative estimates of ER.

$$FV_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 SG_{i(t-1)} + C_3 OP_{i(t-1)} + C_4 \ln(TA_{t-1})_i + C_5 AGE_{i(t-1)} + C_6 SD_i + C_7 ER_i + e_i \quad \text{------ (1.12)}$$

$$AIM_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 SG_{i(t-1)} + C_3 OP_{i(t-1)} + C_4 \ln(TA_{t-1})_i + C_5 AGE_{i(t-1)} + C_6 SD_i + C_7 ER_i + e_i \quad \text{------ (1.13)}$$

Where AIM is sequentially set equal to AIM1, AIM2, and AIM3; we also perform the two regressions with different formats in which we leave out some of the independent variables.

[Insert Table 1.6 here]

Table 1.6 presents the regression results of model (1.9), (1.10), and (1.11). The regression coefficients from each model are applied to our IPO sample to find the estimated reputation, ER, of each underwriter. Panel A, Panel B and Panel C in Table 1.6 report the regression results for the models (1.9), (1.10) and (1.11) respectively. In Panel A, the regression coefficients are in turn 6.0624, -0.0239, 0.7824 and -0.0525. The p-values are 0.0000, 0.1532, 0.0000 and 0.0001 respectively. R-square is 0.16. We then use the regression coefficients obtained from the model (1.9) to compute the estimated reputation for each underwriter. In Panel B, we add the standard deviation on the right side of the model (1.9) to get the model (1.10). The regression coefficients are in turn 6.2000, -0.0242, 0.7467, -0.0503 and -0.1743. The p-values are 0.0000, 0.1360, 0.0000, 0.0001 and 0.0000 respectively. R-square is 0.21. Similarly, we apply the regression coefficients obtained from the model (1.10) to compute the estimated reputation for each underwriter. Finally, we add one more independent variable, the age of IPO firm, to obtain the model (1.11). The regression coefficients are 6.4208, -0.0226, 0.6663, -0.0373, -0.1712 and -0.0097. The p-values are 0.0000, 0.1584, 0.0000, 0.0047, 0.0000 and 0.0022 respectively. R-square is still 0.21. Again, we compute the estimated reputation based on the regression coefficients obtained from the model (1.11).

[Insert Table 1.7 here]

Table 1.7 reports the regression results when ER is estimated using model (1.9). The results in Panel A show that the coefficients of DAC are insignificant in all the regressions. That is, with the endogeneity between IPO earnings management and the choice of the underwriter considered, pre-IPO accruals do not affect the initial value of IPO firms. In addition, the results in Panel A also show that all the coefficients of ER are significantly positive. That is, with the

endogeneity problem considered, certification of high-reputation underwriters add to firm value. The result implies that in the presence of effective certification by the underwriter, opportunistic initial earnings management of IPO issuers is ineffective in affecting the initial firm value. Specifically, the certification role played by high-prestige underwriters restrains opportunistic earnings management of IPO firms. The finding lends support to our first hypothesis. The next three panels of Table 1.7 report results related to the post-issue operating performance of IPO issuers. Similar to the results in Panel A, coefficients of DAC are all insignificant in Panels B, C, and D. At the same time, all the coefficients of ER are significantly positive. The significantly positive relation between underwriter reputation and post-IPO operating performance implies that underwriters are not disheartened by the initial earnings management of IPO issuers. IPO underwriters keep themselves engaged in the affairs of their clients because of the lucrative business relationships. The monitoring that high-reputation underwriters continue to supply to the firms they take public is value-increasing. This finding supports our second hypothesis and is consistent with Stoughton and Zechner (1998) and Jain and Kini (1999).

[Insert Tables 1.8 and 1.9 here]

Tables 1.8 and 1.9 report regression results when the instrumental variable, ER, is estimated using models (1.10) and (1.11) respectively. The results on the initial firm value of IPO issuers are very similar and consistent with those reported in Table 1.7. That is, IPO discretionary accruals management is unrelated to initial firm value when the endogeneity between earnings management and the choice of underwriters is considered. Regarding the regression results on post-IPO operating performance, the coefficients of DAC continue to be insignificant. However, the coefficients of ER in panels B, C, and D of Tables 1.8 and 1.9 are mostly significant only at the 10% level, with some of them insignificant. We think the weaker

results are likely related to our estimation of the instrumental variable used in these two tables. Specifically, we find that adding independent variables in estimating the instrumental variable ER has not increased the R-square of the estimation. Hence, the instrumental variable ER in Tables 1.8 and 1.9 could be weaker than that in Table 1.7. Nevertheless, results in Tables 1.8 and 1.9 are still consistent with those in Table 1.7.

1.5.2 Weighted least squares regression

In our sample, the high- and medium- reputation underwriter groups have observations several times that of the low-reputation underwriters. To avoid our results being driven by this factor, we apply a weighted least squares approach to the instrumental variable two-stage regression model. The weight applied to each observation is equal to the inverse of the number of observations in each underwriter-reputation group. In this manner, each group receives equal weight in the estimation.

[Insert Table 1.10 here]

From the results in Table 1.10, we again find the initial firm value and post-IPO operating performance of IPO issuers positively related to underwriter reputation. Also, the coefficients of DAC are insignificant in all the regressions. That is, the presence of effective certification and monitoring by underwriters has restrained the opportunistic initial earnings management by IPO issuers. The results are identical to those in Tables 1.7 to 1.9. In sum, the additional tests in section 5 prove that our empirical results are robust.

1.6. Summary

Prior studies document that there is a positive relation between IPO earnings management and the initial value of the IPO firm. They attribute this to the opportunistic earnings management of IPO issuers. However, the certification role played by underwriters has been largely overlooked in prior studies. In this study, we argue that underwriters have incentives to protect their reputation capital and therefore there is a negative relation between IPO earnings management and underwriter reputation. In addition, based on existing literature that examines the monitoring role performed by underwriters, we further argue that high-prestige underwriters have strong incentives to continue supplying monitoring to the firms that they take public due to the lucrative business relationships. Thus, we hypothesize that there is a positive relation between underwriter reputation and firm operating performance even when initial earnings management is taken into consideration.

Our results show that IPOs underwritten by high-reputation underwriters on average have discretionary accruals that are significantly less than those associated with medium- and low-reputation underwriters. Moreover, IPO discretionary accruals are not related to initial firm value when high-reputation underwriters are involved. For IPOs underwritten by low-reputation underwriters, there is a significant positive relation between IPO discretionary accruals and initial firm value. We argue that this is consistent with implications of opportunistic earnings management among IPOs using low-reputation underwriters.

Regarding post-IPO operating performance, our results show that IPOs underwritten by high-reputation underwriters experience improvements in various raw and industry-adjusted performance measures. On the other hand, IPOs underwritten by low-reputation underwriters experience declining operating performance in the three years after going public. Our regression

results further show that IPO discretionary accruals are not related to post-issue operating performance for IPOs underwritten by high-reputation underwriters. On the other hand, initial discretionary accruals have a significant negative relation with post-issue operating performance for IPOs underwritten by low-reputation underwriters. We attribute this to the reversal of the aggressive initial accruals among IPOs associated with low-reputation underwriters.

For robustness tests, we consider the possibility that IPO earnings management and the choice of the underwriter are endogenously determined. Using an instrumental variable two-stage least squares regression (IV-2SLS) approach, we obtain consistent results that IPO earnings management is restrained by effective underwriter certification and that there is also a positive relation between underwriter reputation and post-IPO operating performance even when IPO earnings management is taken into consideration. We consider the positive effect of underwriter reputation on post-issue firm performance an indication that the initial earnings management of IPO issuers does not make underwriters disinterested in the affairs of their clients. We also control for the unequal number of IPOs underwritten by each reputation-group by performing a weighted least squares regression. We obtain similar results.

ESSAY 2:
PRE-IPO EARNINGS MANAGEMENT AND POST-IPO OWNERSHIP STRUCTURE

2.1. Introduction

The purpose of IPO issuers' earnings management is not only to increase proceeds, but may be also to achieve a desired post-IPO ownership structure, especially a higher institutional ownership. In essay two, we explore the relation between pre-IPO earnings management and post-IPO ownership structure. Specifically, we address the following two questions: (1) whether pre-IPO earnings management or conventional variables related to IPO firm characteristics such as total assets play a more important role in affecting post-IPO institutional ownership; and (2) whether the presence of post-IPO institutional ownership or other more essential factors related to IPO firm characteristics such as IPO accruals quality play a more significant role in affecting post-IPO stock returns.

Fernando et al. (2004) find that post-IPO institutional ownership increases monotonically with the chosen IPO price level and that IPO firms use offer price to generate desired post-IPO ownership structures. Kim and Park (2005) find that equity issuers employ aggressive accounting decisions to push up their offer prices. Thus, if IPO issuers want to achieve a desired post-IPO ownership structure, aggressive earnings management may be taken to push up the offer price to attract institutional investors. To testify our ratiocination and answer the first question, we examine the association between pre-IPO earnings management and post-IPO ownership structure to see whether IPO issuers can use pre-IPO earnings management as an effective tool to achieve a desired post-IPO ownership structure.

Several studies show that stock returns and institutional ownership are positively related. Nofsinger and Sias (1999) document strong positive correlation between changes in institutional ownership and returns measured over the same period. Dennis and Strickland (2002) find that a firm's abnormal return is positively related to the percentage of institutional ownership. Fernando et al. (2004) also report that IPO firms choosing a more institutional investor base experience lower mortality rates. In addition, there are several other advantages related to institutional ownership. For example, Clyde (1997) shows that the institutional ownership is positively related to the benefits of policing firms. Stoughton and Zechner (1998) also suggest that institutional investors may provide the monitoring function after IPO. Baysinger et al. (1991) even find that the institutional ownership has positive impact on corporate R&D spending. Moreoever, higher institutional ownership can avoid higher transaction cost imposed by individual investors (McInish and Wood 1992). Hence, to obtain one or more benefits related to institutional investments, IPO issuers may adopt aggressive earnings management to push up IPO offer price and stock returns to attract more institutional investors. However, Field and Lowry (2005) indicate that institutional investors can not predict future returns. To explain the puzzle and shed light on our second question, we investigate the relation between post-IPO institutional ownership and stock returns.

To further explore if initial institutional ownerships are affected by the IPO firm's motive of going public other than the initial earnings management, we conduct robustness checks to see if IPO institutional ownerships during the first year following the IPO issue date are explainable by some of the more commonly cited hypotheses of IPO offerings: (1) signaling of future opportunities; (2) market-timing hypothesis; (3) asymmetric information. We regress IPO institutional ownerships on proxy variables underlying the three hypotheses. For the signaling of

future opportunities hypothesis, we use the average return on assets during the first and second year following IPO issue date to proxy the future opportunities. If the signaling hypothesis is true, the coefficient on ROA will be significantly positive. For the market-timing hypothesis, we use excess return during the 2-year period following IPO issue date as a proxy. If the motive of IPO issuers is due to market-timing, the coefficient on excess return will be significantly positive. Finally, we use the standard deviation of stock returns from day 5 to day 225 following the IPO issue date to proxy asymmetric information. The coefficient on the standard deviation will be significantly negative if the asymmetric information hypothesis is true.

The rest of this essay is organized as follows. Section 2.2 defines the institutional ownership and describes the sample. Section 2.3 develops the hypotheses and presents empirical results. Robustness tests are conducted in section 2.4. Section 2.5 further explores the motives of IPO issuers. Concluding remarks are made in section 2.6.

2.2. Definition of Institutional Ownership and Data Description

2.2.1. Definition of Institutional Ownership

To investigate the above questions, at first we need to define institutional ownership. We have three definitions for institutional ownership: (1) the number of institutional owners; (2) the percentage of shares owned by all institutional investors; and (3) the average percentage of shares owned by each institution. The third definition (average percentage of shares owned by each institution) is equal to the second definition (the percentage of shares owned by all institutions) divided by the first definition (the number of institutional owners). The third definition of institutional ownership is also a measure of concentration of ownership adopted by Hedge et al (2003).

In this essay, we focus on the first and the second definitions of institutional ownership, that is, the number of institutional owners and the percentage of shares owned by all institutions. Because some institutional investors have restrictions investing in IPOs, the third definition of institutional ownership may be distorted by the upper limit of shares that an institutional investor can buy or hold. Thus, focusing on the first and the second definitions of institutional ownership is more realistic and meaningful.

2.2.2. Data Sources and Descriptive Statistics

Our data are the IPO firms reported on the website: www.Hoovers.com. The institutional ownership data are obtained from the 13F filings reported in the database of Thomson One Banker. Our sample period covers from April 1996 to December 2004. Several selection criteria are applied sequentially. The sample excludes financial institutions, utility firms, and ADRs. This avoids some potentially confounding factors such as the capital structure of financial institutions, systematic effects of regulations, etc. Also, the sample excludes firms with offer price less than one dollar and firms with offer size less than one million dollars, because in these cases firms are not required to disclose all of the data that are needed to calculate earnings management measures. In addition, unit offerings are eliminated since a unit consists of at least one common share plus warrants or debentures and one cannot directly observe the initial equity value alone for unit offerings. For the final sample, we have 338 IPO firms with institutional ownership data from April 1996 through December 2004.

[Insert Table 2.1 Here]

Table 2.1 presents the data description of the institutional ownership of IPO firms. Panel A in the table presents the data description if the institutional ownership is defined as the number

of institutional owners. Panel B in the table presents the data description if the institutional ownership is defined as the percentage of shares owned by all institutions. Panel A shows that the means (medians) of the number of institutional owners are 31.9 (29), 34.05 (28), 40.34 (31), 45.23 (35), 56.24 (40.5) and 63.50 (46) respectively at the end of the first, second, third, fourth quarter, the second and third year after the IPO offering date. Panel B shows that the means (medians) of the percentage of shares owned by all institutions are 0.24 (0.20), 0.26 (0.22), 0.29 (0.26), 0.31 (0.28), 0.36 (0.31) and 0.40 (0.36) respectively at the end of each post-IPO time period. From the data description, we find that the means of the number of institutional owners, the means and medians of the percentage of shares owned by all institutions all increase over time. Most of the medians of the number of institutional owners also increase over time except the one at the end of the second quarter after IPO. The findings indicate that more institutional investors would like to invest when more public information on the firms are available over time.

Next, we check the offer prices of IPOs with different institutional ownership and discretionary accruals. We assign an IPO into the high-, medium-, or low-discretionary accruals group if the size of accruals is within the top, middle, or bottom one-third discretionary accruals. The means (medians) of offer prices for IPO firms with different post-IPO institutional ownership and pre-IPO discretionary accruals are presented in Table 2.2.

[Insert Table 2.2 Here]

From Panel A of Table 2.2, we find that for all the three discretionary accruals groups, higher offer prices are related to higher institutional ownership - the number of institutional owners. The median offer prices are 18.00, 15.00 and 10.00 respectively for the high, medium and low institutional ownership groups if discretionary accruals are high. The median offer prices are 17.00, 14.00 and 10.00 respectively if discretionary accruals are medium. The median

offer prices are 17.00, 14.00 and 9.00 respectively if discretionary accruals are low. Therefore, for all level discretionary accruals groups, higher offer prices are related to higher institutional ownership. On the other hand, for the three levels of institutional ownerships, higher offer prices are also positively related to higher discretionary accruals. For the high institutional ownership group, the medians of offer prices are 18.00, 17.00 and 17.00 respectively for high, medium and low discretionary accruals groups. For the medium institutional ownership group, the medians of offer prices are 15.00, 14.00 and 14.00 respectively. For the low institutional ownership group, the medians of offer prices are 10.00, 10.00 and 9.00 respectively. In Panel B of Table 2.2, we find that only for the high and low discretionary accruals groups, higher offer prices are related to higher institutional ownership – the percentage of shares owned by all institutions.

The descriptive statistics above show that in most cases higher post-IPO institutional ownership is related to higher IPO offer price and that higher IPO offer price is accordingly related to higher pre-IPO discretionary accruals, especially when the institutional ownership is defined as the number of institutional investors. Therefore, IPO issuers may manipulate pre-IPO earnings to push up offer price and attract institutional investors. To further testify our conjecture, we develop two hypotheses and report the empirical results in next section.

2.3. Hypothesis development and empirical results

2.3.1. Hypothesis 1

Our first concern is whether pre-IPO earnings management or conventional variables related to IPO firm characteristics such as total assets play a more important role in affecting post-IPO institutional ownership. The conventional variables include the size of IPO firms measured by total assets, the age of IPO firms, the reputation ranking of underwriters, the

leverage ratio and so on. If pre-IPO earnings management plays a more significant role in affecting post-IPO institutional ownership, IPO firms may adopt this effective method to attract institutional investors and obtain some benefits related to institutional ownership. There are several benefits related to institutional investments. For example, institutional investors may provide the monitoring function in the future (Clyde 1997; Stoughton and Zechner 1998). With more institutional investments, IPO firms experience lower mortality rates (Fernando et al. 2004). Also, IPO firms with more institutional investors can avoid higher transaction cost imposed by individual investors (McInish and Wood 1992). However, we do not expect that there is a significant association between pre-IPO earnings management and post-IPO institutional ownership. Field and Lowry (2005) find that institutional investors depend heavily on publicly available information to make their investment decisions. In other words, institutional investors rely heavily on post-IPO information rather than pre-IPO information to make their investment decisions. Thus, we wonder how important pre-IPO earnings management could be in affecting post-IPO institutional ownership. With the reason above considered, our first hypothesis is developed as follows:

Hypothesis 1: pre-IPO earnings management has a very little impact on post-IPO institutional ownership, while conventional variables related to IPO firm characteristics still play a significant role in affecting post-IPO institutional ownership.

To explore the relation between post-IPO institutional ownership and pre-IPO earnings management, we use simultaneous estimation equations given that the choice of the level of the pre-IPO accruals and the size of the post-IPO institutional ownership could be simultaneously

determined. If we ignore the simultaneity among variables in this case, the results could be biased and inconsistent.

The dependent variable of the first equation is pre-IPO discretionary accruals, which is used to measure pre-IPO earnings management. The independent variables include the institutional ownership in the IPO issue year, which is used to proxy post-IPO institutional ownership. To reduce the possibility of model misspecification due to missing variables, we follow prior studies to control for additional independent variables in the model. Numerous studies have documented that unexpected accruals are negatively related to firm operating performance (Dechow 1994; Burgstahler and Dichev 1997). We thus include pre-IPO firm operating performance as one of the explanatory variables, which is measured by operating return on assets (ORA), operating cash flow return on assets (OCFRA), or return on assets (ROA) alternatively. Previous research also suggests that firms of larger size are less likely to manipulate earnings because they are more attention-getting in the market and are more likely to be detected and monitored (Watts and Zimmerman 1978; Zmijewski and Hagerman 1981). Field and Lowry (2005) also find that the institutional presence in firms of different sizes is significantly different. Therefore, we include the natural log of pre-IPO total assets and the natural log of IPO offer size to control for the firm size effect. In addition, growth in sales and age prior to IPO are included to control for any value-relevant information it may provide at the time of IPO. Furthermore, we set industry dummy variables (SIC) to control for the effect resulting from different industries. Finally, considering the mutual association between discretionary accruals and underwriter's reputation, we include underwriter's reputation in the equation. Here we still use the Jay Ritter's revision of underwriter's reputation rankings, which is based on Carter and Manaster (1990) and Carter, Dark and Singh (1998) rankings. In all, the

independent variables include the post-IPO institutional ownership, the pre-IPO firm operating performance, the natural log of pre-IPO total assets, the natural log of IPO offer size, sales growth, age, underwriter's reputation rank, and SIC dummy variables.

In the second equation, the dependent variable is the institutional ownership in the IPO issue year. The independent variables include pre-IPO discretionary accruals and other controlling parameters such as pre-IPO firm operating performance, the natural log of pre-IPO total assets, sales growth, age, underwriter's reputation rank, the industry dummy variables, and the leverage ratio (long-term debt over total assets) in the IPO issue year. We use the leverage ratio to proxy the closeness to a debt-covenants violation, because firms are more likely to manipulate earnings when they are close to violating debt covenants. For the reasons mentioned above, we only apply the first and the second definitions of institutional ownership respectively in the following simultaneous equations:

$$DAC_{-1} = C + C_1 IH_0 + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 Ln(OS) + C_5 SG_{-1} + C_6 AGE_{-1} + C_7 RANK + C_8 SIC + e \quad \text{---------- (2.1)}$$

$$IH_0 = C + C_1 DAC_{-1} + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 SG_{-1} + C_5 AGE_{-1} + C_6 RANK + C_7 LEV_0 + C_8 SIC + e \quad \text{---------- (2.2)}$$

Where

DAC_{-1} is the discretionary accruals in the pre-IPO year;

C_j are coefficients, j = 1, 2, 3, 4, 5, 6, 7 or 8;

IH_0 is the institutional ownership one-year after IPO issue date;

OP_{-1} is the operating performance in the pre-IPO year, which is measured by operating return on assets (ORA), operating cash flow return on assets (OCFRA), or return on assets (ROA) alternatively;

TA_{-1} is the total assets of IPO firms in the pre-IPO year;

OS is the offer size of IPO firms;

SG_{-1} is the sales growth in the pre-IPO year;

AGE_{-1} is the age of IPO firms in the pre-IPO year;

RANK is the reputation rank of the lead underwriter;

LEV_0 is IPO firms' leverage ratio (long-term debt/total assets) in the IPO issue year;

SIC is a series of dummy variables for IPO firms' standard industrial classification code;

e is the regression disturbance, assumed cross-sectionally uncorrelated and normally distributed with mean zero.

[Insert Table 2.3 Here]

Table 2.3 reports the regression results of simultaneous equations (2.1) and (2.2). In Table 2.3, the institutional ownership is defined as the number of institutional owners, that is, the first definition of institutional ownership. Results for equation (2.1) are shown in Pane A of Table 2.3, and results for equation (2.2) are shown in Pane B. From Panel A, we do not find any significant relation between pre-IPO discretionary accruals and institutional ownership in the IPO issue year. The coefficients of institutional ownership are -0.0002, -0.0001, 0.0002, -0.0002, -0.0001, 0.0003 respectively for the six regressions with different operating performance measures. We have similar findings in Panel B. When the dependent variable is institutional ownership, all the coefficients of pre-IPO discretionary accruals are insignificant. The results in the Panel A and B of Table 2.3 indicate that there is no significant relation between pre-IPO

discretionary accruals and institutional ownership in the IPO issue year. In other words, pre-IPO earning management can not affect post-IPO institutional ownership. The results imply that institutional investors are not easily deceived or misled by pre-IPO earnings management. One possible reason is that institutional investors have more reliable information than individual investors and institutional investors are able to see through any misinformation associated with IPO issuers' earnings management. This is consistent with the findings of Field and Lowry (2005) that institutional investors are on average smart investors.

Although we do not find a significant relation between IPO accruals and the initial institutional ownership, most of conventional parameters are still significant. From Panel B of Table 2.3, we find significant relations between institutional ownership in the IPO issue year and conventional parameters such as total assets, age, underwriter's reputation rank and the leverage ratio (long-term debt over total assets). All the coefficients of these four conventional parameters are significant at the 5% level. Among the conventional parameters, total assets and underwriter's reputation rank are positively related to institutional ownership in the IPO issue year. Age and the leverage ratio are negatively related to institutional ownership in the IPO issue year. That is, institutional investors prefer to choose IPOs with larger size (total assets) and higher reputation underwriter, and try to avoid IPOs with higher leverage ratio (long-term debt over total assets) and longer history. The results show that institutional investors make their decisions still based on conventional parameters and their decisions are not affected by IPO issuers' earnings management.

[Insert Table 2.4 Here]

Next, we use the second definition of institutional ownership (the percentage of shares owned by all institutions) instead of the first definitions of institutional ownership (the number of

institutional owners) to run the above simultaneous estimation equations (2.1) and (2.2) again. The regression results are presented in Table 2.4 and are very similar to the earlier results when institutional ownership is defined as the number of institutional owners. In Table 2.4, the institutional ownership in the IPO issue year is still not related to pre-IPO earnings management. In Panel A, all the coefficients on the institutional ownership are not significant when the dependent variable is the pre-IPO discretionary accruals. At the same time, all the coefficients on the pre-IPO discretionary accruals are not significant in Panel B when the dependent variable is the institutional ownership. However, although conventional parameters still have the same signs, only the coefficients of total assets are significant. All the coefficients on the natural log of total assets are significant at the 5% level in Panel B. The results imply that among the conventional variables, total asset is a very powerful explanatory parameter. For untabulated robustness tests, we use total accruals instead of discretionary accruals to run all the above regressions again and have similar results.

Hence, the regression results of simultaneous equations above support our first hypothesis. That is, pre-IPO earnings management has a very little impact on post-IPO institutional ownership, while conventional variables related to IPO firm characteristics still play a significant role in affecting post-IPO institutional ownership. The results indicate that IPO issuers are not likely to change post-IPO institutional ownership by pre-IPO earnings management. The results also imply that institutional investors are smart and are not deceived or misled by pre-IPO earnings management. Moreover, according to Field and Lowry (2005), institutional investors rely heavily on publicly available information rather than pre-IPO information to make their investment decisions. Therefore, pre-IPO earnings management plays a very limited role in affecting post-IPO institutional ownership.

2.3.2. Hypothesis 2

Our second question is whether the presence of institutional ownership or other more essential factors related to IPO firm characteristics such as IPO accruals quality play a more significant role in affecting post-IPO stock returns. We investigate whether the presence of institutional ownership or other factors related to IPO firm characteristics are more important or essential in affecting post-IPO stock returns. Numerous studies examine the relation between institutional ownership and stock returns. Michaely et al. (1994) and Badrinath et al. (1995) indicate that higher institutional ownership is related to higher post-IPO stock returns. Nofsinger and Sias (1999) document a strong positive correlation between changes in institutional ownership and returns measured over the same period. Dennis and Strickland (2002) also find that a firm's abnormal return is positively related to the percentage of institutional ownership. However, in this paper we are mostly interested in exploring the underlying reason behind the explicit relation between institutional ownership and stock returns. Because Field and Lowry (2005) find that institutional investors can not predict future returns, we wonder if there are any other more important factors such as IPO accruals quality to determine the explicit relation between institutional ownership and stock returns. Thus, we have the second hypothesis as follows:

Hypothesis 2: post-IPO stock return is not directly related to the presence of post-IPO institutional ownership, but is determined by other more essential factors related to IPO firm characteristics such as IPO accruals quality.

To determine this, we examine whether there is any significant relation between post-IPO one-year buy-and-hold stock returns and institutional ownership in IPO issue year. At the same time, we take into consideration other valuable factors such as IPO discretionary accruals and the book-to-market ratio. We use the one-year time period because the association between post-IPO stock returns and institutional ownership may be contaminated by other factors over a longer period. We examine the relation between IPO institutional ownership and post-IPO returns by running OLS regressions of post-IPO one-year buy-and-hold returns on IPO institutional ownership in the IPO issue year. For the dependent variable, post-IPO returns, we use raw post-IPO one-year buy-and-hold returns as well as market-adjusted post-IPO one-year buy-and-hold returns. The primary independent variable is the institutional ownership in the IPO issue year. Same as before, we use both the first and second definition of institutional ownership alternatively for the regressions. The other explanatory variables include discretionary accruals, IPO operating performance measures, the natural log of the market value of equity, the book-to-market ratio, sales growth, age of IPO firms, underwriter's reputation rank, and IPO firm's leverage ratio (the ratio of long-term debt to total assets). All independent variables except the age of IPO firms are in IPO issue year. The age of IPO firms is in pre-IPO year. The OLS regression equations are as follows:

$$BHR_0 = C + C_1IH_0 + C_2DAC_0 + C_3OP_0 + C_4Ln(ME_0) + C_5BM_0 + C_6SG_0 + C_7AGE_{-1} + C_8RANK + C_9LEV_0 + e \quad \text{------ (2.3)}$$

Where

BHR_0 is the one-year buy-and-hold return after IPO issue date;

DAC_0 is the discretionary accruals in the IPO issue year;

OP_0 is the various operating performance measures in the IPO issue year;

ME_0 is the market value of equity in the IPO issue year;

BM_0 is the book-to-market ratio in the IPO issue year;

SG_0 is the sales growth in the IPO issue year.

In Table 2.5, we report the regression results of equation (2.3) when the institutional ownership is defined as the number of institutional owners. From the results, we find that all the coefficients of institutional ownership are positive but insignificant. This is true when the dependent variable is either raw post-IPO one-year buy-and-hold returns or market-adjusted post-IPO one-year buy-and-hold returns. However, the findings are consistent with those of Field and Lowry (2005) that institutional investors can not predict future returns. According to Field and Lowry (2005), institutional investors are related to higher stock returns because they are informed investors and can identify higher quality firms and avoid firms that exhibit the worst performance. But institutional investors themselves can not predict firms' stock returns. Also, we find that all the coefficients of discretionary accruals are negative and significant at the 5% level. This result holds for both the raw and market-adjusted returns. The results indicate that investors are aware of IPO issuers' earnings management and react negatively. Hence, post-IPO one-year buy-and-hold returns are inversely related to discretionary accruals in the IPO issue year. In addition, we find that post-IPO returns are also significantly related to the book-to-market ratio. For the raw post-IPO one-year buy-and-hold returns, all the coefficients of the book-to-market ratio are positive and significant at the 10% level. For the market-adjusted (both value-weighted and equal-weighted) post-IPO one-year buy-and-hold returns, all the coefficients of the book-to-market ratio are positive and significant at the 5% level. In untabulated tests, we have similar

results when the institutional ownership is defined as the percentage of shares owned by all institutions. The regression results above support our second hypothesis and indicate that other factors such as IPO accruals quality and the book-to-market ratio are more important reasons in affecting post-IPO stock returns, while the presence of institutional ownership itself does not have an impact on post-IPO stock returns.

Next, we consider discretionary accruals in both IPO issue year and pre-IPO year in the regressions. Since post-IPO stock returns are negatively related to IPO discretionary accruals in the IPO issue year, we are also very interested in investigating whether post-IPO stock returns are related to IPO discretionary accruals in the pre-IPO year. We run regressions of post-IPO returns on institutional ownership, discretionary accruals in both IPO issue year and pre-IPO year, and other control variables. To exclude the correlation between discretionary accruals in IPO issue year (DAC_0) and discretionary accruals in pre-IPO year (DAC_{-1}), we use the residuals to proxy for discretionary accruals in IPO issue year (DAC_0). We obtain the residuals by regressing discretionary accruals in IPO issue year (DAC_0) on discretionary accruals in pre-IPO year (DAC_{-1}). The regression equation (2.3) is changed into the following:

$$BHR_0 = C + C_1IH_0 + C_2DAC_{-1} + C_3PDAC_0 + C_4OP_0 + C_5Ln(ME_0) + C_6BM_0 + C_7SG_0 + C_8AGE_{-1} + C_9RANK + C_{10}LEV_0 + e \quad \text{------ (2.4)}$$

Where $PDAC_0$ is the proxy for discretionary accruals in IPO issue year, which is the residual obtained by regressing discretionary accruals in IPO issue year on pre-IPO discretionary accruals.

Table 2.6 reports the regression results of equation (2.4). In this table, institutional ownership is the number of institutional owners. Panel A, B and C in Table 2.6 respectively

show the regression results when the dependent variables are raw, market-adjusted (value-weighted) and market-adjusted (equal-weighted) post-IPO one-year buy-and-hold return. From the regression results, we find all the coefficients of institutional ownership are positive but insignificant. The results confirm the findings of Field and Lowry (2005) that institutional investors can not predict future returns. Second, all the coefficients of discretionary accruals in IPO issue year ($PDAC_0$) are still significantly negative. Again, the results indicate that the market reacts negatively toward IPO issuers' earnings management. Third, almost all the coefficients of pre-IPO discretionary accruals (DAC_{-1}) are not significant (only one is significant at the 10% level), which shows that post-IPO accruals quality rather than pre-IPO accruals quality determines post-IPO stock returns and that the market can not be deceived or misled by pre-IPO earnings management. Finally, similar to the results in Table 2.5, post-IPO returns are again significantly related to the book-to-market ratio. For the raw post-IPO one-year buy-and-hold returns, all the coefficients of the book-to-market ratio are positive and significant at the 10% level. For the market-adjusted (both value-weighted and equal-weighted) post-IPO one-year buy-and-hold returns, all the coefficients of the book-to-market ratio are positive and significant at the 5% level. In untabulated tables, similar findings are observed using the second definition of institutional ownership. All of those results obtained in equation (2.4) are consistent with those obtained in equation (2.3).

Therefore, the regression results above support our second hypothesis. That is, post-IPO stock return is not directly related to the presence of post-IPO institutional ownership, but is determined by other more essential factors related to IPO firm characteristics such as IPO accruals quality and the book-to-market ratio. Taken into account other more essential factors, the relation between post-IPO stock return and post-IPO institutional ownership is not significant.

The results imply that IPO firm characteristics such as post-IPO accruals quality and the book-to-market ratio play a more important role in determining post-IPO stock returns, while the presence of institutional ownership itself has no significant impact on post-IPO returns.

2.4. Robustness tests

In this section, we conduct robustness checks. We re-estimate the simultaneous equations, but this time we use the change in institutional ownership between the end of the fourth quarter and the end of the first quarter following IPO issue date rather than the institutional ownership at the end of IPO issue year. The purpose is to further examine whether pre-IPO earnings management have an effect on institutions' investment decisions and whether there is significant association between the change in the post-IPO institutional ownership and pre-IPO earnings management.

We transform the simultaneous equations (2.1) and (2.2) a little. For measuring institutional ownership, we use the change in institutional ownership following the IPO issue date. The change in institutional ownership is equal to the difference between institutional ownership at the end of the fourth quarter following IPO issue date less institutional ownership at the end of the first quarter following the IPO date. The simultaneous equations are transformed as follows:

$$DAC_{-1} = C + C_1\Delta IH0 + C_2\, OP_{-1} + C_3\, Ln(TA_{-1}) + C_4\, Ln(OS) + C_5\, SG_{-1} + C_6 AGE_{-1} + C_7 RANK + C_8 SIC + e \quad \text{---------- (2.5)}$$

$$\Delta IH0 = C + C_1 DAC_{-1} + C_2 OP_{-1} + C_3\, Ln(TA_{-1}) + C_4 SG_{-1} + C_5 AGE_{-1} + C_6 RANK + C_7 LEV_0 + C_8 SIC + e \quad \text{---------- (2.6)}$$

Where

ΔIH0 is the change in institutional ownership between the end of the fourth quarter and the end of the first quarter following IPO issue date.

Table 2.7 reports the regression results of simultaneous equations (2.5) and (2.6). The institutional ownership is defined as the number of institutional owners. The results of equation (2.5) show that the change in institutional ownership after IPO is not significantly related to pre-IPO discretionary accruals. The results of equation (2.6) also show that pre-IPO discretionary accruals have little effect on the change in institutional ownership after IPO. Thus, pre-IPO earnings management can not affect post-IPO institutional ownership change. The findings are consistent with those when we measure institutional ownership at the end of the first year after the IPO offer date. In unreported results, we observe similar findings when the institutional ownership is defined as the percentage of shares owned by all institutions.

The results of robustness tests again confirm that institutional investors can not be deceived or misled by IPO issuers' pre-IPO earnings management. Institutional investors rely heavily on post-IPO information to make their investment decisions. The findings are also consistent with those of Field and Lowry (2005).

2.5. Motives of IPO issuers

If post-IPO institutional ownership is not affected by pre-IPO earnings management, is it probably related to other motives of IPO issuers in going public? In particular, we examine whether initial institutional ownerships are affected by the IPO firm's reasons of going public. Based on the existing IPO literature, the common motives of IPO issuers examined here are: (1)

the signaling hypothesis (Allen and Faulhaber 1989; Grinblatt and Hwang 1989; Welch 1989); (2) the market-timing hypothesis (Alti 2005; Alti 2006; Yan and Cai 2003); and (3) the asymmetric information hypothesis (Li, McInish and Wongchoti 2005; Kennedy, Sivakumar and Vetzal 2006; Shen and Wei 2006). We run a series of OLS regressions with the change in institutional ownership as the dependent variable.

(1) The signaling hypothesis

IPO issuers may signal their firm quality to attract investors. Allen and Faulhaber (1989) and Welch (1989) use IPO underpricing as the signal. Grinblatt and Hwang (1989) use an additional signal, the retention rate by insiders. If the desired ownership structure is a higher institutional ownership structure, one way to do so is to manipulate the offer price to emit the signal. If so, we expect a significant and positive relation between post-IPO firm performance and post-IPO institutional ownership. To test the signaling hypothesis, we proxy the firm quality with the average return on assets in years 1 and 2 after the IPO issue date. Also, we use the change in institutional ownership during the first four quarters following IPO issue date to proxy the post-IPO institutional ownership. If the signaling hypothesis is true, the coefficients of the average return on assets must be significantly positive.

(2) The market-timing hypothesis

It is well documented in the literature that IPO offerings are more common when the stock market is overvalued (Alti 2006). IPOs are therefore associated with investor sentiment that is overly optimistic in general (Yan and Cai 2003; Ljungqvist, Nanda and Singh 2006). As a result, the literature has also documented significant negative long-run returns on IPOs (Ljungqvist

1996; Schultz 2003; Yan and Cai 2003). Rational institutional investors will therefore avoid IPOs on average initially. Thus, we expect the initial year institutional ownership of IPOs a reflection of their expectation of investment returns on IPOs. We expect a positive relation between post-IPO stock performance and institutional ownership. More institutional investors are likely to invest in IPO firms if they expect high excess returns on IPOs. To examine the market-timing hypothesis, we run regressions of the change in institutional ownership during the first four quarters following the IPO issue date on the excess return during the two-year period after the fourth quarter of IPO. If the market-timing hypothesis is true for IPOs, we expect to see a significantly positive relation between post-IPO excess returns and the change (increase) in post-IPO institutional ownership.

(3) The asymmetric information hypothesis

IPO investors in general do not have much information about the IPO firm. The asymmetric information could be so significant that IPO issuers have to underprice their offerings in order to overcome the winner's curse (adverse selection) problem (Rock 1986; Beatty and Ritter 1986; Carter and Manaster 1990); to avoid potential legal liabilities (Hughes and Thakor 1992; Beatty and Welch 1996); and to induce investors to seek out more information about the IPO firm (Chemmanur 1993). We use the standard deviation of stock returns from day 5 to day 225 after IPO to measure the asymmetric information problem. We expect a high information asymmetry to be associated with a lower institutional ownership because of the risk involved.

After we take into account the above three hypotheses, we run the following OLS regression:

$$\Delta IH0 = C + C_1 ECR_{(1to2)} + C_2 ROA_0 + C_3 ROA_{(1to2)} + C_4 STD_0 + C_5 DAC_{-1} +$$

$$C_6 DAC_0 + C_7 RANK + C_8 Ln(OS) + C_9 LEV_0 + e \quad \text{---------- (2.7)}$$

Where

$ECR_{(1to2)}$ is the excess return during the 2-year period following the end of the fourth quarter after IPO issue date;

ROA_0 is the return on total assets in the IPO issue year;

$ROA_{(1to2)}$ is the average return on total assets during the 2-year period following IPO issue date;

STD_0 is the standard deviation of stock returns from day 5 to day 225 after IPO.

In equation (2.7), we use the return on total assets ($ROA_{(1to2)}$) to proxy for future opportunities of IPO firms. If the signaling hypothesis is the reason for the post-IPO change in institutional ownership, the coefficient of the return on total assets ($ROA_{(1to2)}$) should be significantly positive. For the market-timing hypothesis, the proxy is the excess return during the 2-year period following the end of the fourth quarter after IPO issue date ($ECR_{(1to2)}$). If the market-timing hypothesis is the reason for the post-IPO institutional ownership change, the coefficient of the excess return ($ECR_{(1to2)}$) should be significantly positive. Finally, if the reason is asymmetric information, the coefficient on the standard deviation of stock returns (STD_0) should be significantly negative. The standard deviation of stock returns from day 5 to day 225 after IPO (STD_0) serves as a measure of the information asymmetry. In addition, we also include other control variables, including the return on total assets in the IPO issue year (ROA_0), discretionary accruals in the pre-IPO year (DAC_{-1}) and the IPO issue year (DAC_0), underwriter's

rank (RANK), the natural logarithm of IPO offer size (Ln(OS)) and the leverage ratio in the IPO issue year (LEV_0).

Table 2.8 reports the results of equation (2.7). We obtain four equations alternatively by removing the return on total assets (ROA_0) or the discretionary accruals (DAC_0) in the IPO issue year from equation (2.7). Panel A in Table 2.8 reports the results when the institutional ownership is defined as the number of institutional owners. First, we check the coefficients of $ROA_{(1to2)}$, the average return on total assets during the 2-year period following IPO issue date, to examine if the signaling hypothesis is true for our sample. The results show that all the four coefficient of $ROA_{(1to2)}$ are negative and only one of the coefficients of $ROA_{(1to2)}$ is significant at the 10% level. The other three coefficients of $ROA_{(1to2)}$ are not significant. If the signaling hypothesis is true for our sample, we expect to see the coefficients of $ROA_{(1to2)}$ to be significantly positive. However, all the coefficients of $ROA_{(1to2)}$ are negatively related to the change in institutional ownership and only one is significant at the 10% level. Thus, the results do not support the signaling hypothesis in our sample. That is, the change in post-IPO institutional ownership is not due to the signals sent out by IPO issuers.

Second, we want to investigate if the change in post-IPO institutional ownership results from market-timing. We need to check the coefficient of $ECR_{(1to2)}$. $ECR_{(1to2)}$ is the excess return during the second and third year after IPO. If the market-timing hypothesis is true, the coefficient of $ECR_{(1to2)}$ should be significantly positive. However, we find that all the coefficients of $ECR_{(1to2)}$ are negative and insignificant. The results suggest that the change in post-IPO institutional ownership is not because of market-timing. The excess returns after IPO can not make institutional investors to change their minds easily. Institutional investors would like to continue holding IPO firms of higher quality rather than seek the excess returns in the short-run.

This also reflects that institutional investors emphasize long-run benefits rather than short-run returns.

Third, we consider if the change in the post-IPO institutional ownership is the result of asymmetric information. We use the standard deviation of stock returns from day 5 to day 225 after IPO to measure the adverse selection cost. If the adverse selection cost is higher (lower), institutional investors are less (more) likely to change. We expect to see a significantly negative relation between the change in the post-IPO institutional ownership and the standard deviation of stock returns. From Panel A in Table 2.8, we find that all the coefficients of the standard deviation (STD_0) are significant but positive. Among the four coefficients of the standard deviation, three are significant at the 5% level and one is significant at the 10% level. If asymmetric information is the reason for the change in the post-IPO institutional ownership, the coefficient of the standard deviation should be significant and negative. The results in Panel A of Table 2.8 do not provide us with the evidence. That is, asymmetric information hypothesis can not explain the change in the post-IPO institutional ownership in our sample.

Moreover, we conduct the robustness tests again with the institutional ownership defined as the percentage of shares owned by all institutions. Panel B in Table 2.8 reports the results. From the results, we find that only the coefficients on discretionary accruals are significant and negative. One is significant at the 5% level and another is significant at the 10% level. The coefficients on all the other variables are not significant. The results have similar implications to those in Panel A in Table 2.8 when the institutional ownership is defined as the number of institutional owners. The results in both Panel A and B in Table 2.8 indicate that there is no evidence to support that the change in post-IPO institutional ownership is due to any of the three commonly cited hypotheses: the signaling hypothesis, the market timing hypothesis, or the

asymmetric information hypothesis. However, we notice that the change in post-IPO institutional ownership is inversely related to discretionary accruals in IPO issue year and the relation is always significant in both Panel A and B in Table 2.8. The finding suggests that institutional investors prefer to choose IPOs with lower discretionary accruals in IPO issue year. From Panel A in Table 2.8, we also find that IPOs of larger size are more likely to attract more institutional investors. But this is not true if the institutional ownership is defined as the percentage of shares owned by all institutions, which is indicated in Panel B of Table 2.8.

2.6. Conclusions

In essay two, we investigate whether IPO issuers manipulate pre-IPO earnings to achieve a desired post-IPO ownership structure. Specifically, we try to figure out the following two questions: (1) whether pre-IPO earnings management or conventional variables related to IPO firm characteristics such as total assets play a more important role in affecting post-IPO institutional ownership; and (2) whether the presence of post-IPO institutional ownership or other more essential factors related to IPO firm characteristics such as IPO accruals quality play a more significant role in affecting post-IPO stock returns. In robustness checks, we explore the motives of IPO issuers by examining three commonly cited hypotheses.

For the first question, we find that post-IPO institutional ownership is not related to pre-IPO earnings management, but still significantly related to other conventional variables related to IPO firm characteristics such as total assets. The reason is that institutional investors are smart and are not deceived or misled by pre-IPO earnings management. Moreover, institutional investors rely heavily on publicly available information rather than pre-IPO information to make their investment decisions. For the second question, we find that the presence of institutional

ownership itself has a very little impact on post-IPO returns if we take into consideration other underlying factors related to IPO firm characteristics such as IPO accruals quality and the book-to-market ratio.

Furthermore, we conduct robustness tests to see if the change in post-IPO institutional ownership is due to one of the three commonly cited hypotheses on IPO firms: (1) the signaling hypothesis; (2) the market-timing hypothesis; and (3) the asymmetric information hypothesis. We use the return on total assets, the excess return, and the standard deviation respectively as the proxy to test the signaling hypothesis, the market-timing hypothesis, and the asymmetric information hypothesis. However, the results of robustness tests indicate that the change in post-IPO institutional ownership is not due to any of the three commonly cited hypotheses.

In sum, IPO issuers are unlikely to attract institutional investors by manipulating pre-IPO information. Institutional investors seem to be able to identify IPO firms of higher quality and always seek IPO firms with lower discretionary accruals and higher book-to-market ratios depending on post-IPO information, but the presence of institutional ownership itself has a very little impact on stock returns.

ENDNOTES:

1. Another view of earnings management emphasizes the liabilities arising from false earnings signals. These include explicit legal expenses and implicit costs due to a damaged firm reputation. It is argued that the burdens impel stock issuers to signal validly. Thus investors are informed, but not deceived. Even if this view is correct, we argue that high-prestige underwriters will distant themselves from firms with aggressive earnings management because there would be undesirable effects if the underwritten firms are likely to keep reporting continuously declining performance when accruals revert in later reporting periods.

2. Our sample size is much larger than the 171 IPOs between 1982 and 1987 in Durcharme et al. (2001) that have pre-IPO accruals information.

3. DeAngelo (1986), Aharony, Lin, and Loeb (1993) and Friedlan (1994) use year-to-year changes in a firm's accruals as a measure of abnormal accruals. This differenced approach has several disadvantages for IPOs. If accruals are independent, and identically distributed with constant mean and variance, differencing will induce a negative serial correlation (of – 0.5); see Dechow (1994) and Choi, Gramlich, and Thomas (1993). Choi et al. also reports that first differences adequately capture abnormal long-term accruals (e.g. depreciation) but not abnormal current accruals. Furthermore, the differenced measure can be perverse if earnings management occurs in periods prior to the test period. The differenced measure is therefore particularly suspect for examining immediate post-IPO accruals, because the benchmark period (just prior to the IPO) may have been also manipulated.

4. In untabulated regression results, we have added ADAC and ANAC (the averages of discretionary and nondiscretionary accruals over the three-year post-IPO period) to the independent variables and the regression results remain consistent and similar to those in Tables 1.5a to 1.5c.

5. We have also estimated underwriter reputation using the following simple regression model: $AR_i = C + C_1 DAC_{i(t-1)} + e_i$. However, the R-square is only 0.006 and subsequent results are inconsistent. We therefore choose not to report the results of this particular model due to the concern of weak instrumental variable.

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Table 1.1
Descriptive statistics for discretionary accruals of IPO Issuers

This table presents the descriptive statistics of IPO discretionary accruals. Panel A is the descriptive statistics of IPO discretionary accruals by underwriter-reputation group and calendar year from 1996 through 2004. Panel B is the descriptive statistics of IPO discretionary accruals by underwriter-reputation group and event year from T = -1 through T = 3 (T = 0 is the IPO issue year).

Panel A: Discretionary accruals by underwriter-reputation group and calendar year

Reputation Groups	Calendar Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
High (N=191)	Mean	0.00	-0.38	-0.21	-0.67	-0.36	-0.14	-0.06	-0.14	-0.04
	Median	0.00	-0.03	-0.05	-0.05	-0.07	-0.08	-0.04	-0.03	-0.05
	Max.	14.27	1.71	1.75	2.37	13.19	1.22	0.98	0.32	1.35
	Min.	-20.37	-21.82	-6.09	-62.97	-42.40	-2.09	-1.58	-1.66	-0.79
	Std. dev.	2.61	2.42	0.66	3.84	2.51	0.29	0.19	0.33	0.27
	p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medium (N=138)	Mean	0.22	0.01	0.11	-0.53	-0.14	-0.09	-0.03	-0.05	-0.02
	Median	0.15	0.02	0.00	-0.03	-0.02	-0.06	-0.01	-0.03	-0.04
	Max.	1.15	0.47	7.13	2.04	1.58	0.36	0.40	1.03	0.25
	Min.	-0.69	-1.45	-1.38	-40.18	-9.63	-1.53	-1.47	-0.63	-0.27
	Std. dev.	0.48	0.34	1.06	4.82	1.25	0.26	0.27	0.31	0.15
	p-value	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
Low (N=38)	Mean	0.28	0.07	0.06	0.06	0.05	-0.13	0.04	0.00	-0.03
	Median	0.12	0.04	0.04	0.02	0.05	-0.05	-0.02	-0.02	-0.03
	Max.	1.84	2.60	3.74	6.47	4.68	2.79	0.43	0.39	-0.03
	Min.	-0.94	-1.78	-2.98	-3.75	-1.18	-2.32	-0.20	-0.27	-0.03
	Std. dev.	0.76	0.78	0.99	1.35	0.88	0.86	0.19	0.22	NA
	p-value	0.72	0.00	0.00	0.00	0.00	0.00	0.30	0.75	NA

Table 1.1 (continued)

Panel B: Discretionary accruals by underwriter-reputation group and event year

Reputation Groups	Event Year	T = - 1	T = 0	T = 1	T = 2	T = 3
High (N=191)	Mean	-0.71	-0.22	-0.17	-0.14	-0.13
	Median	-0.08	-0.09	-0.06	-0.05	-0.03
	Max.	14.27	13.19	1.75	0.67	1.35
	Min.	-62.97	-6.09	-10.37	-9.68	-6.89
	Std. Dev.	4.53	1.17	0.74	0.66	0.49
	p-value	0.00	0.00	0.00	0.00	0.00
Medium (N=138)	Mean	0.17	0.11	-0.03	-0.01	-0.01
	Median	-0.04	0.07	-0.01	-0.01	-0.04
	Max.	7.13	1.58	1.52	0.40	1.03
	Min.	-1.38	-1.50	-1.53	-0.59	-0.44
	Std. Dev.	1.10	0.57	0.35	0.16	0.22
	p-value	0.00	0.00	0.00	0.00	0.00
Low (N=38)	Mean	0.46	0.09	0.19	-0.02	0.23
	Median	-0.01	0.22	0.04	0.00	-0.01
	Max.	6.47	0.71	2.79	0.39	4.68
	Min.	-0.46	-1.08	-0.97	-0.59	-0.76
	Std. Dev.	1.69	0.48	0.78	0.21	1.20
	p-value	0.00	0.23	0.00	0.10	0.00

Table 1.2

t-test (χ^2 test) for the equality of means (medians) of discretionary accruals across underwriter-reputation groups

This table reports the means (medians) of discretionary accruals for high-, medium-, and low-reputation groups. This table also presents the results of t-test and chi-square test for the equality of the means (medians) of discretionary accruals across underwriter-reputation groups. H, M and L denote IPO firms associated with high-, medium-, and low-reputation underwriters respectively. * represents significance at the 5% level.

Reputation groups	T = -1	T = 0	T = 1	T = 2	T = 3
	Mean(median)	Mean(median)	Mean(median)	Mean(median)	Mean(median)
H	-0.71(-0.08)	-0.22(-0.09)	-0.17(-0.06)	-0.14(-0.05)	-0.13(-0.03)
M	0.17(-0.04)	0.11(0.07)	-0.03(-0.01)	-0.01(-0.01)	-0.01(-0.04)
L	0.46(-0.01)	0.09(0.22)	0.19(0.04)	-0.02(0.00)	0.23(-0.01)
H vs. M	2.01*(8.72*)	0.40(13.40*)	0.28(6.75*)	1.51(4.75*)	3.46*(3.82)
M vs. L	0.85(0.56)	0.96(0.14)	1.95(10.27*)	2.19*(2.74)	1.36(2.06)
H vs. L	2.05*(3.55*)	2.00*(8.40*)	2.38*(17.61*)	1.58(0.01)	2.12*(8.31*)

Table 1.3
Regression analysis of initial firm value

This table reports the OLS regression results of IPO initial firm value on accruals and other IPO firm characteristics. FV is the initial firm value. DAC and NAC denote discretionary accruals and nondiscretionary accruals. SG is the sales growth rate. OP is pre-IPO operating performance measured by the next six variables. ORA is the operating return on assets. OCFRA is the operating cash flow return on assets. ROA is return on assets. IORA, IOCFRA, and IROA are the industry-adjusted ORA, OCFRA, and ROA respectively. Ln(OS) is the natural logarithm of offer size in the IPO offer year. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. The dependent variable (FV) is for the IPO offer year. All the independent variables except ln(OS) and SD are for the pre-IPO year. * represents significance at the 5% level.

$$FV_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_6 \ln(OS)_i + C_7 AGE_{i(t-1)} + C_8 SD_i + e_i$$

Panel A: High-Reputation Group

DAC	-1.05	-1.48	-1.80	-2.03	-1.92	-1.68
NAC	2.21	1.78	0.99	0.65	0.45	0.60
SG	0.92	0.96	0.99	0.97	0.97	0.97
ORA	0.141					
OCFRA		0.23*				
ROA			0..05			
IORA				0.33*		
IOCFRA					0.31*	
IROA						0.01
Ln(OS)	1363*	1361*	1390*	1277*	1288*	1375*
AGE	1.27	1.61	3.20	4.87	3.92	3.55
SD	12659*	12261*	12348*	13376*	12756*	12425*
R^2	0.38	0.39	0.38	0.40	0.40	0.38

Table 1.3 (continued)

Panel B: Medium-Reputation Group

DAC	-0.11	-0.19	-0.02	-0.15	-0.23	-0.40
NAC	0.66	0.44	1.09	0.95*	0.92*	0.83
SG	2.09	2.03	2.26	2.07	2.04	2.19
ORA	0.01					
OCFRA		0.02				
ROA			0.13			
IORA				-0.02		
IOCFRA					0.01	
IROA						0.35
Ln(OS)	262*	260*	271*	271*	268*	264*
AGE	-0.46	-0.67	-0.29	-0.33	-0.40	-0.14
SD	1784*	1743*	1355*	1482*	1565*	1830*
R^2	0.66	0.66	0.65	0.65	0.65	0.66

Panel C: Low-Reputation Group

DAC	7.15*	7.34*	7.81*	7.60*	7.52*	7.83*
NAC	8.49*	8.84*	8.37*	9.04*	9.05*	8.53*
SG	9.25*	9.32	5.85	8.91*	9.01*	6.31
ORA	0.02					
OCFRA		0.01				
ROA			0.18*			
IORA				0.03		
IOCFRA					0.06	
IROAI						-0.03
Ln(OS)	93.16*	91.55*	81.34*	89.65*	89.76*	81.83*
AGE	0.77	0.77	0.57	0.70	0.74	0.47
SD	-0.02	-0.05	-0.33	-0.08	-0.06	-0.25
R^2	0.79	0.78	0.84	0.80	0.79	0.84

Table 1.4
Mean (Median) change of *industry-adjusted* operating performance measures

This table presents the mean (median) changes of industry-adjusted operating performance between pre-IPO year (T = -1) and post-IPO years (T = 1, 2, or 3). IORA is the industry-adjusted operating return on assets (operating income before taxes and depreciation divided by total assets); IOCFRA is the industry-adjusted operating cash flow return on assets ((operating income before taxes and depreciation minus capital expenditures) divided by total assets); IROA is the industry-adjusted return on assets (net income divided by total assets). * represents significance at the 5% level.

Panel A: High-reputation

	Years relative to completion of IPO							
	-1 to 0		-1 to +1		-1 to +2		-1 to +3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
IORA	0.92	0.07*	1.34*	0.12	1.35*	0.11	1.41*	0.10
IOCFRA	1.00	0.05	1.56*	0.19*	1.59*	0.16*	1.65*	0.18*
IROA	1.04*	0.07	1.44*	0.15*	1.44*	0.14	1.63*	0.14*

Panel B: Medium-reputation

	Years relative to completion of IPO							
	-1 to 0		-1 to +1		-1 to +2		-1 to +3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
IORA	0.62	0.07	1.06*	0.12	1.01*	0.07	1.11*	0.05
IOCFRA	0.73	0.07	1.32*	0.08	1.27*	0.09	1.40*	0.10*
IROA	0.70	0.07	1.22*	0.12*	1.19*	0.08	1.30*	0.08

Panel C: Low-reputation

	Years relative to completion of IPO							
	-1 to 0		-1 to +1		-1 to +2		-1 to +3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
IORA	0.15	0.03	0.69	-0.02	0.62	-0.07	0.68	-0.03*
IOCFRA	-0.03	-0.02*	0.67	-0.05*	0.67	-0.05*	0.72	-0.06*
IROA	-0.21	0.02	0.01	0.00	0.00	-0.05	0.00	-0.02

Table 1.5a
Regression analysis of post-issue operating performance for IPOs underwritten by high-reputation underwriters

This table presents the regression results of post-IPO operating performance on IPO characteristics. Here the IPO firms are underwritten by high-reputation underwriters. Panel A, Panel B and Panel C show the results when the dependent variables are AIM1, AIM2 and AIM3 alternatively. AIM1, AIM2 and AIM3 are the average industry-adjusted operating return on assets, cash flow return on assets, and return on assets between years T=1 and T=3 respectively. DAC and NAC denote discretionary and nondiscretionary accruals. SG is the sales growth. OP is operating performance measured by the next three parameters. IORA is the industry-adjusted Operating Return on Assets in year T=-1. IOCFRA is the industry-adjusted Operating Cash Flow Return on Assets in year T=-1. IROA is the industry-adjusted Return on Assets in year T=-1. Ln(OS) is the natural logarithm of offer size in the IPO offer year. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. * represents significance at the 5% level.

$$AIM_i = C + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_6 \ln(OS)_i + C_7 AGE_{i(t-1)} + C_8 SD_i + e_i$$

Panel A: AIM1 is the average industry-adjusted operating return on assets between T=1 and T=3

DAC	-0.001	-0.001	-0.006
NAC	-0.018	-0.020	-0.025
SG	0.005	0.006	0.006
IORA	0.011*		
IOCFRA		0.010*	
IROA			0.013*
Ln(OS)	0.041*	0.041*	0.041*
AGE	0.000	0.000	0.000
SD	-3.644*	-3.634*	-3.680*
R^2	0.27	0.26	0.27

Panel B: AIM2 is the average industry-adjusted cash flow return on assets between T=1 and T=3

DAC	-0.004	-0.004	-0.008
NAC	-0.034	-0.036	-0.040
SG	-0.001	0.000	0.001
IORA	0.011*		
IOCFRA		0.010*	
IROA			0.012*
Ln(OS)	0.049*	0.048*	0.048*
AGE	0.000	0.000	0.000
SD	-3.056*	-3.017*	-3.086*
R^2	0.23	0.23	0.23

Table 1.5a (high-reputation underwriters group continued)

Panel C: AIM3 is the average industry-adjusted return on assets between T=1 and T=3

DAC	-0.005	-0.004	-0.010
NAC	-0.045	-0.048	-0.048
SG	0.010	0.010	0.011
IORA	0.014		
IOCFRA		0.012	
IROA			0.015
Ln(OS)	0.096*	0.095*	0.096*
AGE	0.001	0.001	0.001
SD	-3.252	-3.215	-3.399*
R^2	0.10	0.10	0.10

Table 1.5b
Regression analysis of post-issue operating performance for IPOs underwritten by medium-reputation underwriters

This table presents the regression results of post-IPO operating performance on IPO characteristics. Here the IPO firms are underwritten by medium-reputation underwriters. Panel A, Panel B and Panel C show the results when the dependent variables are AIM1, AIM2 and AIM3 alternatively. AIM1, AIM2 and AIM3 are the average industry-adjusted operating return on assets, cash flow return on assets, and return on assets between years T=1 and T=3 respectively. DAC and NAC denote discretionary and nondiscretionary accruals. SG is the sales growth. OP is operating performance measured by the next three parameters. IORA is the industry-adjusted Operating Return on Assets in year T=-1. IOCFRA is the industry-adjusted Operating Cash Flow Return on Assets in year T=-1. IROA is the industry-adjusted Return on Assets in year T=-1. Ln(OS) is the natural logarithm of offer size in the IPO offer year. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. * represents significance at the 5% level.

$$AIM_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_6 \ln(OS)_i + C_7 AGE_{i(t-1)} + C_8 SD_i + e_i$$

Panel A: AIM1 is the average industry-adjusted operating return on assets between T=1 and T=3

DAC	-0.02	0.00	-0.03
NAC	-0.08*	-0.06	-0.08*
SG	0.00	0.00	0.00
IORA	0.01		
IOCFRA		0.00	
IROA			0.01
Ln(OS)	0.07*	0.07*	0.07*
AGE	0.00	0.00	0.00
SD	-3.98*	-4.20*	-3.98*
R^2	0.21	0.21	0.21

Panel B: AIM2 is the average industry-adjusted cash flow return on assets between T=1 and T=3

DAC	-0.02	-0.004	-0.03
NAC	-0.09*	-0.07	-0.09*
SG	-0.01	0.00	0.00
IORA	0.01		
IOCFRA		0.002	
IROA			0.01
Ln(OS)	0.08*	0.08*	0.08*
AGE	0.00	0.00	0.00
SD	-3.08*	-3.26*	-3.07*
R^2	0.19	0.19	0.19

Table 1.5b (medium-reputation underwriters group continued)

Panel C: AIM3 is the average industry-adjusted return on assets between T=1 and T=3

DAC	0.00	0.04	-0.03
NAC	-0.03	0.00	-0.06
SG	0.00	0.00	0.00
IORA	0.01		
IOCFRA		-0.01	
IROA			0.02
Ln(OS)	0.04	0.04	0.04
AGE	0.00	0.00	0.00
SD	-4.94*	-5.21*	-4.73*
R^2	0.23	0.24	0.24

Table 1.5c
Regression analysis of post-issue operating performance for IPOs underwritten by low-reputation underwriters

This table presents the regression results of post-IPO operating performance on IPO characteristics. Here the IPO firms are underwritten by low-reputation underwriters. Panel A, Panel B and Panel C show the results when the dependent variables are AIM1, AIM2 and AIM3 alternatively. AIM1, AIM2 and AIM3 are the average industry-adjusted operating return on assets, cash flow return on assets, and return on assets between years T=1 and T=3 respectively. DAC and NAC denote discretionary and nondiscretionary accruals. SG is the sales growth. OP is operating performance measured by the next three parameters. IORA is the industry-adjusted Operating Return on Assets in year T=-1. IOCFRA is the industry-adjusted Operating Cash Flow Return on Assets in year T=-1. IROA is the industry-adjusted Return on Assets in year T=-1. Ln(OS) is the natural logarithm of offer size in the IPO offer year. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. * represents significance at the 5% level.

$$AIM_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_6 \ln(OS)_i + C_7 AGE_{i(t-1)} + C_8 SD_i + e_i$$

Panel A: AIM1 is the average industry-adjusted operating return on assets between T=1 and T=3

DAC	-0.11*	-0.16*	-0.14*
NAC	-0.29*	-0.35*	-0.33*
SG	0.01	0.01	0.01
IORA	0.22*		
IOCFRA		0.26*	
IROA			0.21*
Ln(OS)	-0.02	-0.01	-0.02
AGE	0.01*	0.01*	0.01*
SD	0.00	0.01	0.00
R^2	0.62	0.64	0.62

Panel B: AIM2 is the average industry-adjusted cash flow return on assets between T=1 and T=3

DAC	-0.07	-0.12	-0.09
NAC	-0.23*	-0.29*	-0.26*
SG	-0.01	0.00	-0.01
IORA	0.18*		
IOCFRA		0.22*	
IROA			0.17*
Ln(OS)	0.00	0.01	-0.01
AGE	0.00	0.00	0.00
SD	0.00	0.00	0.00
R^2	0.56	0.59	0.54

Table 1.5c (low-reputation underwriters group continued)

Panel C: AIM3 is the average industry-adjusted return on assets between T=1 and T=3

DAC	-0.10*	-0.15*	-0.12*
NAC	-0.25*	-0.31*	-0.29*
SG	-0.02	-0.01	-0.02
IORA	0.21*		
IOCFRA		0.25*	
IROA			0.21*
Ln(OS)	-0.02	-0.01	-0.03
AGE	0.004*	0.004	0.005*
SD	-0.004	-0.004	-0.004
R^2	0.72	0.74	0.70

Table 1.6
Three models for computing the instrumental variable - estimated reputation of underwriters

The following tables report the regression results of three models for computing the instrumental variable - the estimated reputation (ER). Panel A, B and C are for the models (1.9), (1.10) and (1.11) respectively. We apply the regression coefficients from each model (1.9), (1.10) and (1.11) to the sample to compute each underwriter's estimated reputation. We estimate ER using three different ways in order to address the possibility of getting a weak instrumental variable. AR is the actual reputation ranking of underwriters per Carter and Manaster (1990). DAC_{-1} is the pre-IPO discretionary accruals. TA_{-1} is the pre-IPO total assets. SD is the standard deviation of daily returns from day 6 to day 255 after IPO; AGE_{-1} is the age of IPO firms in the pre-IPO year.

Panel A: $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + e$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.0624	0.2629	23.0632	0.0000
DAC_{-1}	-0.0239	0.0167	-1.4305	0.1532
$Ln(TA_{-1})$	0.7824	0.1221	6.4061	0.0000
$[Ln(TA_{-1})]^2$	-0.0525	0.0132	-3.9667	0.0001
$R^2 = 0.16$				

Panel B: $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + C_4 * SD + e$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.2000	0.2568	24.1460	0.0000
DAC_{-1}	-0.0242	0.0162	-1.4934	0.1360
$Ln(TA_{-1})$	0.7467	0.1188	6.2863	0.0000
$[Ln(TA_{-1})]^2$	-0.0503	0.0129	-3.9148	0.0001
SD	-0.1743	0.0336	-5.1900	0.0000
$R^2 = 0.21$				

Panel C: $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + C_4 * SD + C_5 * AGE_{-1} + e$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.4208	0.2624	24.4731	0.0000
DAC_{-1}	-0.0226	0.0160	-1.4127	0.1584
$Ln(TA_{-1})$	0.6663	0.1211	5.5009	0.0000
$[Ln(TA_{-1})]^2$	-0.0373	0.0131	-2.8398	0.0047
SD	-0.1712	0.0333	-5.1458	0.0000
AGE_{-1}	-0.0097	0.0032	-3.0815	0.0022
$R^2 = 0.21$				

Table 1.7
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (1.9))

This table reports the regression results of IPO initial firm value or the average industry-adjusted operating performance on IPO firm characteristics by using the estimated reputation (ER). The purpose is to control for endogeneity between earnings management and the choice of underwriters. The instrumental variable, ER, is estimated using model (1.9): $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + e$. Panel A shows the results when the dependent variable is the IPO initial firm value (FV). Panel B, C, and D show the results when the dependent variable is the average industry-adjusted Operating Return on Assets (AIM1), the average industry-adjusted Operating Cash Flow Return on Assets (AIM2), and the average industry-adjusted Return on Assets (AIM3) respectively. FV is the initial firm value. DAC is discretionary accruals. SG is the sales growth rate. ORA is Operating Return on Assets in year T = -1. OCFRA is Operating Cash Flow Return on Assets in year T = -1. ROA is Return on Assets in year T = -1. IORA, IOCFRA, and IROA are the industry-adjusted ORA, OCFRA, and ROA. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. The dependent variable (FV) is for the IPO offer year. ER is the estimated reputation of the underwriter. *, ** represent significance at the 5% and 10% levels respectively.

Panel A:

(1) $FV = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-316.837*	-225.019	-224.570	-243.327**	-213.193	-211.935
DAC	0.353	0.320	0.538	0.451	0.346	0.534
SG	0.372*	0.273*	0.249**	0.298*	0.248**	0.227**
ORA	-0.655*					
OCFRA		-0.373*				
ROA			-0.558*			
IORA				-0.643*		
IOCFRA					-0.338*	
IROA						-0.539*
AGE	-0.373	-0.453	-0.505	-0.455	-0.495	-0.538
STD	-5.140*	-5.266*	-5.189*	-5.210*	-5.288*	-5.217*
ER	70.369*	57.291*	57.102*	59.777*	55.714*	55.381*
R^2	0.13	0.11	0.12	0.13	0.11	0.12

Table 1.7 (continued)

Panel B:

(2) $AIM1 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.6085*	-0.6078*	-0.5980*	-0.5840*	-0.5887*	-0.5771*
DAC	-0.00001	-0.00001	-0.00002	-0.00001	-0.00001	-0.00002
SG	-0.0009**	-0.0009**	-0.0010**	-0.0009**	-0.0009**	-0.0009**
ORA	0.0394*					
OCFRA		0.0345*				
ROA			0.0328*			
IORA				0.0435*		
IOCFRA					0.0375*	
IROA						0.0361*
AGE	0.0004	0.0004	0.0006	0.0004	0.0004	0.0006
STD	0.0038	0.0037	0.0038	0.0038	0.0037	0.0037
ER	0.0825*	0.0833*	0.0816*	0.0799*	0.0810*	0.0790*
R^2	0.12	0.12	0.11	0.14	0.13	0.12

Panel C:

(3) $AIM2 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.6143*	-0.5912*	-0.6038*	-0.5873*	-0.5706*	-0.5798*
DAC	-0.00001	0.00001	-0.00002	-0.00001	0.00001	-0.00002
SG	-0.0011*	-0.0011*	-0.0012*	-0.0011*	-0.0011*	-0.0012*
ORA	0.0345*					
OCFRA		0.0333*				
ROA			0.0286*			
IORA				0.0390*		
IOCFRA					0.0366*	
IROA						0.0322*
AGE	0.0008	0.0007	0.0009	0.0008	0.0007	0.0009
STD	0.0014	0.0013	0.0014	0.0014	0.0012	0.0013
ER	0.0793*	0.0771*	0.0784*	0.0763*	0.0746*	0.0753*
R^2	0.12	0.12	0.11	0.13	0.13	0.12

Table 1.7 (continued)

Panel D:

(4) $AIM3 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.8279*	-0.8326*	-0.8227*	-0.8009*	-0.8084*	-0.8007*
DAC	-0.00006	-0.00005	-0.00008	-0.00006	-0.00005	-0.00008
SG	-0.0043*	-0.0042*	-0.0043*	-0.0042*	-0.0042*	-0.0043*
ORA	0.0411*					
OCFRA		0.0359*				
ROA			0.0358*			
IORA				0.0456*		
IOCFRA					0.0397*	
IROA						0.0392*
AGE	0.0011	0.0011	0.0013	0.0011	0.0011	0.0013
STD	-0.0013	-0.0014	-0.0013	-0.0013	-0.0015	-0.0014
ER	0.1035*	0.1050*	0.1033*	0.1006*	0.1021*	0.1005*
R^2	0.13	0.13	0.13	0.14	0.13	0.13

Table 1.8
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (1.10))

This table reports the regression results of IPO initial firm value or the average industry-adjusted operating performance on IPO firm characteristics by using the estimated reputation (ER). The purpose is to control for endogeneity between earnings management and the choice of underwriters. The instrumental variable, ER, is estimated using model (1.10): $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + C_4 * STD + e$. Panel A shows the results when the dependent variable is the IPO initial firm value (FV). Panel B, C, and D show the results when the dependent variable is the average industry-adjusted Operating Return on Assets (AIM1), the average industry-adjusted Operating Cash Flow Return on Assets (AIM2), and the average industry-adjusted Return on Assets (AIM3) respectively. FV is the initial firm value. DAC is discretionary accruals. SG is the sales growth rate. ORA is Operating Return on Assets in year T = -1. OCFRA is Operating Cash Flow Return on Assets in year T = -1. ROA is Return on Assets in year T = -1. IORA, IOCFRA, and IROA are the industry-adjusted ORA, OCFRA, and ROA. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. The dependent variable (FV) is for the IPO offer year. ER is the estimated reputation of the underwriter. *, ** represent significance at the 5% and 10% levels respectively.

Panel A:

(1) $FV = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 ER + e$

Variable	Coefficients					
C	-134.885**	-106.193	-104.502	-112.068	-101.584	-100.025
DAC	0.263	0.269	0.501	0.396	0.302	0.504
SG	0.443*	0.330*	0.304*	0.358*	0.301*	0.278*
ORA	-0.641*					
OCFRA		-0.403*				
ROA			-0.598*			
IORA				-0.667*		
IOCFRA					-0.371*	
IROA						-0.583*
AGE	-0.169	-0.292	-0.348	-0.288	-0.343	-0.392
ER	43.093*	39.110*	38.751*	39.821*	38.576*	38.215*
R^2	0.12	0.11	0.12	0.12	0.11	0.11

Table 1.8 (continued)

Panel B:

(2) $AIM1 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 ER + e$

Variable	Coefficients					
C	-0.2773**	-0.2735**	-0.2664**	-0.2603**	-0.2628**	-0.2551
DAC	-0.00004	-0.00002	-0.00005	-0.00003	-0.00002	-0.00005
SG	-0.0009**	-0.0009**	-0.0010**	-0.0009**	-0.0009**	-0.0009**
ORA	0.0419*					
OCFRA		0.0368*				
ROA			0.0357*			
IORA				0.0458*		
IOCFRA					0.0398*	
IROA						0.0389*
AGE	0.0008	0.0008	0.0010	0.0008	0.0008	0.0010
ER	0.0355	0.0359	0.0346	0.0340	0.0348	0.0333
R^2	0.11	0.10	0.11	0.13	0.11	0.11

Panel C:

(3) $AIM2 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 ER + e$

Variable	Coefficients					
C	-0.3370*	-0.3227*	-0.3270*	-0.3193*	-0.3113*	-0.3144*
DAC	-0.00003	-0.00002	-0.00004	-0.00003	-0.00001	-0.00004
SG	-0.0011*	-0.0011*	-0.0012*	-0.0011*	-0.0011*	-0.0012*
ORA	0.0367*					
OCFRA		0.0352*				
ROA			0.0311*			
IORA				0.0411*		
IOCFRA					0.0384*	
IROA						0.0346*
AGE	0.0012**	0.0011	0.0013*	0.0012**	0.0011	0.0013*
ER	0.0398**	0.0389**	0.0391**	0.0382**	0.0377**	0.0376**
R^2	0.11	0.11	0.10	0.12	0.12	0.11

Table 1.8 (continued)

Panel D:

(4) $AIM3 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 ER + e$

Variable	Coefficients					
C	-0.5250*	-0.5238*	-0.5166*	-0.5066*	-0.5106*	-0.5047*
DAC	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
SG	-0.0043*	-0.0043*	-0.0043*	-0.0042*	-0.0042*	-0.0043*
ORA	0.0436*					
OCFRA		0.0383*				
ROA			0.0387*			
IORA				0.0479*		
IOCFRA					0.0420*	
IROA						0.0420*
AGE	0.0015	0.0015	0.0017	0.0015	0.0014	0.0017
ER	0.0602**	0.0610**	0.0597**	0.0586	0.0596**	0.0583
R^2	0.13	0.12	0.12	0.13	0.13	0.13

Table 1.9
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (1.11))

This table reports the regression results of IPO initial firm value or the average industry-adjusted operating performance on IPO firm characteristics by using the estimated reputation (ER). The purpose is to control for endogeneity between earnings management and the choice of underwriters. The instrumental variable, ER, is estimated using model (1.11): $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + C_4 * STD + C_5 * AGE + e$. Panel A shows the results when the dependent variable is the IPO initial firm value (FV). Panel B, C, and D show the results when the dependent variable is the average industry-adjusted Operating Return on Assets (AIM1), the average industry-adjusted Operating Cash Flow Return on Assets (AIM2), and the average industry-adjusted Return on Assets (AIM3) respectively. FV is the initial firm value. DAC is discretionary accruals. SG is the sales growth rate. ORA is Operating Return on Assets in year T = -1. OCFRA is Operating Cash Flow Return on Assets in year T = -1. ROA is Return on Assets in year T = -1. IORA, IOCFRA, and IROA are the industry-adjusted ORA, OCFRA, and ROA. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. The dependent variable (FV) is for the IPO offer year. ER is the estimated reputation of the underwriter. *, ** represent significance at the 5% and 10% levels respectively.

Panel A:

(1) $FV = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 ER + e$

Variable	Coefficients					
C	-137.498**	-115.495	-115.991	-120.914	-112.972	-113.430
DAC	0.222	0.249	0.489	0.373	0.290	0.501
SG	0.445*	0.335*	0.309*	0.364*	0.305*	0.281*
ORA	-0.608*					
OCFRA		-0.396*				
ROA			-0.597*			
IORA				-0.659*		
IOCFRA					-0.370*	
IROA						-0.585*
ER	43.027*	39.790*	39.643*	40.439*	39.463*	39.304*
R^2	0.12	0.11	0.11	0.12	0.10	0.11

Table 1.9 (continued)

Panel B:

(2) $AIM1 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 ER + e$

Variable	Coefficients					
C	-0.3126**	-0.3126**	-0.2925**	-0.3014**	-0.3075**	-0.2865**
DAC	0.00005	0.00006	0.00004	0.00005	0.00006	0.00004
SG	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
ORA	0.0420*					
OCFRA		0.0367*				
ROA			0.0379*			
IORA				0.0441*		
IOCFRA					0.0381*	
IROA						0.0396*
ER	0.0401**	0.0408**	0.0383	0.0393**	0.0404**	0.0376
R^2	0.11	0.10	0.10	0.12	0.11	0.11

Panel C:

(3) $AIM2 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 ER + e$

Variable	Coefficients					
C	-0.3436*	-0.3353**	-0.3240**	-0.3317*	-0.3296**	-0.3169**
DAC	0.00007	0.00008	0.00007	0.00007	0.00009	0.00007
SG	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001
ORA	0.0394*					
OCFRA		0.0363*				
ROA			0.0355**			
IORA				0.0418*		
IOCFRA					0.0379*	
IROA						0.0374*
ER	0.0410**	0.0407**	0.0392	0.0401**	0.0402**	0.0384
R^2	0.10	0.10	0.09	0.11	0.11	0.10

Table 1.9 (continued)

Panel D:

(4) $AIM3 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 ER + e$

Variable	Coefficients					
C	-0.4961**	-0.4925**	-0.4654	-0.4807**	-0.4844**	-0.4581
DAC	0.00005	0.00006	0.00004	0.00005	0.00007	0.00004
SG	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
ORA	0.0608*					
OCFRA		0.0548*				
ROA			0.0566*			
IORA				0.0636*		
IOCFRA					0.0571*	
IROA						0.0588*
ER	0.0563	0.0569	0.0535	0.0552	0.0562	0.0526
R^2	0.09	0.08	0.08	0.09	0.09	0.09

Table 1.10
Weighted least squares regression (instrumental variable ER is estimated using model (1.9))

This table reports the weighted least squares regression results of IPO initial firm value or the average industry-adjusted operating performance on IPO firm characteristics. The purpose is to avoid the impact on our results driven by the difference in the sizes of high-, medium-, and low-reputation groups. In the weighted least squares regression, each group receives equal weight in the estimation. The instrumental variable, ER, is estimated using model (1.9): $AR = C + C_1 * DAC_{-1} + C_2 * Ln(TA_{-1}) + C_3 * [Ln(TA_{-1})]^2 + e$. Panel A shows the results when the dependent variable is the IPO initial firm value (FV). Panel B, C, and D show the results when the dependent variable is the average industry-adjusted Operating Return on Assets (AIM1), the average industry-adjusted Operating Cash Flow Return on Assets (AIM2), and the average industry-adjusted Return on Assets (AIM3) respectively. FV is the initial firm value. DAC is discretionary accruals. SG is the sales growth rate. ORA is Operating Return on Assets in year T = -1. OCFRA is Operating Cash Flow Return on Assets in year T = -1. ROA is Return on Assets in year T = -1. IORA, IOCFRA, and IROA are the industry-adjusted ORA, OCFRA, and ROA. AGE denotes the age of issuing firm. SD is the standard deviation of daily returns from day 6 to day 255. The dependent variable (FV) is for the IPO offer year. ER is the estimated reputation of the underwriter. *, ** represent significance at the 5% and 10% levels respectively.

Panel A:

(1) $FV = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	0.354*	0.353*	0.353*	0.354*	0.351*	0.352*
DAC	0.111	0.108	0.116	0.130	0.144	0.124
SG	-0.026	-0.026	-0.030	-0.035	-0.021	-0.030
ORA	-0.015					
OCFRA		-0.019				
ROA			-0.022			
IORA				-0.071		
IOCFRA					-0.082	
IROA						-0.052
AGE	0.002	0.003	0.001	0.004	0.012	0.002
STD	-0.978*	-0.978*	-0.979*	-0.987*	-0.979*	-0.981*
ER	6.686*	6.686*	6.696*	6.706*	6.666*	6.697*
R^2	0.27	0.27	0.27	0.27	0.27	0.27

Table 1.10 (continued)

Panel B:

(2) $AIM1 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.0007*	-0.0006*	-0.0006*	-0.0007*	-0.0007*	-0.0006*
DAC	0.0026	0.0026	0.0024	0.0023	0.0023	0.0024
SG	-0.0006**	-0.0006*	-0.0004	-0.0002	-0.0003	-0.0003
ORA	0.0005**					
OCFRA		0.0007*				
ROA			0.0006			
IORA				0.0011**		
IOCFRA					0.0007	
IROA						0.0008
AGE	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015
STD	-0.0031	-0.0031	-0.0030	-0.0029	-0.0030	-0.0030
ER	0.0155*	0.0156*	0.0151*	0.0148*	0.0151*	0.0149*
R^2	0.09	0.10	0.09	0.10	0.09	0.09

Panel C:

(3) $AIM2 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.0006*	-0.0005**	-0.0005**	-0.0006*	-0.0006*	-0.0005**
DAC	0.0025	0.0026	0.0024	0.0023	0.0023	0.0024
SG	-0.0005**	-0.0006*	-0.0003	-0.0002	-0.0003	-0.0002
ORA	0.0005**					
OCFRA		0.0007*				
ROA			0.0006			
IORA				0.0011*		
IOCFRA					0.0008**	
IROA						0.0008**
AGE	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004
STD	-0.0042**	-0.0042**	-0.0042**	-0.0040**	-0.0041**	-0.0041**
ER	0.0110*	0.0111*	0.0106*	0.0104*	0.0107*	0.0105*
R^2	0.06	0.06	0.06	0.06	0.06	0.06

Table 1.10 (continued)

Panel D:

(4) $AIM3 = C + C_1 DAC_{t-1} + C_2 SG_{t-1} + C_3 OP_{t-1} + C_4 AGE_{t-1} + C_5 STD + C_6 ER + e$

Variable	Coefficients					
C	-0.0008*	-0.0008*	-0.0008*	-0.0009*	-0.0008*	-0.0008*
DAC	0.0023	0.0025	0.0021	0.0021	0.0020	0.0021
SG	-0.0008*	-0.0008*	-0.0005*	-0.0002	-0.0004**	-0.0003**
ORA	0.0007*					
OCFRA		0.0009*				
ROA			0.0008*			
IORA				0.0012*		
IOCFRA					0.0009*	
IROA						0.0010*
AGE	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004
STD	-0.0099*	-0.0099*	-0.0098*	-0.0096*	-0.0097*	-0.0097*
ER	0.0149*	0.0149*	0.0143*	0.0139*	0.0143*	0.0141*
R^2	0.11	0.11	0.10	0.10	0.10	0.10

Table 2.1
Data description of institutional ownership at the end of each period after IPO

This table presents the sample descriptive statistics of institutional ownership. Panel A is the data descriptive statistics of institutional ownership when the institutional ownership is defined as the number of institutional owners; Panel B is the data descriptive statistics of institutional ownership when the institutional ownership is defined as the percentage of shares owned by all institutions. Q1, Q2, Q3 and Q4 denote the end of the first quarter, the second quarter, the third quarter and the fourth quarter respectively; Y2 and Y3 denote the end of the first year and the second year respectively.

Panel A: institutional ownership - the number of institutional owners

	Q1	Q2	Q3	Q4	Y2	Y3
Mean	31.90	34.05	40.34	45.23	56.24	63.50
Median	29.00	28.00	31.00	35.00	40.50	46.00
Maximum	264.00	428.00	391.00	367.00	402.00	508.00
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Std. Dev.	24.75	33.09	40.09	44.21	57.58	64.20
Probability	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	484	484	484	484	484	484

Panel B: institutional ownership - the percentage of shares owned by all institutions

	Q1	Q2	Q3	Q4	Y2	Y3
Mean	0.24	0.26	0.29	0.31	0.36	0.40
Median	0.20	0.22	0.26	0.28	0.31	0.36
Maximum	1.00	0.99	1.00	1.00	1.00	1.00
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Std. Dev.	0.19	0.18	0.20	0.21	0.26	0.28
Probability	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	484	484	484	484	484	484

Table 2.2
IPO offer prices with different post-IPO institutional ownership and pre-IPO discretionary accruals

This table reports the means (medians) of IPO offer price with different post-IPO institutional ownership and pre-IPO discretionary accruals. Panel A is for the first definition of institutional ownership: the number of institutional owners; Panel B is for the second definition of institutional ownership: the percentage of shares owned by all institutions. High, medium or low denotes IPO firms with top, medium or low one-third discretionary accruals; H, M or L denotes IPO firms with top, medium or low one-third institutional ownership. The numbers in the table are means (medians) of IPO offer prices.

Panel A: institutional ownership – the number of institutional owners

Discretionary	Institutional Ownership at the End of the First Quarter		
Accruals	H	M	L
High	19.83(18.00)	14.99(15.00)	9.99(10.00)
Medium	19.99(17.00)	14.45(14.00)	10.75(10.00)
Low	17.21(17.00)	13.97(14.00)	10.12(9.00)

Panel B: institutional ownership - the percentage of shares owned by all institutions

Discretionary	Institutional Ownership at the End of the First Quarter		
Accruals	H	M	L
High	17.08(16.00)	14.74(15.00)	13.07(12.00)
Medium	14.05(13.50)	14.62(14.00)	17.84(14.50)
Low	14.89(15.00)	14.16(13.25)	12.31(12.00)

Table 2.3
Regression results of simultaneous equations (institutional ownership definition 1)

This table reports the regression results of simultaneous equations. The institutional ownership is defined as the number of institutional owners. Panel A is for the first equation when the dependent variable is the discretionary accruals. Panel B is for the second equation when the dependent variable is the institutional ownership. DAC_{-1} is the discretionary accruals in the pre-IPO year; IH_0 is the institutional ownership one-year after IPO issue date; OP_{-1} is the operating performance in the pre-IPO year, which is measured by operating return on assets (ORA_{-1}), operating cash flow return on assets ($OCFRA_{-1}$), or return on assets (ROA_{-1}) alternatively; $Ln(TA_{-1})$ is the natural log of IPO firms' total assets in the pre-IPO year; Ln(OS) is the natural log of IPO firms' offer size; SG_{-1} is the sales growth in the pre-IPO year; AGE_{-1} is the age of IPO firms in the pre-IPO year; RANK is the reputation rank of the lead underwriter; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year; SIC is a series of industry dummy variables based on IPO firms' standard industrial classification code. *, ** represent the significance at the 5% and 10% level respectively.

Panel A: discretionary accruals

$$DAC_{-1} = C + C_1 IH_0 + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 Ln(OS) + C_5 SG_{-1} + C_6 AGE_{-1} + C_7 RANK + C_8 SIC + e$$

Variables	Coefficients					
C	0.8545**	1.0147*	0.9893**	0.8937**	1.0058*	0.9917**
IH_0	-0.0002	-0.0001	0.0002	-0.0002	-0.0001	0.0003
ORA_{-1}	0.3151*					
$OCFRA_{-1}$		0.2677*				
ROA_{-1}			0.3343*			
$IORA_{-1}$				0.3155*		
$IOCFRA_{-1}$					0.2681*	
$IROA_{-1}$						0.3347*
$Ln(TA_{-1})$	-0.0820	-0.0643	-0.0653	-0.0758	-0.0592	-0.0605
Ln(OS)	-0.0009	-0.0349	-0.0714	-0.0065	-0.0397	-0.0774
SG_{-1}	-0.0029	-0.0032	-0.0025	-0.0030	-0.0032	-0.0025
AGE_{-1}	-0.0023	-0.0028	-0.0011	-0.0021	-0.0026	-0.0009
RANK	-0.0887	-0.0900	-0.0457	-0.0906	-0.0915	-0.0456
R^2	0.73	0.75	0.71	0.73	0.75	0.71

Table 2.3 (continued)

Panel B: institutional ownership

$$IH_0 = C + C_1 DAC_{-1} + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 SG_{-1} + C_5 AGE_{-1} + C_6 RANK + C_7 LEV_0 + C_8 SIC + e$$

Variables	Coefficients					
C	3.623	2.923	4.096	3.695	2.916	4.098
DAC_{-1}	-0.371	-0.554	-0.193	-0.418	-0.569	-0.201
ORA_{-1}	0.297					
$OCFRA_{-1}$		0.313				
ROA_{-1}			0.178			
$IORA_{-1}$				0.317		
$IOCFRA_{-1}$					0.318	
$IROA_{-1}$						0.181
$Ln(TA_{-1})$	14.502*	14.711*	14.484*	14.501*	14.714*	14.485*
SG_{-1}	0.024	0.022	0.023	0.024	0.022	0.023
AGE_{-1}	-0.263*	-0.269*	-0.263*	-0.263*	-0.269*	-0.263*
RANK	10.481*	10.496*	10.379*	10.474*	10.491*	10.378*
LEV_0	-54.058*	-55.059*	-54.314*	-54.065*	-55.066*	-54.317*
R^2	0.34	0.34	0.34	0.34	0.34	0.34

Table 2.4
Regressions results of simultaneous equations (institutional ownership definition 2)

This table reports the regression results of simultaneous equations. The institutional ownership is defined as the percentage of shares owned by all institutions. Panel A is for the first equation when the dependent variable is the discretionary accruals. Panel B is for the second equation when the dependent variable is the institutional ownership. DAC_{-1} is the discretionary accruals in the pre-IPO year; IH_0 is the institutional ownership one-year after IPO issue date; OP_{-1} is the operating performance in the pre-IPO year, which is measured by operating return on assets (ORA_{-1}), operating cash flow return on assets ($OCFRA_{-1}$), or return on assets (ROA_{-1}) alternatively; $Ln(TA_{-1})$ is the natural log of IPO firms' total assets in the pre-IPO year; Ln(OS) is the natural log of IPO firms' offer size; SG_{-1} is the sales growth in the pre-IPO year; AGE_{-1} is the age of IPO firms in the pre-IPO year; RANK is the reputation rank of the lead underwriter; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year; SIC is a series of industry dummy variables based on IPO firms' standard industrial classification code. *, ** represent the significance at the 5% and 10% level respectively.

Panel A: discretionary accruals

$$DAC_{-1} = C + C_1 IH_0 + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 Ln(OS) + C_5 SG_{-1} + C_6 AGE_{-1} + C_7 RANK + C_8 SIC + e$$

Variables	Coefficients					
C	0.8699**	1.0313*	0.9766**	0.9105**	1.0221*	0.9781**
IH_0	-0.0532	-0.1039	0.0062	-0.0681	-0.1136	-0.0036
ORA_{-1}	0.3150*					
$OCFRA_{-1}$		0.2678*				
ROA_{-1}			0.3344*			
$IORA_{-1}$				0.3154*		
$IOCFRA_{-1}$					0.2681*	
$IROA_{-1}$						0.3347*
$Ln(TA_{-1})$	-0.0810	-0.0618	-0.0650	-0.0746	-0.0564	-0.0599
Ln(OS)	-0.0033	-0.0338	-0.0662	-0.0083	-0.0377	-0.0710
SG_{-1}	-0.0030	-0.0032	-0.0025	-0.0030	-0.0032	-0.0025
AGE_{-1}	-0.0023	-0.0028	-0.0011	-0.0021	-0.0027	-0.0010
RANK	-0.0888	-0.0895	-0.0452	-0.0906	-0.0909	-0.0451
R^2	0.73	0.75	0.71	0.73	0.75	0.71

Table 2.4 (continued)

Panel B: institutional ownership

$$IH_0 = C + C_1 DAC_{-1} + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 SG_{-1} + C_5 AGE_{-1} + C_6 RANK + C_7 LEV_0 + C_8 SIC + e$$

Variables	Coefficients					
C	0.190*	0.186*	0.191*	0.191*	0.187*	0.192*
DAC_{-1}	-0.002	-0.005	-0.0003	-0.003	-0.006	-0.001
ORA_{-1}	0.001					
$OCFRA_{-1}$		0.002				
ROA_{-1}			0.0004			
$IORA_{-1}$				0.001		
$IOCFRA_{-1}$					0.002	
$IROA_{-1}$						0.001
$Ln(TA_{-1})$	0.038*	0.039*	0.038*	0.038*	0.039*	0.038*
SG_{-1}	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
AGE_{-1}	-0.0004	-0.0005	-0.0004	-0.0004	-0.0005	-0.0004
RANK	0.016	0.016	0.016	0.016	0.016	0.016
LEV_0	-0.022	-0.030	-0.024	-0.022	-0.030	-0.024
R^2	0.12	0.13	0.12	0.12	0.13	0.12

Table 2.5
Regression results of post-IPO one-year buy-and-hold return on IPO firm characteristics (with discretionary accruals only in IPO issue year)

This table presents the regression results of post-IPO one-year buy-and-hold return on IPO firm characteristics with discretionary accruals only in IPO issue year. The institutional ownership is defined as the number of institutional owners. Panel A, B, and C report the results when we use the raw, market-adjusted (value-weighted) and market-adjusted (equal-weighted) post-IPO one-year buy-and-hold return respectively. BHR_0 is the post-IPO one-year buy-and-hold return; IH_0 is the institutional ownership one-year after IPO issue date; DAC_0 is the discretionary accruals in the IPO issue year; OP_0 is the operating performance in the IPO issue year, which is measured by operating return on assets (ORA_0), operating cash flow return on assets ($OCFRA_0$), or return on assets (ROA_0) alternatively; $Ln(ME_0)$ is the natural log of the market value of equity in the IPO issue year; BM_0 is the book-to-market ratio in the IPO issue year; SG_0 is the sales growth in the IPO issue year; AGE_{-1} is the age of IPO firms in the pre-IPO year; RANK is the reputation rank of the lead underwriter; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year. *, ** represent the significance at the 5% and 10% level respectively.

$$BHR_0 = C + C_1IH_0 + C_2DAC_0 + C_3OP_0 + C_4Ln(ME_0) + C_5BM_0 + C_6SG_0 + C_7AGE_{-1} + C_8RANK + C_9LEV_0 + e$$

Panel A: raw post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.708	0.728	0.738	0.710	0.736	0.739
IH_0	0.003	0.003	0.004	0.003	0.003	0.003
DAC_0	-0.585*	-0.596*	-0.561*	-0.598*	-0.608*	-0.572*
ORA_0	0.058					
$OCFRA_0$		0.078				
ROA_0			0.009			
$IORA_0$				0.084		
$IOCFRA_0$					0.092	
$IROA_0$						0.026
$Ln(ME_0)$	-0.150	-0.145	-0.172	-0.145	-0.143	-0.169
BM_0	0.307**	0.310**	0.303**	0.312**	0.313**	0.306**
SG_0	0.008	0.011	0.004	0.010	0.012	0.005
AGE_{-1}	-0.004	-0.004	-0.003	-0.004	-0.004	-0.003
RANK	-0.012	-0.020	0.010	-0.017	-0.024	0.006
LEV_0	0.585	0.577	0.632	0.570	0.569	0.622
R^2	0.11	0.11	0.11	0.11	0.11	0.11

Table 2.5 (continued)

Panel B: market-adjusted (value-weighted) post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.262	0.278	0.282	0.262	0.285	0.283
IH_0	0.002	0.002	0.003	0.002	0.002	0.003
DAC_0	-0.554*	-0.566*	-0.529*	-0.567*	-0.578*	-0.541*
ORA_0	0.042					
$OCFRA_0$		0.068				
ROA_0			-0.003			
$IORA_0$				0.072		
$IOCFRA_0$					0.083	
$IROA_0$						0.016
$Ln(ME_0)$	-0.080	-0.074	-0.100	-0.074	-0.072	-0.096
BM_0	0.365*	0.368*	0.361*	0.370*	0.372*	0.364*
SG_0	0.008	0.011	0.005	0.010	0.013	0.006
AGE_{-1}	-0.005	-0.006	-0.005	-0.005	-0.006	-0.005
RANK	-0.010	-0.018	0.011	-0.016	-0.022	0.007
LEV_0	0.529	0.518	0.573	0.511	0.509	0.562
R^2	0.10	0.10	0.10	0.10	0.11	0.10

Panel C: market-adjusted (equal-weighted) post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.427	0.449	0.451	0.429	0.456	0.452
IH_0	0.002	0.002	0.002	0.002	0.002	0.002
DAC_0	-0.574*	-0.586*	-0.550*	-0.588*	-0.599*	-0.562*
ORA_0	0.054					
$OCFRA_0$		0.078				
ROA_0			0.004			
$IORA_0$				0.083		
$IOCFRA_0$					0.093	
$IROA_0$						0.024
$Ln(ME_0)$	-0.107	-0.102	-0.128	-0.101	-0.100	-0.125
BM_0	0.356*	0.360*	0.352*	0.361*	0.364*	0.356*
SG_0	0.010	0.014	0.006	0.013	0.015	0.008
AGE_{-1}	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
RANK	-0.002	-0.011	0.020	-0.008	-0.014	0.016
LEV_0	0.466	0.458	0.514	0.449	0.449	0.503
R^2	0.10	0.10	0.10	0.10	0.10	0.10

Table 2.6

Regression results of post-IPO one-year buy-and-hold return on IPO firm characteristics (with discretionary accruals in both pre-IPO year and IPO issue year)

This table presents the regression results of post-IPO one-year buy-and-hold return on IPO firm characteristics with discretionary accruals in both pre-IPO year and IPO issue year. The institutional ownership is defined as the number of institutional owners. Panel A, B, and C report the results when we use the raw, market-adjusted (value-weighted) and market-adjusted (equal-weighted) post-IPO one-year buy-and-hold return respectively. BHR_0 is the post-IPO one-year buy-and-hold return; IH_0 is the institutional ownership one-year after IPO issue date; DAC_{-1} is the pre-IPO discretionary accruals; $PDAC_0$ is the proxy for the discretionary accruals in the IPO issue year; OP_0 is the operating performance in the IPO issue year, which is measured by operating return on assets (ORA_0), operating cash flow return on assets ($OCFRA_0$), or return on assets (ROA_0) alternatively; $Ln(ME_0)$ is the natural log of the market value of equity in the IPO issue year; BM_0 is the book-to-market ratio in the IPO issue year; SG_0 is the sales growth in the IPO issue year; AGE_{-1} is the age of IPO firms in the pre-IPO year; RANK is the reputation rank of the lead underwriter; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year. *, ** represent the significance at the 5% and 10% level respectively.

$$BHR_0 = C + C_1IH_0 + C_2DAC_{-1} + C_3PDAC_0 + C_4OP_0 + C_5Ln(ME_0) + C_6BM_0 + C_7SG_0 + C_8AGE_{-1} + C_9RANK + C_{10}LEV_0 + e$$

Panel A: raw post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.7428	0.7585	0.7492	0.7451	0.7664	0.7509
IH_0	0.0028	0.0026	0.0031	0.0026	0.0025	0.0030
DAC_{-1}	0.0510	0.0488	0.0610**	0.0489	0.0473	0.0595
$PDAC_0$	-0.6298*	-0.6390*	-0.6107*	-0.6409*	-0.6491*	-0.6182*
ORA_0	0.0391					
$OCFRA_0$		0.0609				
ROA_0			-0.0183			
$IORA_0$				0.0653		
$IOCFRA_0$					0.0738	
$IROA_0$						-0.0018
$Ln(ME_0)$	-0.1468	-0.1415	-0.1623	-0.1418	-0.1396	-0.1594
BM_0	0.3139**	0.3161**	0.3088**	0.3183**	0.3191**	0.3108**
SG_0	0.0111	0.0140	0.0069	0.0131	0.0149	0.0082
AGE_{-1}	-0.0040	-0.0043	-0.0036	-0.0041	-0.0044	-0.0037
RANK	0.0121	0.0046	0.0308	0.0068	0.0011	0.0274
LEV_0	0.5897	0.5796	0.6320	0.5747	0.5719	0.6228
R^2	0.13	0.13	0.13	0.13	0.13	0.13

Table 2.6 (continued)

Panel B: market-adjusted (value-weighted) post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.2974	0.3095	0.2943	0.2971	0.3167	0.2962
IH_0	0.0022	0.0020	0.0025	0.0020	0.0020	0.0024
DAC_{-1}	0.0493	0.0469	0.0588	0.0470	0.0453	0.0570
$PDAC_0$	-0.5970*	-0.6064*	-0.5767*	-0.6076*	-0.6163*	-0.5846*
ORA_0	0.0244					
$OCFRA_0$		0.0511				
ROA_0			-0.0296			
$IORA_0$				0.0541		
$IOCFRA_0$					0.0661	
$IROA_0$						-0.0105
$Ln(ME_0)$	-0.0772	-0.0715	-0.0907	-0.0715	-0.0690	-0.0873
BM_0	0.3708*	0.3741*	0.3665*	0.3753*	0.3773*	0.3687*
SG_0	0.0108	0.0140	0.0071	0.0132	0.0151	0.0086
AGE_{-1}	-0.0054	-0.0057	-0.0050	-0.0055	-0.0058	-0.0051
RANK	0.0134	0.0056	0.0313	0.0075	0.0016	0.0275
LEV_0	0.5324	0.5201	0.5730	0.5150	0.5113	0.5620
R^2	0.12	0.12	0.12	0.12	0.12	0.12

Panel C: market-adjusted (equal-weighted) post-IPO one-year buy-and-hold return

Variables	Coefficients					
C	0.4661	0.4833	0.4661	0.4676	0.4914	0.4684
IH_0	0.0017	0.0016	0.0020	0.0015	0.0015	0.0019
DAC_{-1}	0.0469	0.0445	0.0566	0.0446	0.0428	0.0548
$PDAC_0$	-0.6163*	-0.6263*	-0.5973*	-0.6281*	-0.6370*	-0.6059*
ORA_0	0.0362					
$OCFRA_0$		0.0611				
ROA_0			-0.0224			
$IORA_0$				0.0660		
$IOCFRA_0$					0.0759	
$IROA_0$						-0.0030
$Ln(ME_0)$	-0.1043	-0.0991	-0.1190	-0.0986	-0.0968	-0.1156
BM_0	0.3623*	0.3657*	0.3578*	0.3671*	0.3690*	0.3602*
SG_0	0.0133	0.0164	0.0090	0.0155	0.0175	0.0105
AGE_{-1}	-0.0052	-0.0055	-0.0047	-0.0053	-0.0055	-0.0048
RANK	0.0209	0.0129	0.0400	0.0149	0.0089	0.0360
LEV_0	0.4698	0.4597	0.5142	0.4524	0.4510	0.5033
R^2	0.12	0.12	0.12	0.12	0.12	0.12

Table 2.7
Robustness tests for simultaneous equations

This table reports the robustness test results of simultaneous equations. The institutional ownership is defined as the number of institutional owners. Panel A is for the first equation when the dependent variable is the discretionary accruals. Panel B is for the second equation when the dependent variable is the institutional ownership. DAC_{-1} is the discretionary accruals in the pre-IPO year; ΔIH_0 is the change in institutional ownership between the end of the fourth quarter and the end of the first quarter following IPO issue date; OP_{-1} is the operating performance in the pre-IPO year, which is measured by operating return on assets (ORA_{-1}), operating cash flow return on assets ($OCFRA_{-1}$), or return on assets (ROA_{-1}) alternatively; $Ln(TA_{-1})$ is the natural log of IPO firms' total assets in the pre-IPO year; Ln(OS) is the natural log of IPO firms' offer size; SG_{-1} is the sales growth in the pre-IPO year; AGE_{-1} is the age of IPO firms in the pre-IPO year; RANK is the reputation rank of the lead underwriter; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year; SIC is a series of industry dummy variables based on IPO firms' standard industrial classification code. *, ** represent the significance at the 5% and 10% level respectively.

Panel A: discretionary accruals

$$DAC_{-1} = C + C_1\Delta IH_0 + C_2OP_{-1} + C_3Ln(TA_{-1}) + C_4Ln(OS) + C_5SG_{-1} + C_6AGE_{-1} + C_7RANK + C_8SIC + e$$

Variables	Coefficients					
C	0.851**	1.009*	0.971**	0.888**	0.998*	0.971**
IH_0	-0.001	-0.001	-0.0003	-0.001	-0.001	-0.0003
ORA_{-1}	0.315*					
$OCFRA_{-1}$		0.268*				
ROA_{-1}			0.334*			
$IORA_{-1}$				0.316*		
$IOCFRA_{-1}$					0.268*	
$IROA_{-1}$						0.335*
$Ln(TA_{-1})$	-0.081	-0.063	-0.064	-0.074	-0.058	-0.059
Ln(OS)	-0.004	-0.036	-0.066	-0.010	-0.041	-0.071
SG_{-1}	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
AGE_{-1}	-0.002	-0.003	-0.001	-0.002	-0.003	-0.001
RANK	-0.086	-0.088	-0.044	-0.088	-0.089	-0.044
R^2	0.73	0.75	0.71	0.73	0.75	0.71

Table 2.7 (continued)

Panel B: institutional ownership

$$IH_0 = C + C_1 DAC_{-1} + C_2 OP_{-1} + C_3 Ln(TA_{-1}) + C_4 SG_{-1} + C_5 AGE_{-1} + C_6 RANK + C_7 LEV_0 + C_8 SIC + e$$

Variables	Coefficients					
C	-17.202	-17.275	-17.141	-17.093	-17.244	-17.129
DAC_{-1}	-0.529	-0.496	-0.204	-0.609	-0.546	-0.224
ORA_{-1}	0.343					
$OCFRA_{-1}$		0.269				
ROA_{-1}			0.250			
$IORA_{-1}$				0.377		
$IOCFRA_{-1}$					0.287	
$IROA_{-1}$						0.259
$Ln(TA_{-1})$	4.452*	4.512*	4.455*	4.448*	4.511*	4.455*
SG_{-1}	0.027	0.026	0.028	0.027	0.026	0.028
AGE_{-1}	-0.133	-0.134	-0.131	-0.133	-0.134	-0.131
RANK	5.481*	5.441*	5.455*	5.472*	5.434*	5.453*
LEV_0	-17.101	-17.351	-17.216	-17.112	-17.360	-17.220
R^2	0.09	0.09	0.09	0.09	0.09	0.09

Table 2.8
Regression results for testing three hypotheses

This table reports the regression results for testing the commonly cited three hypotheses in explaining motives of IPO issuers. Panel A presents the results when the institutional ownership is defined as the number of institutional investors. Panel B presents the results when the institutional ownership is defined as the percentage of shares owned by all institutions. ΔIH_0 is the change in institutional ownership between the end of the fourth quarter and the end of the first quarter; ECR_{1-2} is the excess return for the 2-year period after the fourth quarter; ROA_0 is the return on assets in the IPO issue year; ROA_{1-2} is the average return on assets during the first and second year; STD_0 is the standard deviation of stock returns from day 6 to day 255. DAC_{-1} is the pre-IPO discretionary accruals; DAC_0 is the discretionary accruals in the IPO issue year; RANK is the reputation rank of the lead underwriter; Ln(OS) is the natural log of IPO offer size; LEV_0 is IPO firms' leverage ratio (long-term debt / total assets) in the IPO issue year. *, ** represent the significance at the 5% and 10% level respectively.

$$\Delta IH_0 = C + C_1 ECR_{1-2} + C_2 ROA_0 + C_3 ROA_{1-2} + C_4 STD_0 + C_5 DAC_{-1} + C_6 DAC_0 + C_7 RANK + C_8 \ln(OS) + C_9 LEV_0 + e$$

Panel A: institutional ownership is the number of institutional investors

Varibles	Coefficients			
C	-48.43*	-39.82*	-47.77*	-39.47*
ECR_{1-2}	-1.09	-0.63	-1.26	-1.59
ROA_0	0.56	3.65**		
ROA_{1-2}	-7.40	-8.61**	-6.69	-4.83
STD_0	397.01*	342.39*	384.57*	300.98**
DAC_{-1}	-0.99	-0.52	-0.99	-0.67
DAC_0		-9.29*		-6.29*
RANK	-1.36	-1.92	-1.30	-1.47
Ln(OS)	12.66*	11.99*	12.52*	11.55*
LEV_0	2.38	0.93	2.16	0.35
R^2	0.18	0.24	0.18	0.21

Table 2.8 (continued)

Panel B: institutional ownership is the percentage of shares owned by all institutions

Varibles	Coefficients			
C	0.112	0.144	0.097	0.144
ECR_{1-2}	-0.005	-0.003	-0.001	-0.003
ROA_0	-0.013	-0.001		
ROA_{1-2}	-0.015	-0.019	-0.031	-0.020
STD_0	-1.412	-1.612	-1.130	-1.598
DAC_{-1}	-0.002	-0.001	-0.002	-0.0005
DAC_0		-0.034**		-0.035*
RANK	0.001	-0.001	0.0001	-0.001
Ln(OS)	-0.009	-0.011	-0.005	-0.011
LEV_0	0.030	0.025	0.035	0.025
R^2	0.04	0.06	0.03	0.06

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