The Certification and Monitoring Roles of Underwriters in IPO Earnings Management

Abstract: The purpose of this paper is to investigate the certification and monitoring roles played by underwriters in IPO earnings management. Prior studies show that IPO issuers have incentives to employ opportunistic earnings management to enhance initial firm values. However, the certification role of underwriters has been largely overlooked. We argue that there is a negative relation between underwriter reputation and IPO earnings management. Moreover, we think that underwriters have strong incentives to continue providing monitoring to the firms they take public due to the lucrative business relationships. We thus hypothesize that there is a positive relation between underwriter reputation and post-IPO firm operating performance. Using a sample of 367 IPOs, we obtain results consistent with our hypotheses. We find that IPOs underwritten by lower-reputation underwriters have more initial discretionary accruals and higher initial firm values, indicating there is a significantly negative relation between IPO earnings management and underwriter reputation. We also find that the post-IPO operating performance of IPOs is significantly and positively related to underwriter reputation. For the robustness test, we consider the possibility that IPO earnings management and the choice of underwriters are endogenously determined. An instrumental variable two-stage least squares regression and a weighted least squares regression confirm the robustness of our results.

Keywords: IPO Earnings Management Underwriter

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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.

The rest of this article is as follows. Next section we develop two hypotheses to address the certification and monitoring roles of underwriters respectively. In section 3, we describe the sample and methodology. The regression results are presented and discussed in section 4. In section 5, we conduct the robustness tests. Section 6 concludes the article.

2. Hypothesis development

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, 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.

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 security, 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.

3. Sample and methodology

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.

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:

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

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):

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

$$DAC_{jy} = [TAC_{jy}/TA_{jy-1}] - a_{0j}[1/TA_{jy-1}] - a_{1j}[(\Delta REV_{jy} - \Delta REC_{jy})/TA_{jy-1}] - a_{2j}[PPE_{jy}/TA_{jy-1}] \quad \text{------ (3)}$$

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 here]

Descriptive statistics for the estimated discretionary accruals are reported in Table 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 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 2 here]

In Table 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.

4. Analysis and results

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.

$$FV_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{------ (4)}$$

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 3 here]

Table 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.

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 4 here]

Table 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 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 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.

$$AIM1_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (5)}$$

$$AIM2_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (6)}$$

$$AIM3_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 NAC_{i(t-1)} + C_3 SG_{i(t-1)} + C_4 OP_{i(t-1)} + C_5 \ln(OS)_i + C_6 AGE_{i(t-1)} + C_7 SD_i + e_i \quad \text{----- (7)}$$

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 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 5b for IPOs underwritten by medium-reputation underwriters. For IPOs underwritten by low-reputation underwriters, results in Table 5c show more than half (six out of nine) of the coefficients of DAC are significantly negative. In Table 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 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 5a, 5b, and 5c here]

5. Robustness tests

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]

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + e_i \quad \text{------- (9)}$$

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + C_4 SD + e_i \quad \text{------- (10)}$$

$$AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 Ln(TA_{i(t-1)}) + C_3 (LnTA_{i(t-1)})^2 + C_4 SD_i + C_5 AGE_{i(t-1)} + e_i \quad \text{------- (11)}$$

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.

$$FV_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 SG_{i(t-1)} + C_3 OP_{i(t-1)} + C_4 \ln(TA_{t-1})_i + C_5 AGE_{i(t-1)} + C_6 SD_i + C_7 ER_i + e_i \quad \text{------ (12)}$$

$$AIM_i = \mathrm{C} + C_1 DAC_{i(t-1)} + C_2 SG_{i(t-1)} + C_3 OP_{i(t-1)} + C_4 \ln(TA_{t-1})_i + C_5 AGE_{i(t-1)} + C_6 SD_i + C_7 ER_i + e_i \quad \text{------ (13)}$$

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 6 here]

Table 6 presents the regression results of model (9), (10), and (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 6 report the regression results for the models (9), (10) and (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 (9) to compute the estimated reputation for each underwriter. In Panel B, we add the standard deviation on the right side of the model (9) to get the model (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 (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 (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 (11).

[Insert Table 7 here]

Table 7 reports the regression results when ER is estimated using model (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 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 8 and 9 here]

Tables 8 and 9 report regression results when the instrumental variable, ER, is estimated using models (10) and (11) respectively. The results on the initial firm value of IPO issuers are very similar and consistent with those reported in Table 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 8 and 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 8 and 9 could be weaker than that in Table 7. Nevertheless, results in Tables 8 and 9 are still consistent with those in Table 7.

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 10 here]

From the results in Table 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 7 to 9. In sum, the additional tests in section 5 prove that our empirical results are robust.

6. Conclusions

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.

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 5a to 5c.

5. We have also estimated underwriter reputation using the following simple regression model: $AR_i = \mathrm{C} + C_1 DAC_{i(t-1)} + e_i$. 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
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 (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 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 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 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 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 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.

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

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

DAC	-0.001	-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 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 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 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 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 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 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 (9), (10) and (11) respectively. We apply the regression coefficients from each model (9), (10) and (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 7
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (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 (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 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 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 8
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (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 (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 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 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 9
Control for endogeneity between earnings management and the choice of underwriters
(Instrumental variable ER is estimated using model (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 (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 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 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 10
Weighted least squares regression (instrumental variable ER is estimated using model (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 (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 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 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