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Firm's motives behind SEOs, earnings management, and performance

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ABSTRACT

issuing new shares

This study hypothesizes that financial constraints and financial distress risk can drive firms to report greater earnings around seasoned equity offerings (SEOs) but result in different performance in the long run. We confirm this argument and show that aggressively earnings-managing firms with financial constraints and high distress risk perform well and poorly after SEOs, respectively. These results imply that financially constrained firms fairly signal their post-issue profitability due to the release of operational inflexibility, while those with high distress risk inflate earnings to benefit from greater proceeds. We contribute to the literature by showing that firms with different characteristics convey distinct information in reported earnings around SEOs. This finding reminds auditors to watch firms with defective reporting intention and helps long-run investors select right targets.

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1. Introduction

Empirical studies (e.g., Rangan (1998) and Teoh, Welch, and Wong (1998)) show that firms tend to overstate their earnings around seasoned equity offerings (SEOs), which can help them complete their new issues and increase their proceeds.[2] However, firms with aggressive earnings management are prone to perform poorly after SEOs. A typical explanation for this finding is that some issuers opportunistically manipulate earnings upward before SEOs, leading investors to be overoptimistic about future earnings and overvalue these firms.

By contrast, DuCharme, Malatesta, and Sefcik (2004) argue that earnings management may cause penalties to issuers, including explicit lawsuits due to defective accounting disclosures and implicit costs arising from poor reputation. Agarwal, Chomsisengphet, Liu, and Ghon Rhee (2007) find that banks faced record-high non-performing loans during the severe recession period and, therefore, banks on average may have been restrained from using loan loss provisions to smooth income and/or to replenish regulatory capital. These adverse effects can impair issuers' credit and ability of raising capital, impelling them to signal validly. In this situation, firms would manage earnings to achieve a fair value for stock issues, rather than an excessive one. This implies that investors are informed about issuers' discretionary accounting choices.

This study contends that the above two seemingly contradictory phenomena can exist simultaneously. Some firms exaggerate their earnings around SEOs, while some fairly report their upward earnings. Both of them look like earnings manipulations but would perform differently in the long run. According to this inference, not all firms with "earnings management" would perform poorly after SEOs. We investigate this issue by hypothesizing that motives behind SEOs are associated with the reliability of their

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[2] Kim and Park (2005)how that SEO firms would manage earnings aggressively to push up their offer prices.

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reported earnings, and would result indifferent long-run post-issue performance. In particular, we consider two motives behind SEOs: release of financial constraints and decrease of distress risk.[3].

Financial constraints refer to a firm's inability to obtain funds to satisfy its investment demands, which could be due to credit limitation, difficulty in borrowing or issuing equity, lack of collateral, and the like. On the other hand, financial distress means that a firm has difficulty in continuing its business operation. These two factors are correlated but not the same.[4] For instance, younger firms with growth potential may face financial constraints due to their short credit history but have low financial distress probabilities.

Financial constraints and financial distress involve different risk. Firms with financial constraints have greater risk because they are confronted with operating inflexibility (see Zhang (2005)). If financially constrained firms gain operating flexibility and engage in growth activities after SEOs, they may improve their operations and have superior stock performance after SEOs.[5] In this case, these firms would report upward earnings around SEOs to present their fair values. On the other hand, firms' distress risk may result from the weakness of their fundamentals (e.g., low profitability). Firms can decrease their distress risk via SEOs but unlikely to make significant progress of their fundamentals.[6] Hence, high-distress firms that manage earnings aggressively around SEOs are likely motivated by their own interests, such as survival or avoidance of going out of business. In this situation, firms' pre-SEO distress risk would be negatively associated with post-SEO performance.

As an aside, research has paid attention to the impacts of financial constraints and financial distress on firms' subsequent returns. Current evidence shows a mixed relation between financial constraints and subsequent returns.[7] On the other hand, a number of articles find that firms with high distress risk tend to deliver low average realized returns (e.g., Dichev (1998); Griffin and Lemmon (2002), and Campbell, Hilscher, and Szilagyi (2008) among others).In contrast to these studies treating financial constraints or financial distress as a common factor affecting returns, this study views these two variables as motives inducing SEO earnings management and investigates how they affect post-issue returns. In other words, we are concerned with firms' performance after changes in constraints and distress due to SEOs, rather than the cross-sectional relation between the variable and subsequent returns.

Using Ohlson's (1980) and Kaplan and Zingales' (1997) methods to measure financial distress risk and financial constraints, respectively, we show that both these two factors drive firms to report greater earnings. Financially constrained and high-distress firms with aggressive earnings management tend to perform well and poorly after SEOs, respectively. We ascribe this finding to the difference of risk contained in these two factors. Firms that manage earnings to release financial constraints appear to improve their businesses after the reduction of risk arising from operational inflexibility. In other words, the remove of financial constraints can help firms recover their fundamentals. They thus use earnings management as an instrument to communicate their post-issue fair values. By contrast, firms with high distress risk appear to be unable to improve their business operations and thus underperform after SEOs.

Prior studies show that SEO firms tend to perform poorly in the long run (e.g., Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995)), especially for those with aggressive earnings management (e.g., Teoh et al. (1998)). Chen, Lin, Wang, and Wu (2010) show that the frequency of earnings management is the highest when firms try to meet analysts' forecasted earnings. These findings imply that both new equity financing and greater reported earnings around SEOs are negative signals. We show that it is true for high-distressed firms, but not for financially constrained firms. This result may not only contribute to the signaling literature but also help practitioners. It prompts auditors to keep an eye on firms with defective reporting intention (i.e., unconstrained and high-distress firms) and helps long-run investors select right targets (i.e., constrained and low-distress firms reporting greater earnings).

The remainder of this study is organized as follows. Section 2 introduces the methodology. Section 3 describes the data and sample characteristics. Section 4 reports the empirical results. Finally, section 5 summarizes the findings.

2. Methodology

2.1. Earnings management measures

We employ the method suggested by Louis (2004) and Kothari, Leone, and Wasley (2005) to estimate quarterly discretionary accruals. For each year, we use the following regression to estimate current accruals for each industry (2-digit SIC code):

$$CA_i = \sum_{j=1}^{4} \alpha_j Q_j + \lambda(\Delta Sales_i - \Delta AR_i) + \varepsilon_i, \quad (1)$$

[3] DeAngelo, DeAngelo, and Stulz (2010) document that cash squeeze is the main reason for firms' SEOs. They also find that a subset of mature firms appear to decrease their financial risk via SEOs. The variable, financial constraints, we use is related to cash squeeze.

[4] In our sample, the correlation coefficient between financial constraints (KZ index) and financial distress (Ohlson score) is 0.256.

[5] Li (2011) argues that high-R&D firms facing financial constraints would restrict their development of ongoing projects, and thus have greater risk. His empirical results support this argument by finding a positive relation between financial constraints and expected stock returns for firms with high R&D intensity.

[6] Firms can use SEOs to achieve their specific purposes, such as increase in their bargaining power against their suppliers/customers (Kale and Shahrur (2007)) and better credit ratings (Kisgen (2006)).

[7] Lamont, Polk and Saa-Requejo (2001) uncover a financial constraint factor that captures comovements in stock returns. They find, however, constrained firms earn lower returns than unconstrained firms. By contrast, Whited and Wu (2006) confirm the existence of a financial constraint factor and find that constrained firms earn higher returns in the cross-sectional regression test.

where CA_i is the current accrual of firm i, Q_j is a dummy set as 1 in quarter j and 0 otherwise, $\Delta Sales_i$ is the quarterly change in sales, ΔAR_i is the quarterly change in accounts receivable, and ε_i is the regression error term. All the variables are scaled by assets at the beginning of quarter in order to reduce heteroscedasticity. We delete the observation if its absolute value of total current accruals to scaled beginning total assets is greater than one. Current accrual is empirically computed as follows (numbers in parentheses are Compustat codes):

$$\begin{aligned} CA = {} & \Delta[Current\ Assets(Q40) - Cash(Q36)] \\ & - \Delta[Current\ Liabilities(Q49) - Current\ Maturity\ of\ Long\text{-}Term\ Debt(Q45)] \end{aligned} \tag{2}$$

In Eq. (1), the increase in accounts receivable is subtracted from sales growth to allow for the possibility of credit sales manipulation by the SEO firms, who might allow generous credit policies to obtain high sales prior to the offering. The estimated residual ($\hat{\varepsilon}$) is the discretionary current accrual (DCA), which is assumed to be not affected by firm and industry conditions. Specifically, DCA is calculated as.

$$DCA_i = CA_i - \sum_{j=1}^{4} \hat{\alpha}_j Q_j + \hat{\lambda}(\Delta Sales_i - \Delta AR_i) \tag{3}$$

Kothari et al. (2005) suggest that discretionary accruals estimated by regressions tend to be biased toward rejecting the null hypothesis of no earnings management when the event is associated with performance, and recommend adjusting the discretionary accruals by the average discretionary accrual of a portfolio matched on prior-year return-on-assets (ROA) and industry. In consideration of this bias, we create five portfolios by their ROAs four quarters ago for each quarter and for each industry (two-digit SIC code). We then calculate an issuer's abnormal current accruals (ABCA), defined as the difference between its discretionary current accrual and the average DCA of its matched portfolio, as another measure of earnings management.

Since the results using DCA and ABCA are qualitatively similar, we only report the results of DCA because it can avoid the bias of selecting matching portfolios. In our empirical tests, we rank the sample firms by their DCAs and assign them into different earnings-management groups.

2.2. Measure of financial constraints

We use Kaplan and Zingales' (KZ, 1997) method to measure financial constraints. Specifically, the KZ value of firm i at time t is as follows:

$$KZ_{it} = -\beta_1(CF/TA)_{it} + \beta_2(LD/TA)_{it} - \beta_3(DIV/TA)_{it} - \beta_4(LA/TA)_{it} + \beta_5 Q_{it}, \tag{4}$$

where β_j is the jth estimated coefficient,[8] *CF/TA* is cash flow over total assets, *LD/TA* is long-term debt over total assets, *DIV/TA* is dividends over total assets, *LA/TA* is liquid assets over total assets, and *Q* is Tobin's q, calculated as (*BV* of assets − *BV* of equity − Deferred taxes + *MV* of equity) / *BV* of assets, where *BV* and *MV* are book and market values, respectively.

We calculate the KZ index using two sets of data: one at the end of the fiscal year and the other at the end of the quarter preceding the SEO date. Since the results are qualitatively the same, for brevity we only report those based on the yearly data which are free of the seasonal effect. We rank SEO firms by their KZ values each calendar year and divide them evenly into two groups.

2.3. Meaure of financial distress

We use O-score in Ohlson's (1980) to measure the financial distress risk and the O-Score of firm i at time t is as follows:

$$\text{O-score}_{it} = \alpha_0 + \alpha_1 \ln(TA_{it}) + \alpha_2 + \frac{TL_{it}}{TA_{it}} + \alpha_3 \frac{WC_{it}}{TA_{it}} + \alpha_4 \frac{CL_{it}}{CA_{it}} + \alpha_5 \frac{NI_{it}}{TA_{it}} + \alpha_6 \frac{FFO_{it}}{TL_{it}} + \alpha_7 \frac{NI_{it} - NI_{it-1}}{|NI_{it}| + |NI_{it-1}|} + \alpha_8 D_1 + \alpha_9 D_2, \tag{5}$$

where α_j is the jth estimated coefficient,[9] TA is total assets, WC is working capital, CL is current liabilities, CA is current assets, NI is net income, FFO is funds from operations, and TL is total liabilities. In addition, $D_1 = 1$ if TL > TA, 0 otherwise. $D_2 = 1$ if a net loss for the last two years, 0 otherwise.

From Eq. (5), we find that the calculation of O-score takes firm's fundamental characteristics into account. For example, most of variables come from income statement or balance sheet. In contrast, the KZ index focuses more on the operational characteristics, especially the sources and the uses of cash flows. As we mention earlier, financial constraints have substantial impact on operational side and financial distress risk reflects firm's fundamental problems. Therefore, the use of both measures is consistent with our previous argument about the difference between financial constraints and financial distress risk.

[8] The values of the coefficients are $\beta_1 = 1.0019$, $\beta_2 = 3.1392$, $\beta_3 = 39.3678$, $\beta_4 = 1.3148$, and $\beta_5 = 0.2826$ (see Whited and Wu (2006), p. 543).

[9] The values of the coefficients are $\alpha_0 = -1.32$, $\alpha_1 = -0.407$, $\alpha_2 = 6.03$, $\alpha_3 = -1.43$, $\alpha_4 = 0.757$, $\alpha_5 = -2.37$, $\alpha_6 = -1.83$, $\alpha_7 = -0.521$, $\alpha_8 = -1.72$, and $\alpha_9 = 0.285$ (see Ohlson (1980)).

2.4. Long-run performance measures

We calculate buy-and-hold abnormal returns (BHARs) of a portfolio as follows:

$$BHARs_p = \frac{1}{N}\sum_{j-1}^{T}\left[\prod_{t-1}^{T}\left(1+R_{j,t}\right)-\prod_{t-1}^{T}\left(1+R_{bench,t}\right)\right], \tag{6}$$

where $R_{j,t}$ and $R_{bench,t}$, respectively, denote firm j's returns and benchmark returns on day t, and N is the number of firms. We adopt returns of CRSP NYSE/AMEX/NASDAQ value-weighted (VW) indices and the size × BM portfolios as benchmarks. We calculate return from the new issue day and set a year to have 252 trading days. If the firm is delisted, returns are compounding until the delist date.

The event-time methodology has been criticized of overstating issuers' long-run underperformance (Schultz (2003) and Gompers and Lerner (2003)). To overcome this defect, we use the Fama and French (1993)) model plus price momentum (i.e., the four-factor model) to conduct time-series regressions, which can be written as

$$R_{p,t}-R_{f,t} = \alpha_{j,T} + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \varepsilon_t, \tag{7}$$

where $R_{p,t}$ is return on the (equally weighted) portfolio, $R_{f,t}$ is risk-free rate, $RMRF_t$ is market return minus risk-free rate, SMB_t is return on a portfolio of small firms minus return on a portfolio of large firms, HML_t is return on a portfolio of high book-to-market (BM) firms minus return on a portfolio of low BM firms, *Momentum* is return on a portfolio of good performers minus return on a portfolio of poor performers, and subscript t indicates month t. In this model, the intercept is used to evaluate the abnormal performance of the portfolio, which is the long-run risk-adjusted return for each SEO estimated as the intercept from the four-factor regression involving individual SEO monthly excess returns starting from the month following the issue date and ending in the 36th month after the SEO.

In the regression analyses, we control for institutional ownership, size, book to market, and the runups. Past studies (e.g., Gibson, AssemSafieddine, and RamanaSonti (2004); Chemmanura, He, and Hu (2009)) show that pre-SEO institutional shareholdings affect the issuer's long-run performance. This finding can arise from the possibility that institutional investors own private information or can infer the future performance of SEO firms. In addition, Brav, Geczy, and Gompers (2000) find more severe long-run underperformance for small-firm and low book-to-market SEOs. They attribute the long-run underperformance to firm factors (e.g., size and book-to-market ratio) rather than equity issuance. Hence, we consider size and book-to-market ratio as control variables. Finally, the timing model suggests that the price runup prior to SEOs is due to investors' excessive optimism about SEO firms' prospects and managers' intentions to take advantage of the window of opportunity to issue equity. In our analyses, we utilize cumulative excess return from month −6 to month −4 (CER(−6,−4)) to examine the effect of price runup on earnings management, and CER(−3, −1) to investigate its impact on the SEO long-run performance.

3. Data and sample

3.1. Data

We collect data on SEOs completed during 1990–2008 (19 years) from the Thomson/SDC New-Issues database and trace their returns up to 2011. The data items include firm name, CUSIP number, SEO filing and effective dates, SIC code, number of new shares offered, number of shares outstanding, and offer price. We then use the following criteria to screen our sample.

(1) The SEOs must be of common stocks of firms (share codes 10 and 11) listed on NYSE, AMEX, and NASDAQ. American depository receipts (ADRs), real estate investment trusts (REITs), closed-end mutual funds, and partnership are eliminated from the sample.
(2) Non-underwritten offerings, rights offerings, standby offerings, shelf offerings, pure secondary offerings, and unit offerings (equity issue with warrants) are excluded.
(3) As do other studies (e.g., Loughran and Ritter (1995)), we exclude SEOs of the financial and utility industries since firms in these industries may issue equity to meet regulatory requirements rather than their capital demand. Also, accounting items of these two industries are distinct from those of other industries, which complicates empirical tests.
(4) SEOs with an offer price below $5 are dropped since many of them involve price manipulation.
(5) Cases of multiple SEOs that span less than three years are excluded. In other words, only SEOs that have no other SEO within the previous and subsequent three years are included in our sample. This criterion is used to avoid serious dependence of statistical tests (e.g., multiple SEOs conducted by one firm can have the same explanatory variables in regressions). Also, firms with frequent SEOs are likely to have high growth or potential financial problems. Including such firms may yield biased inferences since their performance comes from other reasons (e.g., certain hot industries) rather than SEOs.
(6) Firms that acquire another firm (above 40% of the SEO firm's assets) within the three years before and after the SEOs are excluded since their long-run performance may arise from mergers and acquisitions (M&As) rather than SEOs. M&A data are obtained from the Thomson/SDC M&A database.

Table 1
Summary Statistics of the SEOs.
Panel A of this table reports the number of the sample SEOs completed during 1990–2008. Proceeds indicate the amount of capital raised in the SEOs. In Panel B, capitalization is the market value of equity on the 11th day prior to the SEO announcement day. BM is the book-to-market ratio at the end of the month preceding the SEO. 3-month Pre-SEO Excess Return is firm return minus market return in the three months before the SEO announcement.

Panel A. Number of SEOs

Year	Number of SEOs by Year			Proceeds (Million $)		Offer Price ($)	
	All	Three-Month Pre-SEO Excess Return		Mean	Median	Mean	Median
		Positive	Negative				
1990–92	204	136	68	75.80	33.00	21.32	18.19
1993–94	211	130	81	51.48	37.60	20.62	18.50
1995–96	221	135	86	55.56	40.00	21.70	19.25
1997–98	200	112	88	84.90	50.40	23.99	20.00
1999–00	144	99	45	172.77	81.65	37.65	29.38
2001–02	115	86	29	137.44	92.40	24.44	22.00
2003–04	188	135	53	123.79	76.65	19.34	17.50
2005–06	150	88	62	141.56	82.85	21.98	20.55
2007–08	87	61	26	226.18	103.00	23.97	17.75
Total	1520	982	538				
Percentage		64.61%	35.39%				

Panel B. Basic Characteristics of the SEOs

	Capitalization (Million $)	BM before SEO	3-month Pre-SEO Excess Returns
Mean	1157.92	0.3937	0.1746
Median	206.56	0.3263	0.0910

Daily returns and number of shares outstanding of the sample firms and daily market indices (CRSP VW) come from the Center for Research in Security Prices (CRSP) database. Quarterly accounting data are extracted from the Compustat database, including assets, book value of debt and equity, cash, accounts receivables, inventory, current liabilities, and sales. We collect quarterly institutional equity holdings from the Thomson CDA Spectrum database, which are from institutional investors' 13-f filings.[10].

3.2. Sample summary

Panel A of Table 1 reports the number of the SEO observations every two years. There are 1520 SEOs in total, which do not concentrate in certain years but were less in the 2001–02 and 2007–08 downturn periods. About 65% of the SEOs (982 observations) experienced positive excess returns (raw returns minus market returns) in the three months prior to the SEO announcements. The offer prices during the internet bubble period (1999–2000) were significantly greater than those during other periods, which can be ascribed to investors' overoptimism.

Panel B summarizes the fundamental characteristics of the sample firms. The median firm size and book-to-market (BM) ratio are $206.6 million and 0.33, respectively. In general, firms have positive excess returns (median 9.1%) before SEOs.

4. Results

4.1. Earnings management measures

Table 2 reports earnings management measures of the SEO sample from quarter −4 to quarter 4 relative to the SEO. Panel A shows that all the median DCAs are positive and significant, while the median ABCAs are only significant in quarters −1 and 0. These results indicate that SEO do overstate their earnings around SEOs.

We rank and then divide the sample firms into the high and low groups by their KZ values and O-scores, respectively. Panel B reports the median ABCAs (the sum of quarter −1 and quarter 0) of these groups. The high-KZ group tends to have a greater ABCA than the low-KZ group (0.0054 versus 0.0007), in which their difference is statistically significant at the 1% level. Similarly, the high-O-Score group has a greater ABCA than the low-O-Score group. These results indicate that SEO firms with financial constraints and with high distress risk have a greater degree of earnings management.

We use KZ values to sort the sample and divide them into two groups; each group is further separated into two subgroups by their O-scores. Panel C shows the median ABCAs(−1,0) of this 2 × 2 dimensional classification. The high-KZ and high-O-Score group does not have the greatest ABCAs(−1,0), implying that these two characteristics (financial constraints and distress risk) do not necessarily have an intensive effect on issuers' earnings management.

[10] Institutional investors with more than $100 million in equities must report their equity ownership to the SEC in quarterly 13-f filings. CDA Spectrum classifies institutional investors of five types: bank (trust departments), insurance firms, investment firms (mutual funds and closed-end funds), independent investment advisors (principally pension fund advisors), and others (miscellaneous institutions such as endowment funds or public pension funds).

Table 2
Earnings Management around the SEOs.
This table reports the median earnings management measures of the 1520 SEOs completed during 1990–2008. In Panel A, discretionary current accrual (DCA) is estimated by the following model: $DCA_i = CA_i \sum_{j=1}^{4} \hat{\alpha} Q_j + \hat{\lambda}(\Delta Sales_i - \Delta AR_i)$, where CA_i is the current accrual of firm i, Q_j is a dummy set as 1 in quarter j and 0 otherwise, $\Delta Sales_i$ is the quarterly change in sales, and ΔAR_i is the quarterly change in accounts receivable. Abnormal current accrual (ABCA) is the difference between a firm's discretionary current accrual and the average DCA of its matched portfolio. Panel B reports ABCA from quarter −1 to quarter 0 by the high and low groups divided by SEO firms' KZ values and O-Scores. Numbers in parentheses are the p-values of the Wilcoxon signed rank test for DCA or ABCA equal to 0. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A. Earnings Management Measures

Quarter	Median DCA	(p-value)	Median ABCA	(p-value)
−4	0.0101	(0.001***)	0.0026	(0.198)
−3	0.0131	(0.000***)	0.0031	(0.121)
−2	0.0112	(0.000***)	0.0008	(0.648)
−1	0.0152	(0.000***)	0.0055	(0.000***)
0	0.0217	(0.000***)	0.0105	(0.000***)
1	0.0130	(0.000***)	0.0005	(0.746)
2	0.0093	(0.001***)	−0.0017	(0.201)
3	0.0075	(0.001***)	−0.0017	(0.193)
4	0.0062	(0.002***)	−0.0018	(0.298)

Panel B. ABCA(−1,0) by KZ and O-Score

High KZ	Low KZ	Difference	High O-Score	Low O-Score	Difference
0.0054	0.0007	(0.006***)	0.0047	0.0005	(0.016**)

Panel C. ABCA(−1,0) by KZ and O-Score Interactive Groups

	High O-Score	Low O-Score	Difference
High KZ	0.0056	0.0050	(0.748)
Low KZ	0.0020	0.0001	(0.053*)
Difference	(0.859)	(0.221)	

4.2. Factors affecting earnings management

In this section, we conduct regressions to examine the impacts of financial constraints and distress risk on earnings management (ABCA(−1, 0)). We use size, book-to-market ratio, cumulative excess returns from month −6 to month −4, and pre-SEO institutional shareholdings relative to the SEO as control variables.[11] Table 3 reports the regression results. When KZ index and O-Score are included in the regressions separately (Models 2 and 3), both these factors are statistically significant. When they are included together, only O-score remains significant while KZ become marginally significant. Further, we inspect the interaction of KZ and O-Score (Models 5 and 6) but find no significant interactive effect. These results are consistent with those of Table 2 that financial constraints and distress risk drive firms to manage earnings.

4.3. Long-run performance according to SEO firms' characteristics

Table 4 reports the performance of the sample firms. As shown in Panel A, the sample firms deliver negative mean buy-and-hold abnormal returns (BHARs, adjusted by returns on CRSP weighted-value index) following the SEOs (3-year BHAR −10.21%). The aggressive-earnings-management (EM) group performs worse than the conservative-EM group.

We separate the aggressive- and conservative-EM groups into two subgroups according to their KZ values, respectively. Panel B presents three-year equal-weighted (EW) and value-weighted (VW) BHARs of these groups. In both the aggressive- and conservative-EM groups, high-KZ firms tend to have greater BHARs (e.g., in the conservative-EM group, the low- and high-KZ subgroups generate BHARs of −19.24% and 9.58%, respectively).

Similar to the classification of Panel B, Panel C reports BHARs of the EM × O-Score groups. High-O-Score firms appear to deliver lower BHARs but the difference is not significant. (e.g., in the conservative-EM group, the high- and low-O-Score subgroups generate BHARs of −6.32% and −4.17%, respectively).

We next use the Fama-French (1993) factors plus the price momentum factor (or the four-factor model) in time-series regressions for the SEO and matching portfolios. Table 5 reports regression results in which the intercept measures the monthly abnormal performance. As shown in Panel A, the intercepts of the conservative- and aggressive-EM groups are positive and negative, respectively, but not statistically significant.

Panel B of Table 5 presents the estimates of the four-factor model for the EM × KZ groups. Only the intercept of the conservative-EM and high-KZ group is positive and significant, indicating that firms in this group tend to outperform those of the other groups.

[11] Chung, Firth, and Kim (2002)find that institutional investors can monitor issuers' earnings management.

Table 3
Regressions: Factors Affecting Earnings Management.
The sample contains 1520 SEOs completed during 1990–2008. The regressions use issuers' abnormal current accrual (ABCA) from quarter −1 to quarter 0 as the output variable and include the yearly and industry effects. KZ index is a measure of financial constraints (Kaplan and Zingales (1997)). O-Score is the Ohlson (1980) score measuring firms' distress probabilities. Institutional ownership is the fraction of shares owned by institutional investors in the quarter before the SEO. Size (market value of equity) and book-to-market ratio are data prior to the SEO announcement. CER(−6, −4) denotes cumulative excess return (firm return minus market return) from month −6 to month −4 relative to the SEO announcement. The SEO firms are divided into 2 × 2 groups by their KZ values and O-scores. $D_{\text{Lo-KZ} \times \text{Lo-O-Score}}$ denotes the dummy (equal to 1) for the low-KZ and low-O-Score group and $D_{\text{Lo-KZ} \times \text{Hi-O-Score}}$ is the high-KZ and high-O-Score group. Numbers in parentheses are *p*-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.104***	0.104***	0.108***	0.108***	0.107***	0.109***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
KZ Index		0.008**		0.005	0.004	0.004
		(0.010)		(0.143)	(0.206)	(0.281)
O-Score			0.004***	0.003***	0.003***	0.002*
			(0.000)	(0.003)	(0.009)	(0.074)
Institutional Ownership	−0.016	−0.014	−0.013	−0.012	−0.012	−0.012
	(0.126)	(0.173)	(0.214)	(0.239)	(0.239)	(0.234)
Size	−0.009***	−0.010***	−0.008***	−0.009***	−0.009***	−0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Book-to-Market	−0.004	0.000	−0.003	−0.001	−0.001	0.000
	(0.614)	(0.981)	(0.667)	(0.902)	(0.912)	(0.997)
CER(−6, −4)	0.003	0.003	0.003	0.003	0.003	0.003
	(0.428)	(0.487)	(0.479)	(0.509)	(0.511)	(0.527)
$D_{\text{Lo-KZ} \times \text{Lo-O-Score}}$					0.002	
					(0.786)	
$D_{\text{Hi-KZ} \times \text{Hi-O-Score}}$						−0.009
						(0.127)
Adjusted R2	0.056	0.060	0.065	0.066	0.066	0.067

Table 4
BHARs according to Earnings Management.
This table reports equal-weighted and value-weighted buy-and-hold abnormal returns (BHARs, in percentage) of the SEO groups. The sample contains 1520 SEOs completed during 1990–2008. BHAR is calculated as $\frac{1}{N}\sum_{j=1}^{N}\left[\prod_{t=1}^{T}(1+R_{j,t})-\prod_{t-1}^{T}(1+R_{bench,t})\right]$, where $R_{j,t}$ and $R_{bench,t}$ are, respectively, returns on firm *j* and the benchmark portfolio (returns on CRSP value-weighted index and size × BM portfolios), and *N* is the number of firms. The sample firms are divided into the conservative- and aggressive-earnings management (EM) groups by their ABCA(−1,0). Panel B separates each EM group into two subgroups according to their KZ values. Panel C divides each EM group into two subgroups according to their O-Scores. Numbers in parentheses are the p-values of t-test for the difference in BHARs between two cells. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A. Performance according to Earnings Management

CRSP VW	All SEOs	Aggressive EM	Conservative EM	Difference
1-Year	−0.0204	−0.0562	0.0154	(0.028**)
2-Year	−0.0591	−0.0871	−0.0311	(0.229)
3-Year	−0.1021	−0.1520	−0.0521	(0.000***)

Panel B. Performance according to Earnings Management and KZ

	Aggressive EM		Conservative EM		Difference
	(1) Low KZ	(2) High KZ	(3) Low KZ	(4) High KZ	(1) vs (4)
Equal-Weighted					
CRSP VW	−0.3024	−0.0094	−0.1924	0.0958	(0.001***)
Size × BM	−0.0422	0.1920	0.0158	0.2260	(0.002***)
Value-Weighted					
CRSP VW	−0.2894	0.0051	−0.1732	0.1175	(0.000***)
Size × BM	−0.0732	0.1582	−0.0010	0.2038	(0.001***)

Panel C. Performance according to Earnings Management and O-Score

	Aggressive EM		Conservative EM		Difference
	(1) High O-Score	(2) Low O-Score	(1) High O-Score	(2) Low O-Score	(1) vs (4)
Equal-Weighted					
CRSP VW	−0.1692	−0.1338	−0.0632	−0.0417	(0.118)
Size × BM	0.0505	0.1071	0.0555	0.1773	(0.140)
Value-Weighted					
CRSP VW	−0.1527	−0.1192	−0.0341	−0.0209	(0.093*)
Size × BM	0.0196	0.0753	0.0518	0.1456	(0.134)

Table 5
Fama-French Four-Factor Regressions.
This table reports the results of the Fama-French four-factor model using a sample of 1520 SEOs completed during 1990–2008. The model can be expressed as:

$$R_{p,t} - R_{f,t} = \alpha_{j,T} + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \varepsilon_t,$$

where $R_{p,t}$ is return on the (equally weighted) portfolio, $R_{f,t}$ is risk-free rate, *RMRFt* is market return minus risk-free rate, SMB_t is return on a portfolio of small firms minus return on a portfolio of large firms, HML_t is return on a portfolio of high book-to-market (BM) firms minus return on a portfolio of low BM firms, *Momentum* is return on a portfolio of good performers minus return on a portfolio of poor performers, and subscript *t* indicates period *t*. To be added in the portfolio, we equally weight each SEO monthly excess returns starting from the month following the issue date and ending three years after the SEO month. The regressions use 228 observations from January 1990 to December 2008. The sample firms are sorted into two groups by their ABCA(−1,0) (conservative and aggressive). Panel B separates each EM group into two subgroups according to their changes in old institutional shareholdings around the SEOs. Panel C divides each EM group into two subgroups according to their O-scores. Numbers in parentheses are p-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A. All SEOs

	Intercept	RMRF	SMB	HML	Momentum	Adj. R2
Conservative	0.008	1.203***	0.085	−0.269**	−0.062	0.699
	(0.109)	(0.000)	(0.436)	(0.040)	(0.462)	
Aggressive	−0.006	1.087***	0.315***	0.001	0.042	0.802
	(0.265)	(0.000)	(0.000)	(0.989)	(0.411)	

Panel B. Portfolios by Earnings Management and KZ Index

Earnings Mgmt	KZ	Intercept	*RMRF*	*SMB*	*HML*	*Momentum*	Adj. R2
Conservative	High	0.015**	1.263***	0.272*	−0.229	−0.152	0.638
		(0.026)	(0.000)	(0.070)	(0.136)	(0.159)	
	Low	0.001	1.108***	0.065	−0.143	0.136*	0.574
		(0.852)	(0.000)	(0.495)	(0.252)	(0.082)	
Aggressive	High	−0.005	1.236***	0.560***	−0.220*	−0.154*	0.791
		(0.364)	(0.000)	(0.000)	(0.083)	(0.054)	
	Low	−0.001	0.987***	0.193**	0.099	0.103	0.614
		(0.910)	(0.000)	(0.048)	(0.353)	(0.207)	

Panel C. Portfolios by Earnings Management and O-Score

Earnings Mgmt	O-Score	Intercept	*RMRF*	*SMB*	*HML*	*Momentum*	Adj. R2
Conservative	High	0.001	1.072***	0.384***	0.042	0.024	0.727
		(0.913)	(0.000)	(0.000)	(0.629)	(0.672)	
	Low	0.010	1.221***	0.026	−0.353**	−0.099	0.608
		(0.173)	(0.000)	(0.835)	(0.028)	(0.355)	
Aggressive	High	−0.007***	1.211***	0.661***	0.342***	0.104	0.760
		(0.007)	(0.000)	(0.000)	(0.008)	(0.135)	
	Low	0.001	1.022**	0.176**	−0.139*	0.025	0.734
		(0.872)	(0.000)	(0.034)	(0.098)	(0.652)	

Further, as shown in Panel C, firms with aggressive EM and high O-Score have a negative intercept (−0.006), which is significant at the ten percent level[12].

Overall, the results show that financially constrained firms with conservative earnings management tend to perform better, and firms with high distress risk and aggressive earnings management tend to perform worse.

4.4. Regressions for long-run performance

This section examines the effects of management earnings (ABCA(−1,0)), financial constraints, and distress risk on issuers' long-run performance. We use three-year BHARs (adjusted by CRSP VW) as the output variable to conduct regressions with the fixed yearly and industry effects. There are four control variables: size, BM ratio, pre-SEO institutional shareholdings, and three-month pre-SEO excess returns CER(−3,−1).[13].

Table 6 reports the regression results. The coefficients of ABCA(−1,0) are negative and significant in all models, confirming that firms with aggressive earnings management tend to have post-issue underperformance. Models 2 and 3 present that KZ index (financial constraints) and O-Score (distress risk) have a positive and negative effect on SEO firms' performance, respectively. Models5 and 6 show that KZ and O-Score do not generate an interactive effect.

[12] One possibility that financially constrained firms outperform unconstrained firms is the former has greater post-SEO cash flows from good investment projects. We compare the cash-flow ratios before and after SEOs between these two types of firms, but find no different pattern between them. In other words, we are unable to confirm the argument that financially constrained firms generate greater post-issue cash flows."

[13] Chemmanura et al. (2009)suggest that institutional investors can have better judgment abilities or private information about SEO firms.

Table 6
Regressions: Factors Affecting SEO Long-run Performance.
The regressions use 3-year BHARs as the output variable and include the yearly and industry effects. The sample contains 1520 SEOs completed during 1990–2008. ABCA is a firm's abnormal discretionary current accrual, a measure of earnings management. ABCA(−1,0) Residual is the residual of the following regression: $ABCA(-1,0)=\alpha_{j,T}+\beta_1 KZ+\beta_2 O-Score+\beta_3 IO+\beta_4 Size+\beta_5 BM+\beta_6 CER(-3,-1)+\varepsilon$. KZ index is a measure of financial constraints (Kaplan and Zingales (1997)). O-score is the Ohlson (1980) score measuring firms' distress probabilities. Institutional ownership is the fraction of shares owned by institutional investors in the quarter before the SEOs. Size (market value of equity) and book-to-market ratio are data prior to the SEO announcement. CER(−3, −1) denotes cumulative excess return (firm return minus market return) from month −3 to month −1 relative to the SEO announcement. The SEO firms are divided into 2 × 2 groups by their KZ values and O-scores. $D_{Hi\text{-}KZ \times Lo\text{-}O\text{-}Score}$ denotes the dummy (equal to 1) for the high-KZ and low-O-Score group and $D_{Lo\text{-}KZ \times Hi\text{-}O\text{-}Score}$ is the low-KZ and high-O-Score group. Numbers in parentheses are *p*-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	−1.569***	−1.553***	−1.601***	−1.615***	−1.563***	−1.624***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ABCA(−1,0) Residual	−0.717*	−0.720*	−0.716*	−0.718*	−0.716*	−0.703*
	(0.072)	(0.068)	(0.072)	(0.068)	(0.069)	(0.073)
KZ Index		0.198***		0.245***	0.266***	0.255***
		(0.000)		(0.000)	(0.000)	(0.000)
O-Score			−0.023*	−0.047***	−0.038***	−0.038***
			(0.054)	(0.000)	(0.003)	(0.006)
Institutional Ownership	0.095	0.143	0.076	0.114	0.115	0.115
	(0.510)	(0.311)	(0.596)	(0.415)	(0.415)	(0.412)
Size	0.055**	0.028	0.051**	0.014	0.014	0.014
	(0.013)	(0.180)	(0.023)	(0.517)	(0.511)	(0.528)
Book-to-Market Ratio	0.303**	0.402***	0.300**	0.418***	0.412***	0.409***
	(0.011)	(0.001)	(0.012)	(0.001)	(0.001)	(0.001)
CER(−3,−1)	−0.096	−0.111	−0.089	−0.100	−0.105	−0.101
	(0.176)	(0.101)	(0.209)	(0.137)	(0.123)	(0.132)
$D_{Hi\text{-}KZ \times Lo\text{-}O\text{-}Score}$					−0.104	
					(0.158)	
$D_{Lo\text{-}KZ \times Hi\text{-}O\text{-}Score}$						0.082
						(0.264)
Adjusted R2	0.088	0.104	0.090	0.112	0.112	0.112

We further examine whether earnings management arising from financial constraints and distress risk affect issuers' performance. To achieve this purpose, we calculate "imputed" earnings management by running the following regressions:

$$ABCA(-1,0) = a_{KZ} + b_{KZ}KZ + e_{KZ},$$
$$ABCA(-1,0) = a_{O-Score} + b_{O-Score}O-Score + e_{O-Score}.$$

We then calculate the fitted values of $ABCA(-1,0)$: $ABCA_{KZ}(-1,0) = \hat{a}_{KZ} + \hat{b}_{KZ}KZ$ and $ABCA_{O\text{-}Score}(-1,0) = \hat{a}_{O\text{-}Score} + \hat{b}_{O-Score}O\text{-}Score$.

Table 7 shows the regression results. Earnings management from financial constraints ($ABCA_{KZ}(-1,0)$) is positively associated with issuers' performance (coefficient 56.845), indicating that constrained firms would use upward earnings to signal their promising future. On the other hand, earnings management from financial distress risk ($ABCA_{O\text{-}Score}(-1,0)$) shows a negative effect on issuers' performance (coefficient − 9.845). These results support our argument that firms with earnings management arising from different motives can perform different after SEOs.

5. Conclusions

Prior research finds that firms tend to overstate their earnings around SEOs. This study suspects that SEO firms' earnings management can arise from different motives and perform differently in the long run. In particular, we consider financial constraints and distress risk as two motives that drive firms to report greater earnings around seasoned equity offerings (SEOs). Our tests confirm this argument.

We also posit that financial constraints and distress risk make issuers perform differently in the long run. The results show that financially constrained firms with aggressive earnings management perform well after SEOs, implying that their earnings fairly signal the ability to improve operations following the release of inflexibility. On the other hand, firms with high distress risk and aggressive earnings management perform poorly after SEOs, revealing that they inflate earnings to benefit from greater proceeds but can hardly improve their operations.

Prior articles (e.g., Teoh et al. (1998)) show that SEO firms with aggressive earnings management tend to perform poorly in the long run. By contrast, this study finds that firms with different characteristics convey distinct information in reported earnings around SEOs. This finding reminds auditors to watch firms with defective reporting intention (those with high distress risk) and helps long-run investors select right targets (financially constrained firms).

Table 7
Regressions: Earnings Management and SEO Long-run Performance.
The regressions use 3-year BHARs as the output variable and include the yearly and industry effects. The sample contains 1520 SEOs completed during 1990–2008. ABCA is a firm's abnormal discretionary current accrual, a measure of earnings management. ABCA(−1,0) Residual is the residual of the following regression: $ABCA(-1,0) = \alpha_{j,T} + \beta_1 KZ + \beta_2 O\text{-}Score + \beta_3 IO + \beta_4 Size + \beta_5 BM + \beta_6 CER(-3,-1) + \varepsilon$. $ABCA(-1,0)$ Fitted by KZ is the expected value of $ABCA(-1,0)$ arising from financial constraints, which is calculated by $\hat{a}_{KZ} + \hat{b}_{KZ}KZ$, where $\hat{a}_{KZ}$ and $\hat{b}_{KZ}$ are the intercept and slope of the regression: $ABCA(-1,0) = a_{KZ} + b_{KZ}KZ + e$. Similarly, $ABCA(-1,0)$ Fitted by O-Score is the expected value of $ABCA(-1,0)$ arising from financial distress risk. KZ index is a measure of financial constraints (Kaplan and Zingales (1997)). O-score is the Ohlson (1980) score measuring firms' distress probabilities. Institutional ownership is the fraction of shares owned by institutional investors in the quarter before the SEOs. Size (market value of equity) and book-to-market ratio are data prior to the SEO announcement. CER(−3, −1) denotes cumulative excess return (firm return minus market return) from month −3 to month −1 relative to the SEO announcement. Numbers in parentheses are *p*-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Model 1	Model 2	Model 3
Intercept	−2.149***	−1.360***	−1.849***
	(0.000)	(0.000)	(0.000)
ABCA(−1,0) Residual	−0.720*	−0.716*	−0.718*
	(0.068)	(0.072)	(0.068)
ABCA(−1,0) Fitted by KZ	56.845***		70.269***
	(0.000)		(0.000)
ABCA(−1,0) Fitted by O-Score		−9.845*	−20.526***
		(0.054)	(0.000)
Institutional Ownership	0.143	0.076	0.114
	(0.311)	(0.596)	(0.415)
Size	0.028	0.051**	0.014
	(0.180)	(0.023)	(0.517)
Book-to-Market Ratio	0.402***	0.300**	0.418***
	(0.001)	(0.012)	(0.001)
CER(−3,−1)	−0.111	−0.089	−0.100
	(0.101)	(0.209)	(0.137)
Adjusted R2	0.104	0.090	0.112

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