Seasoned Equity Offerings: Quality of Accounting Information and Expected Flotation Costs

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Abstract

Flotation costs represent a significant loss of capital to firms and are positively related to information asymmetry between managers and outside investors. We measure a firm's information asymmetry by its accounting information quality based on two extensions of the Dechow and Dichev earnings accruals model (2002), which is a more direct approach to assessing the information available to outside investors than the more commonly used proxies. Our main hypothesis is that poor accounting information quality raises investor uncertainty about a firm, which lowers demand for its new equity, thereby raising underwriting costs and risk. Using a large sample of seasoned equity offerings, we show that poor accounting information quality is associated with higher flotation costs in terms of (1) larger underwriting fees, (2) larger negative SEO announcement effects, and (3) a higher probability of SEO withdrawals. These results are robust to joint determination of offer size and flotation cost components and to adjustments for sample selection bias.

I. Introduction

It is well known that flotation costs in seasoned equity offers (SEOs) represent an economically important portion of gross proceeds. Many studies document that underwriting fees range between 3% and 8% of SEO gross proceeds, while SEO announcement effects range between -2% and -3%. The extant literature has generally concluded that a substantial portion of SEO flotation costs are caused by asymmetric information between issuers and outside investors.[1] However, information asymmetry is not directly observable and there is no generally agreed upon measure for it. As a result, many SEO flotation cost studies employ a wide range of distinctly different measures of information asymmetry. This makes it difficult to assess the importance of information asymmetry or pinpoint the other key determinants of flotation costs.

Common measures of asymmetric information used in the finance literature include stock return (or residual) volatility, analysts' earnings forecast dispersion, proportion of intangible assets, debt rating and stock bid-ask spread (or a component).[2] While heavily used in empirical analysis, none of these variables has a strong theoretical claim to being a clear or complete measure of information asymmetry between issuers and outside investors. Moreover, these measures are likely to capture other economic effects beyond asymmetric information. For example, stock return volatility is influenced by industry wide shocks and changing takeover prospects, which are clearly not related to a firm's relative financial performance. Dispersion in analyst forecasts can be affected by the number and quality of analysts following a stock, analyst herding, and whether the analysts are affiliated with investment banks, to name just a few of the problems that researchers have highlighted. Debt ratings have been criticized for being slow to incorporate new information and to be more focused on the solvency of a firm, which is strongly related to its leverage. The proportion of intangible assets is also a proxy for a proportion of a firm's value represented by growth opportunities, which may be modest for many firms with sizable information asymmetries. Finally, bid-ask spread is strongly affected by the market microstructure environment, such as exchange rules, trading activity, execution costs and dealer borrowing costs needed to support inventory positions. It is also often used as a liquidity measure.[3] In short, none of these commonly used proxies represents a clean measure of asymmetric information between insiders and outside investors regarding a firm's expected future financial performance.

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[1] See the discussion in the Eckbo, Masulis and Norli (2007) survey of the security offering literature.

[2] Many SEO studies employ proxies for information asymmetry and price uncertainty. Drucker and Puri (1999), Altinkilic and Hansen (2000) and Corwin (2003) use stock return volatility; Marquardt and Wiedman (1998) use analysts' earnings forecast dispersion; Liu and Malatesta (2006) use debt ratings, and Corwin (2003) uses bid-ask spreads.

[3] This liquidity measure is also found to be related to SEO flotation costs as shown in Butler, Grullon and Weston (2005).

In this study, we examine the relation of expected flotation costs to an alternative measure of information asymmetry that is directly related to the information available to outside investors about firm performance. We argue that the quality of a firm's accounting information, which is taken from the current accounting literature, is a reasonable proxy for asymmetric information between managers and outside investors. Our view is that since accounting statements are the primary source of information about firm performance available to outside investors, its quality should be directly related to investor uncertainty about a firm's financial health and past performance. However, managers have better internal sources of information, so financial accounting statements are not likely to cause a similar rise in manager uncertainty. As accounting quality deteriorates, investor uncertainty about a firm should rise and demand for its equity should fall. We expect these effects to increase equity underwriting and distribution costs, though we are unaware of any existing studies that directly examine the relationship of accounting information quality to equity flotation costs.[4] We address this current gap in the literature by investigating the relation of accounting information quality to SEO offer size and expected flotation costs. For this purpose, we focus on three major components of expected flotation costs, namely underwriting fees, offering announcement effects and the probability of issue withdrawal.

In a typical SEO underwriting contract, a syndicate of investment banks guarantees to purchase an issuer's entire equity offering at a fixed price, bearing the entire price risk associated with reselling the shares to the public once the contract is signed. By signing this contract, the underwriters accept the risk of an unexpected reduction in investor demand for the SEO. When firms with poor accounting information quality announce SEOs, the decision can increase investor uncertainty about the value of issuers' common stock and thus, lower investor demand for these equity issues. At the end of the registration period, underwriters have several choices if faced with weak investor demand: they can increase their underwriting fees or they can decline the underwriting assignment. In either case, this represents an increase in the issuer's expected flotation costs.[5]

If the investment banks decide to underwrite an SEO despite the higher risk associated with poor accounting information, they must raise their underwriting fees and these fees

[4] Several studies by Francis, Lafond, Olsson, and Shipper (2004, 2005) do investigate the related question of whether accounting information quality is associated with a firm's equity cost of capital and they report finding a significant negative relation.

[5] It is also possible for an underwriter to try to persuade an issuer to reduce an offer's size by either scaling back the number of shares issued or by reducing the offer price. However, we find little evidence that either of these actions occur in the SEO registration period with any significant frequency. We speculate that this is due to issuers generally having minimum equity capital requirements as well as underwriter concerns that such actions would increase investor uncertainty about an issue's quality.

represent a significant expense for SEO issuers. Issuers with poor accounting information face greater investor uncertainty about their stocks' market value and as a result lower issue demand. An investment bank must offset the higher expected underwriting losses and distribution expenses associated with these less attractive issues by charging higher underwriting fees. We test for a negative relation between underwriter gross spreads and issuer accounting information quality, using several recently developed measures of accounting information quality, which are discussed below.

If an investment banking syndicate declines to underwrite an offering, it will generally force an SEO's cancellation, which represents a significant expected cost to an issuer. The inability to raise external capital is one of the greatest costs that a company can face if it delays valuable investment opportunities or forces the company to turn to more costly sources of external capital. An SEO issuer also loses registration fees, accounting expenses and management time devoted to the offering process when an issue is withdrawn from SEC registration. Thus, we view the probability of issue cancellation as an important component of expected flotation costs. Since poor issuer accounting quality raises investor uncertainty about an issue's value and concern about adverse selection, it can reduce issue demand and increase the likelihood of offer cancellation. Thus, accounting information quality is expected to be negatively related to our second component of expected flotation costs, namely the frequency of SEO withdrawals.

The expected stock market reaction to an equity offering announcement is yet another important component of expected flotation cost. Since an SEO can only occur after it is publicly announced and it is well documented that SEOs on average have significantly negative announcement effects ranging between -2% and -3% for U.S. industrial firms,[6] a rational manager must expect to sell new stock at a discount below its current stock price.[7,8] For this reason, the quality of issuers' accounting information a further implication. Since poor quality accounting information can obscure a firm's financial health and its performance, it increases the information asymmetry between issuers and outside investors. On initially hearing news of an equity offering, investors are likely to more heavily discount their valuation of a firm with

[6] For example, see the evidence reported by Masulis and Korwar (1986), Asquith and Mullins (1986), Mikkelson and Partch (1986), Bhagat and Hess (1986) and Eckbo and Masulis (1992).

[7] It can also be argued that when a publicly listed firm raises new capital representing 10% of its outstanding equity capitalization, a 2% downward revaluation of the existing shares also implies that 20% of the gross proceeds of the issue is absorbed by the negative price reaction and the firm's equity capital base rises by only 80% of the SEO's gross proceeds. However, since their negative information is eventually released to the public, the only effect of the SEO announcement is to accelerate the release of this negative information, so this added equity price drop is not really an added flotation costs.

[8] See Eckbo, Masulis and Norli (2006) for a further discussion.

poor quality accounting information to take into account the greater agency problems and adverse selection risk that investing in such a firm entails. So we expect to observe that issuers with worse accounting quality to be associated with more negative announcement returns relative to issuers with better accounting quality.

It is common in the accounting literature to measure the quality of a firm's accounting information by its accruals quality. Until recently, accruals quality was primarily measured in terms of discretionary accruals using a variant of the Jones model (1991), such as the modified Jones model (Dechow, Sloan, and Sweeney, 1995), or performance-matched discretionary accruals (Kothari, Leone, and Wasley, 2005). The rationale for studying discretionary accruals is that managers can exploit their discretion over accounting decisions to enhance reported earnings. However, even in the absence of intentional earnings management, accounting information is affected by volatility in a firm's fundamental economic environment, as well as its industry and firm specific characteristics. Poor accruals quality creates more uncertainty for outside investors about a firm's true performance, regardless of whether it is created through earnings management or not. Thus, we follow the more recent financial accounting literature by using an accruals measure that does not distinguish between intentional earnings management and unintentional estimation errors from models of earnings quality, since both imply poor accounting information quality.[9]

Following Dechow and Dichev (hereafter DD, 2002), our primary measure of accounting information quality is based on the standard errors from a model mapping yearly current accruals into operating cash flows in the prior, current and subsequent years, where larger estimation errors imply poorer quality accounting information. This model was modified by McNichols (2002) to control for changes in sales revenue and property plant and equipment and is called the modified DD model (hereafter MDD), which is our first proxy of accounting information quality. However, measuring the quality of accounting information is complicated by the fact that applicable accounting standards and transparency of accounting information varies considerably across companies and industries. This is a major reason that we propose a new measure of accruals quality, which extends the MDD model to incorporate a firm fixed effect (hereafter FDD). In other words, this measure adjusts the MDD model for firm fixed effects so as to capture unobserved firm characteristics that are time invariant, such as internal accounting policies and cash flow characteristics. Therefore, this adjustment mitigates possible omitted variable problems associated with the MDD measure. In addition, this new accruals quality measure also directly adjusts for a major source of heteroskedasticity in the MDD model.

[9] Francis, Lafond, Olsson and Shipper (2004, 2005).

It follows that standard errors from the FDD model should be lower and their cross sectional variability should better reflect differences in firm accounting information quality.

Poor accruals quality increases the information asymmetry between managers and outside investors, which is expected to induce increase investor risk aversion toward investing in these firms' SEOs. As a result, underwriting SEOs with poor accruals quality should be more risky and costly. Therefore, we predict that issuers of otherwise identical SEOs, except for poor accruals quality, should be associated with larger expected flotation costs.

To preview our results, we find empirical evidence which strongly supports the hypothesis that poor accruals quality is associated with larger expected flotation costs. Using a large sample of completed and withdrawn SEOs by U.S. firms between 1990 and 2002, we find that issuers with lower quality accounting information tend to raise more equity capital. However, the tradeoff is that poor accruals quality is associated with (1) larger underwriting fees, (2) a more negative market reaction to equity offer announcements, and (3) a higher probability of issue withdrawal. These results are robust to taking into account the endogenous offer size choice and controlling for potential sample selection bias.

The rest of this paper is organized as follows. In section II, we introduce and discuss our accruals quality measures. Data sources and sample characteristics are discussed in section III. In Section IV, we examine how accruals quality is related to a firm's choice of equity offering size. In the next three sections (V, VI, and VII), we investigate the relationship between accruals quality and three major components of equity flotation costs: underwriting fees, announcement returns, and issue withdrawal probability. This is followed by the sensitivity analyses of the result in section VIII. Finally, IX presents the conclusions and highlights the contributions of this study.

II. Literature Review and Accruals Quality Measures

Earnings are one of the most frequently cited measures of firm performance. It is not surprising that there is substantial interest in whether earnings are manipulated to dress up firm performance so as to raise investor interest in a stock. Many existing studies examine the opportunistic uses of accounting information around various types of corporate events such as management bonus period or stock option expiration dates (Healy, 1985; Sloan, 1993; Gaver et al., 1995; Holthausen et al.,1995; Balsam, 1998; Guidry et al., 1999; Aboody and Kaznik, 2000), mergers and acquisitions (Erickson and Wang, 1999) or management buyouts (DeAngelo, 1988; Perry and Williams, 1994). One corporate decision that has received substantial interest is a SEO. Evidence of earnings management in order to raise offer prices or gross proceeds is reported in a number of recent studies (DuCharme et al., 2004; Kim and Park, 2005; Ragan, 1998; Shivakumar, 2000; Teoh et al., 1998a, and 1998b, Teoh, Wong and Rao, 1998, Teoh and Wang, 2002).

These earlier studies of earnings management rely on discretionary accruals as a proxy, and presume managers are intent on manipulating or managing accounting information. Accruals are accounting adjustments to a firm's cash flows from operations that convert cash flows into accounting earnings and discretionary accruals are the portion of accruals most subject to managerial discretion. While accounting earnings are purported to be a superior (to cash flow) measure of firms' economic fundamentals, the accruals component of earnings is subject to managerial discretion, estimation errors, and the allocation of cash flow to other periods. For these reasons, earnings quality is often interpreted as synonymous with accruals quality. More recently, some researchers in financial accounting have questioned whether the existing accounting evidence on earnings accruals can reliably distinguish between earnings management and a changing economic environment. Since both effects can raise investor uncertainty, a measure that captures both these effect is argued to be preferable.

Dechow and Dichev (DD) (2002) develops a measure of accruals quality based on the idea that accruals map into cash flow realizations in contemporaneous and adjacent periods. The intuition behind this measure is that managers have some discretion over the timing of cash flow recognition across adjacent periods. As a result, the timing of the firm's economic accomplishments and sacrifices often differ from the timing of their related cash flows. Managers can benefit from this disparity when they use accruals to adjust cash flow timing, but it comes with a cost, namely an offsetting change in next period's accruals and earnings.[10] Therefore, DD suggests that estimation errors in accruals and their subsequent corrections are likely to reduce the beneficial role of accruals, thus the quality of accruals is decreasing in the magnitude of accrual estimation errors. DD also argues that analyzing current accruals can be more accurate than estimating discretionary accruals, given the controversies surrounding non-discretionary accruals estimation.[11] Wysocki (2005) is a good example of the types of criticism leveled against standard discretionary accrual models. This is a major reason for our use of the MDD model, as is explained in greater detail below.

[10] For example, recording a receivable accelerates the recognition of a future cash flow in earnings, and matches the timing of the accounting recognition with the timing of the economic benefits from the sale. However, if net proceeds from a receivable are less than the original estimate, then a subsequent entry records both the cash collected and the correction of the estimation error.

[11] Ecker et al. (2005) extend the Dechow and Dichev (2002) model after substituting total accruals for current accruals. They show that current accruals serves as a reliable instrument for total accruals in estimating accounting information quality. Thus, this evidence indicates that using current accruals, rather than total accruals in the MDD model is not a serious concern.

The DD model for estimating accruals quality is specified as:

$$CA_t = c + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_j CFO_{t+1} + v_t \qquad (1)$$

where CA = total current accruals = Δ current assets (*item 4*) - Δ current liabilities (*item 5*) - Δ cash (*item 1*) + Δ debt in current liabilities (*item 34*), Δ = changes from year *t* to year *t-1*, CFO = cash flow from operation = net income before extraordinary items (*item 18*) – total accruals, and total accruals = current accruals – depreciation and amortization expense (*item 14*). All the variables are drawn from the Computstat database and are scaled by the average of total assets (*item 6)* between year *t-1* and year *t*.

In this study, we adopt the MDD model as modified by McNichols (2002), as our first measure of accruals quality. In this model, changes in sales revenue and property, plant, and equipment (PPE) are added to equation (1), since these components are important in forming expectations about current accruals, beyond their direct effects on operating cash flows. McNichols shows that adding these two variables to equation (1) significantly increases its explanatory power in cross-sectional regressions, thus reducing measurement error. The resulting MDD regression equation is specified as follows:

$$CA_t = c + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_3 CFO_{t+1} + \phi_4 \Delta Sales_t + \phi_5 PPE_t + v_t \qquad (2)$$

where $Sales$ = total revenue (*item 12*), and PPE = property, plant, and equipment (*item 7*), which are also scaled by the average of total assets (*item 6)* between year *t-1* and year *t*.

Estimation of the MDD model follows two steps. First, we estimate equation (2) for each of the Fama and French (1997) 48 industry groups having at least 20 firms over the years *t-4* through *t*. Then we calculate the standard deviation of firm *j's* residuals, i.e. $v_{j,t}$ through $v_{j,t-4}$. Larger standard deviations of residuals reflect a greater portion of current accruals left unexplained by the MDD model, which indicates poorer accruals quality. For robustness, we also estimate equation (2) after adding a firm's book-to-market ratio as an additional regressor, following Larcker and Richardson (2004).[12] The main results are qualitatively similar to the results reported in the tables.

The MDD accruals model is a popular approach for estimating accruals quality in financial accounting studies. For example, two recent studies of accruals quality by Francis, Lafond, Olsson, and Shipper (2004) and (2005) examine the relation between accruals quality based on the MDD model and equity cost of capital. They find that poor accruals quality is significantly related to higher equity cost of capital. Nevertheless, this model is subject to several concerns.

[12] Larcker and Richardson (2004) argue that there is a positive relation between accruals and growing firms, proxied by the book to market ratio.

First, consider two firms – one firm where accruals map weakly into cash flows, which results in consistently large residuals for the accruals model and a second firm where the accruals mapping is relatively better, which results in consistently low residuals. Since the MDD measure is based on the standard deviation of residuals through time, it has a limited ability to distinguish these two firms, since both firms have residuals with low standard errors. Thus, the MDD model would erroneously classify both firms as having good accounting information quality. Second, although including the change in sales revenue and PPE significantly increases the explanatory power of the cross-section DD regression, there may be some other firm characteristics, which also affect a firm's accruals that remain outside the MDD model.

To address the above limitation of the MDD model, we proposed augmenting it with firm fixed effects, which we call the FDD model. In other words, we estimate the following model to obtain our second proxy of accruals quality.

$$CA_t = c_j + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_3 CFO_{t+1} + \phi_4 \Delta Sales_t + \phi_5 PPE_t + v_t \quad (3)$$

where, j= 1, 2, …. 1,291 and t = 1992, 1993, …. 2004. In estimating the panel regressions represented by equation (3), the firm j specific intercepts, c_j, address the prior concerns about the limitations of the MDD model. Thus, this second measure of accruals quality has several potential advantages over the MDD model. First, the firm fixed effect coefficient, c_j, is likely to capture time invariant firm characteristics, allowing it to distinguish between firms where one has consistently large residuals of the same sign and the another has consistently low residuals. Second, firm fixed effects also mitigates the omitted variable problem by capturing unobservable firm characteristics that are time-invariant, such as its accounting policies, cash flow characteristics, etc. By ignoring this problem, the estimated accruals quality measure in the MDD model can be inflated. Third, when we estimate (3) with heteroskedasticity robust standard errors, we control not only for heteroskedasticity, but also for arbitrary serial correlation in the error terms.[13] Since accounting data tends to exhibit higher autocorrelation through time, our FDD model is one way to obtain robust standard errors.[14] Overall, when we estimate accruals quality based on the FDD model, the null hypothesis of all c_j = 0 is rejected with F statistics of 3.4 (p-value = 0.000). Thus, we confirm the usefulness of including a firm

[13] An HAC (heteroskedastic, autocorrelated covariance) estimator is unnecessary in a fixed effect panel regression when the sample period is small. When the estimation period is small relatively to the number of cross sectional observations, robust standard errors are valid in the presence of unkown heteroskedasticity or serial correlation. More detailed discussions are provided in Arellano (1987) and Wooldridge (2002).

[14] Since our accruals quality measure relies on the error terms, which are not affected by heteroskedasticity or serial correlation, this last advantage may not be as important in this study.

fixed effect in estimating accruals quality.

Table I reports descriptive statistics in panel A and a time series of squared roots of the demeaned residuals from our two models of accruals quality in panel B. Comparing the accruals quality measures shown in panel A, we find that they are larger for the MDD model than the FDD model.[15] This is consistent with the firm fixed effect term, c_j, capturing unobserved time-invariant firm characteristics. Thus, the unexplained portion of the current accruals regression is reduced under a firm fixed effects specification. In panel B of Table I, we measure the error from each of the accruals quality models averaged across issuing firms by event year, where year *t* is the SEO year. We find that after year *t-4* accruals quality deteriorates as we move closer to the SEO year, rising sharply in year *t-1*, the year prior to the SEO. These results hold for both the MDD and FDD models. This pattern in the yearly averages of the cross sectional errors suggest an increase in earnings management in the year preceding the SEO.

Turning to a practical matter, the DD approach imposes an important constraint on the SEO sample. In order to estimate the DD model, we need at least 8 years of consecutive financial accounting data, implying that companies have survived for at least 6 years prior to their SEO announcements.[16] Therefore, we systematically exclude younger firms (recently listed) and firms delisted over this sample period, which may have different characteristics that could also affect the estimated size of equity flotation costs. This nonrandom selection criterion, if left unaddressed, could lead to spurious results. To address this concern, we employ the Heckman (1979) selection model to test (and, if necessary, to correct) for any significant selection bias in Section VIII.

III. Data and Sample Description

The SEO sample consists of 963 completed offers and 89 withdrawn SEO filings by U.S. issuers over the 1990 to 2002 period, and is obtained from the Securities Data Company (SDC) New Issue database. The sample criteria requires SEOs to be common stock by U.S. issuers, listed on NYSE, NASDAQ, or AMEX, and excludes: (1) SEOs lacking CRSP daily stock returns and prices for the SEO announcement period and the prior 90 trading days, (2) firms lacking COMPUSTAT annual financial statement data for the 6 years prior to the SEO filing

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[15] The contemporaneous correlation between these two proxies is approximately 52%.

[16] When we estimate equation (2) at time *t*, we have to include *CFO* at time *t-1* and *t+1*. In addition, CFO is defined as the difference between net income and total accruals, which is obtained by subtracting depreciation from current accruals. In other words, CFO at time t-1 has to include accounting components at time t-2. Therefore, estimating equation (2) at time t has to include accounting information at t+1 and estimating equation at time t-4 has to include accounting information at t-6. Therefore, estimating the MDD model requires a total of 8 years of accounting information.

date, the offer year and the following year, which are needed to estimate firm accruals quality, (3) completed SEOs with offer prices less than $5 and withdrawn SEOs with filing range midpoints less than $5, (4) spin-offs, (5) reverse LBOs, (6) closed-end fund, unit investment trusts, REITs and limited partnerships, (7) rights and standby issues, (8) simultaneous or combined offers of several classes of securities such as unit offers of stock and warrants and (9) non-domestic and simultaneous domestic-international offers.

Table II presents descriptive statistics of our SEO sample by year, issuer frequency, primary and secondary offering classifications, and industries. Panel A in Table II highlights that our sample includes a number of hot (1991-93 and 1996-1997) and cold (1990, 1994-1995 and 1998-2001) equity offering periods. Panel B of Table 1 shows that over 65% of the SEO sample involves issuers making a single SEO, while 25% of the issuers make only two offers. Panel C presents the frequency of pure primary, combined primary and secondary, and pure secondary offerings and it highlights that combined primary-secondary offers are fairly common (27.3%), while pure secondary offerings occur infrequently (7.2%). Panel D reports SEO frequencies by industry and reveals that companies in chemical products, computer hardware and software, electrical equipment and electric, gas and sanitary service industries account for approximately 40% of the SEO sample. In sum, SEOs exhibit strong clustering by offer year and industries as well as mild clustering by issuers, which we will take into account in our statistical analysis.

IV. Offer Size and Accruals Quality

While most studies of flotation costs treat offer size as an exogenous variable, it is actually an endogenous variable as observed by Habib and Ljungqvist (2001) which can also be affected by asymmetric information. Thus, before we examine relations between accruals quality and SEO flotation costs, we first investigate whether accruals quality is related to SEO size, measured by net proceeds. We consider two alternative hypotheses concerning the relation between accruals quality measures and SEO size. First, poor accruals quality increases the asymmetric information between managers and outside shareholders. Following the arguments of Myers-Majluf (1984) and Krasker (1986), greater information asymmetry increases manager incentives to time equity offerings to periods when their stock prices are overvalued and then to raise the offering size to further benefit from this mispricing. If issuers of overvalued stock can pool with issuers of undervalued stock, then larger SEOs by overvalued issuers are feasible.[17] Thus, asymmetric information combined with manager incentives yield a positive relation

[17] Firms with undervalued stock find it optimal to undertake SEOs when they have profitable investment opportunities that can not be delayed.

between poor accruals quality and net proceeds. Second, poor accruals quality could adversely affect investor perceptions of the quality of an issuer's accounting information. Investment banks anticipating greater market skepticism could be more reticent to underwrite such an SEO and may demand higher underwriting fees or smaller offers. Thus, investor concerns about adverse selection risk could create a negative relation between poor accruals quality and offer size, measured by net proceeds.

The empirical evidence on these two hypotheses is reported in Table III. The dependent variable in these OLS regressions is SEO size measured by the log of net proceeds. In the first two columns, we measure accruals quality using the residual standard deviations from the MDD model and in the last two columns from the FDD model, where a larger value indicates poorer accruals quality. AQ1 and AQ5 are indicator variables of issuers in the best and worst quintiles of accruals quality, which allows for a non-linear relation between accruals quality and log of net proceeds. Based on the prior literature, we include the following issuer characteristics as control variables: the log of total assets, leverage, Tobin's q, underwriter rank, percent of secondary shares, stock return volatility during the period (-90, -11) prior to the issue date, share turnover during the period (-90, -11) prior to the issue date, and capital expenditure scaled by total assets. In addition, we also include a NYSE stock exchange indicator which takes the value 1 if the issuer's stock is listed on NYSE and is 0 otherwise, a Rule 415 shelf indicator, which takes the value 1 if the issue is registered as a shelf offering, as well as a credit rating indicator, which takes the value 1 if an SEO issuer has a debt rating and is 0 otherwise. The dependent and explanatory variables are defined in the Appendix along with their data sources. All regressions include year and industry fixed effects based on Fama and French (1997) industry classifications. All tests of statistical significance use White heteroskedasticity robust standard errors with adjustment for firm clustering.

Consistent with the argument that increased asymmetric information exacerbates the manager-outside investor conflict of interests, we find SEO net proceeds rises as both measures of accruals quality decline. When we compare issuers with the best accruals quality represented by AQ1 and the worst accruals quality represented by AQ5, we find that issuers with poor accruals quality raise significantly more equity capital, while issuers with high accruals quality raise significantly less equity capital, controlling for other determinants of offer size. Thus, the evidence indicates that SEO size is positively related to asymmetric information and we conclude that issuers, rather than underwriters, are the dominant party in determining SEO size. On the other hand, we expect underwriters to have a stronger voice in determining gross spreads and whether an SEO is withdrawn, questions which we explore in the following sections.

V. Underwriting Fees and Accruals Quality

Our SEO sample represents U.S. issuers using a firm commitment method to sell an SEO at a fixed price through an underwriting syndicate. Under this flotation method, underwriters are allowed to buy an SEO from an issuer at an offer price discount to compensate them for their risk bearing services, where this compensation is called the underwriter gross spread. The main components of the gross spread consist of a management fee, underwriting fee, and selling concession, where gross spread and its components are all scaled by offer price. Panel A in Table IV shows the magnitude of these fees, which has an inter-decile range that goes between 3.25% and 6.5%. Interestingly, the largest portion of this fee represents a selling concession paid to other investment banks for helping distribute the issue to investors. To graphically illustrate the pattern of gross spreads by offer size, we plot gross spreads on offer size in Figure I. This graph shows a negative linear relation between gross spreads and the log of net proceeds, suggesting an economy of scale effect in underwriting fees. In addition, there is considerable dispersion in SEO gross spreads, unlike the well documented concentration of IPO gross spreads around 7% found by Chen and Ritter (2000). For SEOs, there is also a tendency to set gross spreads at integers, which accounts for 22% of the sample, consistent with the prior evidence of Mola and Loughran (2004).

In this section, we investigate the impact of accruals quality on underwriter gross spreads. We argue that poor accruals quality by an issuer leads to high information risk, since it raises investor uncertainty and asymmetry of information with respect to the issuer, which SEO announcements could exacerbate. These concerns can reduce investor demand for a firm's stock and increase stock price volatility. Thus, investment bankers face higher valuation risk and expected selling expenses when underwriting SEOs of such firms, which should require higher gross spreads. To investigate this hypothesis, we first examine average gross spreads by accruals quality quintiles in Panel B and C of Table VI. As accruals quality diminishes (from smallest to largest quintile), gross spreads increase monotonically for both the MDD and FDD measures of accruals quality. This pattern is observed across all quintiles, implying that underwriter gross spreads have positive relations with each of the two accruals quality measures.

While these univariate results support the hypothesis that poor accruals quality is associated with higher investment banking fees, this evidence can be misleading if there are confounding effects between accruals quality and gross spreads. In addition, there may be other issue characteristics that could differ across the samples and also affect gross spreads, thus leading to a similar effect. As a consequence, we estimate this relation in a linear regression framework where we control for a number of other issue characteristics in the next section.

Based on prior studies of equity offering flotation costs, we include the following issue characteristics as control variables:

- *Offer size* (log of net proceeds): Many studies beginning with Smith (1977) report that underwriting fees per dollar of gross proceeds exhibit an economy of scale effect, which implies a negative relation between offer size and gross spreads.
- *Firm size* (log of total assets): Larger companies are more likely to be followed by stock analysts, business news services, institutional investors and other market participants. This lowers the information asymmetry between issuers and outside investors, while also reducing the benefits of underwriter due diligence investigations. This leads to a predicted negative relationship between firm size and gross spreads.
- *Leverage ratio*: In more levered firms, managers seeking to maximize shareholder wealth have greater incentives to undertake riskier, higher expected return projects since a greater portion of the added risk is borne by debtholders. Higher leverage ratios are also associated with higher risk of financial distress, which raises underwriter risk and expected losses. Therefore, both effects imply a positive relation between leverage ratios and gross spreads.
- *Underwriter rank* (based on the Carter-Manaster reputation measure): Puri (1999) argues that the underwriting market is oligopolistic, where more reputable underwriters can charge higher underwriting fees. On the other hand, higher ranked underwriters have lower expected due diligence costs, then they could afford to charge lower underwriting fees in a competitive underwriting market (Li and Masulis, 2005). We include underwriter rank to control for these two possible underwriter effects on gross spreads.
- *Secondary shares*: Issuers of SEOs with secondary offers are more frequently older and have larger book value of assets, sales, cash flow margins and proportions of tangible assets (Brav and Gompers, 2003; Dor, 2003) which are associated with lower asymmetric information. In addition, a portion of the net proceeds is going to existing shareholders, not to the firm, which reduces the free cash flows available to managers for pursuing private benefits of control. This leads us to expect a negative relation between secondary shares and underwriter gross spreads.
- *Stock return volatility*: Firms experiencing higher volatility in their stock returns tend to face more uncertainty and risk exposure. This should raise the value of the underwriter guarantee (firm commitment contract) to the issuer (Smith (1977)). Thus, we expect a positive relation between stock return volatility and gross spreads.
- *Tobin's q*: Choe, Masulis, and Nanda (1993) show that investors face lower adverse selection costs when equity issuers have more profitable investment opportunities. Higher

growth firms are likely to have more profitable investment opportunities and require more frequent security offerings. As a result, they represent more attractive investment banking clients, which create greater incentives to offer these clients underwriting services at lower prices. Therefore, investment banks are expected to charge lower gross spreads to higher growth, more profitable firms.

- *Share turnover*: Butler et al. (2005) documents that higher liquidity is associated with lower SEO flotation costs and argue that greater stock liquidity should make an SEO easier to place. Thus, we expect a negative relation between share turnover and gross spreads.
- *Credit rating*: Liu and Malatesta (2006) document that firms with credit ratings are associated with lower gross spreads. They argue that credit ratings reduce information asymmetry between managers and outside shareholders, especially around equity offerings. This argument suggests a negative relation between credit ratings and gross spreads.
- *Rule 415 shelf*: Under shelf registration rules, an issuer can decide to make an SEO any time within a two year window, choosing from a large list of potential underwriters. This Rule increases competition among underwriters, potentially lowering underwriting fees.[18] On the other hand, the Rule reduces the opportunity for underwriters to conduct thorough due-diligence investigations, increasing adverse selection risk, which could raise underwriting fees. Autore, Kumar and Shome (2005) report that shelf registered SEOs have lower underwriting fees, consistent with a dominant underwriter competition effect. This finding leads us to expect a negative relation with gross spreads.

In addition to these control variables, we also include year and industry fixed effects to capture time variation in equity market conditions between hot and cold periods and industry clustering. Since our sample contains multiple offerings by the same issuers, we use White heteroskedasticity robust standard errors adjusted for issuer clustering. The specification of the empirical model is as follows:

$$
\begin{aligned}
Gross\ spread_i(\%) = {} & \alpha_0 + \alpha_1 accruals\ quality_i + \alpha_2 log(net\ proceeds)_i \\
& + \alpha_3 log(total\ asset)_i + \alpha_4 leverage\ ratio_i + \alpha_5 Tobin's\ q_i \\
& + \alpha_6 underwriter\ ranking_i + \alpha_7 \%\ secondary\ shares_i \\
& + \alpha_8 return\ volatility + \alpha_9 shares\ turtnover_i + \alpha_{10} credit\ rating_i \\
& + \alpha_{11} Rule\ 415\ shelf + \Phi year\ \ fixed\ \ effect + \Gamma industry\ \ fixed\ \ effect \\
& + \varepsilon_i
\end{aligned}
\qquad (4)
$$

Table V presents estimates for our regression model of gross spreads. By including controls for other issue characteristics, we are better able to investigate the effects of accruals

[18] The announcement effect of an equity offering using a shelf registration is also likely to be lower, since this is partially anticipated when the shelf issue is first filed with the SEC

quality on underwriting fees. Accruals quality, measured by MDD and FDD models are reported in panel A and panel B respectively. To allow for a non-linear relation between accruals quality and gross spread, the continuous accruals quality variable is replaced by with two indicator variables, AQ1 and AQ5, representing issuers in the best and worst accruals quality quintiles, in the even numbered regressions.

Examining columns (1) and (3) of each panel, we find that the two accruals quality measures have a significant positive relationship to gross spread, consistent with the previous quintile results. When we proxy for accruals quality with indicators for issuers in the best and worst accruals quality quintiles, shown in columns (2) and (4), we find that issuers in the best accruals quality quintile, AQ1, are associated with significantly smaller gross spreads. In contrast, issuers in the worst accruals quality quintile, AQ5, are associated with larger gross spreads, although this relation is not always significant.

Before drawing any firm conclusions, we need to take into account the fact that SEO size is endogenously determined. Recall from Table III that our two measures of accruals quality are significantly associated with SEO size. For this reason, estimating equation (4) by OLS can lead to biased and inconsistent estimates. To avoid this endogeniety problem, we estimate our model of gross spread using 2SLS, where in the first stage regression has the form of Table III. In other words, we estimate the log of expected offer size (log of net proceeds) using a NYSE exchange indicator variable and capital expenditures as instrumental variables.[19] Then in the second stage OLS regressions, we replace the log of net proceeds by its fitted values obtained from the regression estimates in Table III.[20] The two right hand columns of panels A and B of Table V report these 2SLS estimates. Consistent with the OLS regression results, the accruals quality measure continues to have a significant positive relation to gross spreads. When we replace the continuous accruals quality measure with indicators for issuers in the lowest and highest quintiles of accruals quality, issuers in AQ5, the worst accruals quality quintile, are associated with significantly larger gross spreads. In contrast, the issuers in AQ1, the best accruals quality quintile are associated with significantly smaller gross spreads. The difference in the two coefficients in column 6 is a relatively large -1.273.

---

[19] F statistics for the null hypothesis that the two instruments, the NYSE indicator and firm capital expenditure are zero in the two first stage regressions are 22.93, 16.90, and 22.47, 15.56 respectively with p-values of 0.00. In addition, we see from columns (3) and (4) of Table V, that these variables are not significant in the structural equations. Thus, these two variables satisfy the identification condition for estimating 2SLS regressions and meet the criteria for being effective instrumental variables.

[20] Specifically, regression (5) in Table V, panel A is matched with regression (1) of Table III, while regression (6) is matched with regression (2) of Table III. Similarly, regression (5) in Table V, panel B is matched with regression (3) in Table III and regression (6) is matched with regression (4) of Table III.

A number of control variables are significant and have signs consistent with prior studies.[21] The log of net proceeds is negatively related to gross spreads, consistent with an economy of scale effect. Gross spreads are significantly reduced by firm size, measured by the log of total assets, higher expected asset growth, measured by Tobin's q, and share liquidity, measured by share turnover. In addition, riskier stocks, measured by stock return volatility and more levered firms are associated with higher gross spreads. These results imply that investment banks charge higher underwriting fees to higher risk issuers and lower fees to profitable, high growth firms. Prestigious underwriters also charge lower fees, consistent with Li and Masulis (2005). The coefficients on the percent of secondary shares and the Rule 415 shelf indicator are significantly negative, consistent with reduced underwriter risk bearing as the fraction of primary shares in the SEO falls and intensified underwriter competition in shelf offerings. Overall, the evidence in this section confirms the hypothesis that poor accruals quality is associated with a larger equity flotation cost component represented by investment bank underwriting fees.

VI. Announcement Returns and Accruals Quality

Many studies estimate SEO announcement effects by U.S. industrial issuers and document an average negative 2% to 3% announcement return. They also report that a typical SEO increases outstanding shares by 10 to 15%. This has an important implication. If a firm increases its outstanding shares by 10%, then a 2% reduction in the value of its existing shares implies that the issuer's equity capital rises by only 80% of SEO gross proceeds. Thus, this negative announcement returns can be interpreted as another component of equity flotation cost. In addition, since an SEO must be preceded by a public announcement, rational issuers should expect that their SEO will sell at 2% below its current stock price due to this typical negative SEO announcement effect.

The SEO announcement evidence is largely consistent with either an adverse selection or an agency model perspective. Assuming that managers are maximizing existing shareholder wealth and capital markets are efficient, the adverse selection models of Myer and Majluf (1984) and Krasker (1986) predict that managers are more likely to issue equity as the current stock price rises relative to its intrinsic value and that more stock is issued with increased stock overvaluation. Rational investors will take this decision rule into account, and interpret an equity issue announcement as conveying management's opinion that the stock is not

[21] Much of this evidence is summarized in the literature survey by Eckbo, Masulis and Norli (2006).

undervalued, which should reduce the stock's market price since the right tail of its probability distribution (stock undervaluation) is being truncated.

In the alternative agency model framework, managers often pursue their own private benefits. From this perspective, an equity issues can be a means of achieving empire-building at shareholder expense. Consistent with this explanation, Jung, Kim and Stulz (1996) find that firms without valuable investment opportunities have more negative announcement returns than firms with substantial growth opportunities, approximated by high market-to-book ratios. Choe, Masulis and Nanda (1993) also document that offer announcement effects are less negative in expansionary periods since these periods are characterized by the existence of more promising investment opportunities, and are subject to less moral hazard risk.

Applying the above theoretical models to this study, we conclude that poor accounting information prevents investors from evaluating a firm's true financial health and increases asymmetric information between issuers and outside investors. Thus, poorer accruals quality by creating higher asymmetric information leads to more adverse selection and moral hazard. For these reasons, we hypothesize that announcement returns for SEO issuers with poorer accruals quality are associated with more negative returns than those of firms with better accruals quality.

Table VI reports the median and mean values of cumulative abnormal returns (CAR) surrounding initial announcements of SEOs, based on continuous compounding. We searched the Factiva database to find initial SEO announcement dates. In approximately 5% of the SEO sample, announcement dates could not be found, in which case we use the original filing date from the SDC New Issues database as the announcement date. CAR (*t1*, *t2*) represents the cumulative abnormal return over event days (*t1*, *t2*) using a one factor market model, where the CRSP value weighted index is our measure of the market return and the market model parameters are estimated by OLS using the stock's daily returns over trading days -160 to -11 prior to the SEO announcement date (event day 0).

Consistent with previous studies, the average CARs shown in Table VI exhibit negative values ranging between -2% and – 3%, depending on the length of the event window. These negative announcement returns are significantly larger for issuers in the low accruals quality group AQ5 compared to high accruals quality group AQ1. This result supports the hypothesis that SEO announcement returns of issuers with poor accruals quality are more negative than those of issuers with better accruals quality. For robustness, we used (1) the filing date when it is earlier than the announcement date or (2) the filing date in place of the announcement date. In both cases we found similar results.

Next, we evaluate the cross sectional relation between the SEO announcement effect and our accruals quality measures in a regression framework. As in our prior analysis, we include an array of other control variables capturing various issue characteristics such as log of filing gross proceeds, underwriter ranking, log of total assets, leverage ratio, standard deviation of daily stock returns, secondary shares percentage, share turnover, credit rating, the Rule 415 indicator and Tobin's q. In order to capture industry and business cycle effects, we also include industry and year fixed effects. Since the residuals from cross sectional regressions typically exhibit heteroskedasticity and our sample contains multiple offerings by the same issuers, we use White heteroskedasticity robust standard errors with adjustment for issuer clustering.

Table VII begins with OLS regression estimates, where the dependent variable is a 2 day CAR over the trading period (0, 1).[22] Coefficient estimates for issuer accruals quality measures based on the MDD model and the FDD firm fixed effect model are reported in the odd columns of panel A and panel B, respectively. The accruals quality measures are replaced with the indicator variables for issuers in the best and worst accruals quality quintiles (AQ1 and AQ5) in the even numbered columns of the table to allow for a non-linear relation between accruals quality and gross spread. As in the gross spread regressions, the first two columns include the accruals quality measures along with industry and year fixed effects, and exclude the other control variables. In columns 3 and 4, we report OLS estimates when we include all the control variables. The last two columns report 2SLS estimates of accruals quality on SEO announcement returns, where the specifications of the first stage offer size regressions are taken from Table III to be parallel with the specification in Table VII. The second stage dependent variable is the issuer 2 day announcement CAR.

Regardless of the empirical specification, we observe that the accruals quality measure shown in columns 1, 3, and 5 of each panel of Table VII has a significant negative coefficient, indicating that as accruals quality deteriorates, SEO announcement returns become more negative. This regression analysis supports the hypothesis that poorer accruals quality is associated with a more negative market reaction to the equity issuance decision. We draw similar conclusions when the accruals quality measure is replaced by two indicator variables for issuers in the best and worst accruals quality quintiles in the even columns of each panel. Specifically, we find that the best accruals quality issuers are associated with a significantly more positive market reaction to the SEOs, while the worst accruals quality issuers are associated with a significantly more negative market reaction, although the effect is sometimes

[22] We also examine CARs over event days (-1,1) and (-2,2) and find qualitatively consistent results.

significant only at the 10% level. We again conclude that poor accruals quality leads to significantly larger negative announcement returns.

Turning to the control variables, we find that uncertainty about an issue's value, measured by the standard deviation of daily stock returns over trading days -69 to -11 prior to announcement date, is associated with a more negative mean announcement return. In addition, issuers with a higher proportion of secondary shares and shelf issues typically made by older and larger firms having more tangible assets are associated with more positive announcement returns. Consistent with Choe, Masulis and Nanda (1993) and Jung, Kim and Stulz (1996), firms with more profitable investment opportunities, represented by a higher Tobin's q, have more positive SEO announcement returns.

VII. Probability of Offer Withdrawal and Accruals Quality

An underwriting syndicate guarantees the sale of the entire SEO, bearing responsibility for reselling the issue to the public. When a firm is subject to more information asymmetry and uncertainty, demand for its new security issues is more likely to be weaker and more unstable. Since poor accruals quality makes it harder for investors to evaluate a firm's true performance, it increases the asymmetric information between issuers and outside investors and contributes to stock price uncertainty. Correspondingly, underwriting risk of these issues is heightened. However, underwriters have strong incentive to avoid overpriced SEOs. An overpriced SEO increases the likelihood that it will not be successfully placed and it also raises the risk that the investors purchasing the offering will later sue the underwriters for breach of their fiduciary duty. To minimize their risk, underwriters gather information about issue demand during the registration period, and carefully assess this new information before deciding on whether to sign the underwriting contract. For issuers with poor accruals quality, this issue demand is likely to be more unstable. Therefore, poor accruals quality can raise the probability of offer withdrawal.

From the perspective of issuers, the cancellation of a new issue is very costly, since it can force the firm to forego valuable investment opportunities. Of course, these unsuccessful offers also squander considerable management time and money, including registration and marketing fees. Lee, Lochhead, Ritter and Zhao (1996) documents that the direct expenses of stock offerings, including registration and auditing fees, printing and legal costs, are approximately 3.69% of IPO proceeds, while SEO direct expenses are likely to be somewhat lower, this figure excludes other important costs such as management time. In addition, the inability to raise capital may convey even more negative information to investors, and may result in a substantial fall in stock price. For these reasons, we include the probability of SEO withdrawal as a component of equity flotation costs, and examine how this probability is affected by accruals quality.

Table VIII presents the percentiles of accruals quality between withdrawn and completed SEOs. Across all the reported percentiles, our accruals quality measures are greater for withdrawn issues than completed SEOs. When we perform a univariate test in the last column, using a difference in means test (t-test) or a difference in medians (Wilcoxon test), we conclude that accruals quality in withdrawn SEOs is much worse than that in completed SEOs, based on either the MDD (panel A) or FDD (panel B) models. Overall, these univariate tests support the hypothesis that poor accruals quality is associated with a larger probability of offer withdrawal.

While univariate tests are supportive of an accruals quality effect, they do not control for issuer or industry characteristics that may affect the probability of offer withdrawal and these characteristics can be quite different across the two samples. Therefore, we also estimate a regression model where we control for other factors that can affect the probability of offer withdrawal. For this purpose, the dependent variable is an indicator variable that takes a value of one when an issue is withdrawn, and takes a value of zero, otherwise.

Before estimating the effect of accruals quality on the probability of SEO withdrawal, we again need to recognize that there is a potential endogeniety problem in using offer size (net proceeds) as a regressor in the likelihood function of offer withdrawals. To address this endogeneity concern, we estimate an instrumental variable probit (IV probit) regression in a conditional maximum likelihood framework.[23] In the first stage, we estimate the log of net proceeds using an indicator variable for NYSE listing and firm capital expenditures as instruments.

Table IX presents the estimation results for the IV probit model of offer withdrawal. In the first two columns, we measure accruals quality using the MDD model and in the last two columns, we measure accruals quality using the FDD model. AQ1 and AQ5 are indicator variables for issuers in the best and worst quintiles of accruals quality to allow for a non-linear relation between accruals quality and offer size. In the last row of Table X, we provide p-values for a Wald test. The null hypothesis of no endogeniety is rejected for all the specifications. Consistent with the earlier univariate analysis, our two inverse measures of accruals quality significantly increase the probability of issue withdrawal, supporting the hypothesis that poor accruals quality is associated with larger equity flotation costs. Next, we substitute indicator variables for issuers in the best accruals quality quintile and the worst accruals quality quintile in place of the accruals quality measure. We find that the issuers with the best accruals quality,

[23] More detailed discussion of this model is provided in Wooldridge (2002), 472-477.

AQ1, are associated with a significantly lower probability of issue withdrawal, while issuers with the worst accruals quality, AQ5, are associated with a significantly higher probability of issue withdrawal.

As for the control variables, more reputable underwriters are significantly associated with an increase probability of offer withdrawal. Underwriters bear substantial issue risk exposure if they sign the SEO underwriting agreement. Thus, underwriters are likely to decline tentative underwriting engagements where they uncover material adverse information during the registration period, since this increases their underwriting risk exposure and subjects them to potential litigation by unhappy SEO investors who sustain losses after the offering. Since more reputable underwriters are more sought after than less reputable underwriters, they are more likely to decline weak underwriting engagements to protect their reputation. While larger SEO issuers are associated with an increase probability of issue withdrawal, possibly because they can afford to postpone an offering if the underwriter were to require a lower offering price to offset weakening issue demand, larger issues are associated with a lower probability of issue withdrawal, which may reflect the fact that underwriters are unlikely to agree to a large SEO unless the issuer is financially strong. Not surprisingly, increasing the issuer's leverage or stock return volatility significantly raise the probability of issue withdrawal, which is consistent with increases in these two variables reflecting weakening issuer financial conditions. Finally, a higher percentage of secondary share selling also significantly raises the probability of issue withdrawal, which is consistent with larger insider sales releasing more negative information to the market about the stock's intrinsic value.

VIII. Robustness Analyses

A. Selection Bias Adjusted Estimates

Given that the sample criteria requires issuers to have survived at least 6 years before their SEOs, our previous SEO flotation cost results could be spuriously driven by this nonrandom selection criterion. To examine the importance of this potential sample selection problem, Table X reports summary statistics for issuer characteristics for both our SEO sample and the non-selected SEOs in the population. The non-selected (random) SEO sample consists of 2,649 SEOs that satisfy the same sample criteria shown in section III, except for the availability of COMPUSTAT yearly financial data needed to estimate the accruals quality variable. The COMPUSTAT data availability requirement substantially reduces the SEO sample from 2,176 to 963 observations, since it requires at least 8 years of consecutive yearly financial data.

From Table X, we see that the reduced sample on average includes companies that are larger, measured by total assets, with proportionally more tangible assets, greater leverage, and both lower Tobin'q and pre-offer daily stock returns volatility relative to the non-selected SEO sample. These characteristics are usually found in older and more established companies. In terms of gross spreads, the SEOs in our sample have 0.2 % and 0.3% lower mean and median values relative to non-selected SEOs. Therefore, we need to further investigate if our equity flotation cost results are significantly affected by our sample selection procedure by employing standard econometric techniques for selection bias.

Putting our expected flotation costs estimation problem in a general statistical framework, we are primarily interested in the following equation

$$y = X\beta + \varepsilon$$

where y represents an equity flotation cost component and X represents the determinants of a particular component of equity flotation costs and the sample selection process can be characterized by

$$z^* = W\gamma + \upsilon \ .$$

where W is a matrix of variables that determine whether the expected equity flotation cost is observed, and γ is a vector of coefficients to be estimated. Denoting equity flotation cost components such as gross spread by y, then the sample rule is that y is only observed when z^* is greater than zero. Suppose ε and υ have a bivariate normal distribution with zero mean and correlation ρ, then we can obtain a statistical model that is applicable to the observations in our sample, which has the following form:

$$E\{y \mid z > 0\} = \mu_y + \rho\sigma_y\lambda(\alpha_Z) \text{ and } Var\ \{y \mid z > 0\} = \sigma_y^2\ \left[\ 1 - \rho^2\delta(\alpha_Z)\right]$$

where $\alpha_z = -\dfrac{\mu_z}{\sigma_y}$, $\lambda(\alpha_Z) = \dfrac{f(\alpha_z)}{\left[1 - F(\alpha_z)\right]}$, and $\delta(\alpha_Z) = \lambda(\alpha_Z)\ (\lambda(\alpha_Z) - \alpha_Z)$.

It follows that if λ is omitted, we cannot obtain consistent estimates of β, leading to the classical omitted variable bias in OLS estimation. To avoid this bias, we estimate a maximum-likelihood version of the Heckman (1979) selection model.

Table XI presents estimates from a Heckman selection model to examine the effect of accruals quality on underwriter gross spreads (panel A) and announcement returns, measured by CAR, the cross-sectional average abnormal return continuously compounded over the 2 trading day period (0, 1) (panel B). To ensure the model is identified, we include an indicator for when the number of years between an issuer's IPO and current SEO is equal or greater than 6 as well as an exchange listing indicator variable in the first stage regression. As indicated in the last row of both panels, the hypothesis of no correlation of the error terms ((ρ) =0) is rejected in the underwriter gross spread regressions (panel A), but not in the SEO announcement return regressions (panel B). This implies that sample selection bias needs to be considered when we evaluate the effect of issuer accounting information quality on underwriter gross spreads. However, after controlling for this sample selection bias in unreported results, the accruals quality variable is still significantly positively related to gross spreads and negatively associated with announcement returns. Therefore, we conclude that poor accruals quality is associated with higher gross spreads and more negative announcement returns, and this result is robust to adjusting for sample selection bias. Finally, for the probability of offer withdrawal analysis, the sample selection problem is likely to be of minor concern since the withdrawn offering and completed SEO samples are both subject to the same sample selection criteria.

B. Alternative Empirical Specifications

From Figure I, we see that 22% of gross spreads are concentrated at integers. This may reflect conventional underwriter pricing practices, which are often mentioned in determining offer prices. For example, Lee, Lochhead, Ritter, and Zaho (1996) report a tendency for SEO offer prices to be rounded down to the nearest eighth or integer value. Mola and Loughran (2004) find that SEO offer prices are clustered at integers and do not tend to occur at odd eighths. Corwin (2003) observes that underwriters of Nasdaq stocks tend to be priced at the prior trading day's closing bid quote, rather than the closing transaction price. This evidence suggests that underwriters may round gross spreads up or down to the nearest integer. To accommodate this possibility, we also estimate our model of gross spreads with an ordered logit regression. The empirical model is specified as

$$Gross\ spread_i^* = \alpha_0 + \alpha_1 accruals\ quality_i + other\ control\ variables + \varepsilon_i \qquad (5)$$

where we assign an ordered dependent variable as follows:

$$gross\ spread = \begin{cases} 0 & if \quad gross\ spread^* < 2.5 \\ 1 & if \quad 2.5 \le gross\ spread^* < 3.5 \\ 2 & if \quad 3.5 \le gross\ spread^* < 4.5 \\ 3 & if \quad 4.5 \le gross\ spread^* < 5.5 \\ 4 & if \quad 5.5 \le gross\ spread^* < 6.5 \\ 5 & if \quad 6.5 \le gross\ spread^* \end{cases}$$

Consistent with the results in Table V, we find that poor accruals quality has a significant positive effect on underwriting gross spreads using an ordered logit model.

Turning to the SEO announcement return evidence, we observe that these announcement returns are highly skewed, which can bias OLS estimates. So for robustness, we alternatively estimate the announcement return models using median regressions. While a *least squares* regression estimates the *mean* of the dependent variable, *median* regression estimates the *median* of the dependent variable, and as such it is less sensitive to outliers.[24] The untabulated results using a median regression are qualitatively similar to those in Table VII. Overall, this section supports the hypothesis that poor accruals quality is associated with higher expected SEO flotation costs.

IX. Conclusion

The fundamental question this study investigates is whether increases in asymmetric information between issuers and outside investors are associated with larger flotation costs in seasoned equity offerings. This is an important question because flotation costs can consume a large portion of the capital raised in an equity offering. While many prior studies report a positive relation between flotation costs and asymmetric information, there is no generally agreed upon measure of asymmetric information. Examples of alternative measures of asymmetric information frequently used in the finance literature include: stock return volatility, dispersion in analysts' earnings forecasts, debt rating and a component of bid-ask spread. However, each of these measures has its weaknesses, so we pursue an alternative approach to measuring asymmetric information based on the issuer's financial accounting information.

Given that accounting earnings is one of the most commonly used measures of firm performance, we measure asymmetric information between managers and outside investors based on the quality of this information. More specifically, we examine the reliability of the accruals component of accounting earnings. This is in part motivated by evidence of opportunistic use of accounting discretion by managers for the purposes of window-dressing and manipulation of investor expectations about stock values, which is more likely to occur around major corporate events such as equity offers. This issue has received considerable attention in the accounting literature.

While many earlier financial accounting studies use variations on the discretionary accruals model as a proxy for accounting information quality or earnings management, we measure accounting information quality using a relatively new current accruals model

[24] The median regression method finds the regression plane that minimizes the sum of the absolute residuals rather than the sum of the squared residuals. Therefore, it leads to least absolute deviations (LAD) estimators. It is a special case of a quantile regression model, which is very insensitive to outliers and skewness.

developed by Dechow and Dechev (2002) and McNichols (2002). Unlike the earlier approaches, this measure captures not only managerial actions aimed at manipulating accounting information, but also any estimation errors caused by uncertainty about the firm and its industry conditions. The modified Dechow and Dechev measure is based on a track record of an issuer's accruals surprises. It is generally considered by financial accounting researchers to be a better approach to capturing the quality of accounting information than other existing earnings management or discretionary accruals models. We also improve on this model by augmenting it with firm fixed effects to take into account unobservable firm characteristics that are time invariant such as its unobservable internal accounting policies. We argue that this augmented Dechow and Dechev model is more appropriate for evaluating the effects of information asymmetry on the flotation costs of seasoned equity offerings.

With our two accounting based measures of asymmetric information, we examine the effects on three major components of expected flotation costs in seasoned equity offerings, namely underwriting fees, expected announcement effects and the likelihood of offering withdrawal. From a large sample of recent seasoned equity offerings, we find a significant relation between poor accounting information quality and (1) larger underwriting fees, (2) more negative market reactions to offering announcements, and (3) a higher probability of issue withdrawal. These results are consistent across our two measures of accounting information quality. The conclusions are also robust to controlling for the endogeneity of the offer size decision and potential sample selection bias. These results present persuasive evidence that major components of equity flotation costs are positively related to measures of information asymmetry between issuers and uninformed outside investors and that our measures of accounting information quality are credible proxies for this information asymmetry.

Appendix: Variable Definitions

Variable	Definitions
Underwriter gross spread	Underwriter's purchase price for a share of the SEO as a percent of the offer price, taken from the Thomson Financial New Issues database.
Announcement return	The cross-sectional average abnormal return (CAR) continuously compounded over the 2 day trading period (0, 1), taken from the CRSP database.
Withdrawn SEOs	Indicator variable: 1 if the SEO is not completed and 0 otherwise, taken from the Thomson Financial New Issues database
Log (Net proceeds)	Log of the SEO gross proceeds or shares offered x offer price minus underwriting fees, taken from the Thomson Financial New Issues database.
Accruals quality	The standard deviation from either the MDD model or the FDD model estimated over the 6 years prior to the SEO year and through the year after the SEO. The MDD regression equation is as follows: $CA_t = c + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_3 CFO_{t+1} + \phi_4 \Delta Sales_t + \phi_5 PPE_t + v_t$ where CA = total current accruals = Δ current assets (*Compustat item 4*) - Δ current liabilities (*item 5*) - Δ cash (*item 1*) + Δ debt in current liabilities (*item 34*), Δ = changes from year t to year t-1, CFO = cash flow from operation = net income before extraordinary items (*item 18*) – total accruals, and total accruals = current accruals – depreciation and amortization expense (*item 14*), *Sales* = total revenue (*item 12*), and *PPE* = property, plant, and equipment (*item 7*). All the variables are scaled by the average of total assets (*item 6)* between year t-1 and year t. Estimation of the MDD model involves two steps. First, we estimate the equation for each of the Fama and French (1997) 48 industry groups having at least 20 firms over the years t-4 through t. Then we calculate the standard deviation of firm *j's* residuals, i.e. $v_{j,t}$ through $v_{j,t-4}$. The FDD model is equivalent to the MDD model except that firm fixed effects are added.
AQ1	Indicator variable: 1 for issuers in the best quintile of accruals quality and 0 otherwise.
AQ5	Indicator variable: 1 for issuers in the worst quintile of accruals quality and 0 otherwise.

Log (total assets)	Log of book value of total assets (Compustat item 6) in the year prior to SEO filing.
Leverage ratio	Ratio of book value of short and long term debt (Compustat item 9 + item 34) over book value of total assets (Compustat item 6) in the year prior to SEO filing.
Tobin’s q	Market value to book value of total assets ((Compustat item 6 – item 60 + item 25 * item 199) / item 6) and is measured by book value of total assets minus book value of equity plus common shares outstanding multiplied by the year-end closing stock price, all at the year-end prior to the SEO filing.
Underwriter ranking	The Carter-Manaster reputation measure in the year prior to SEO filing, taken from Jay Ritter’s website.
Secondary shares	Percentage of SEO shares being sold by existing shareholders to total SEO shares, taken from the Thomson Financial New Issues database.
Return volatility	The standard deviation of daily stock return during the trading period (-90, -11) prior to the issue date (trading day 0), taken from the CRSP database.
Share turnover	The ratio of average daily share trading volume during the trading period (-90,-11) prior to the issue date (trading day 0) divided by pre-SEO total shares outstanding, all taken from the CRSP database.
Credit rating	Indicator variable: 1 if the issuer has any rated bonds in the year prior to SEO filing and 0 otherwise, taken from the Compustat database.
Rule 415 Shelf	Indicator variable: 1 if the SEO issue was shelf registered and 0 otherwise, taken from the Thomson Financial New Issues database.
NYSE	Indicator variable: 1 if the SEO issuer’s stock is NYSE listed and 0 otherwise, taken from the CRSP database.
Capex	The capital expenditures (Compustat item 128) scaled by end year total assets (item 6) in the year prior to SEO filing.

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Figure I. Scatter Diagram of Proceeds and Gross Spreads

The sample criteria requires the SEOs to be common stock listed on the NYSE, Amex or Nasdaq and issued by U.S. firms over the 1990 to 2002 period, and excludes: (1) SEOs lacking CRSP daily stock returns and prices for the SEO announcement period and the prior 90 trading days, (2) firms lacking COMPUSTAT annual financial statement data for the 6 years prior to the SEO filing date, the offer year and the following year, which are needed to estimate firm accruals quality, (3) completed SEOs with offer prices less than $5 and withdrawn SEOs with filing range midpoints less than $5, (4) spin-offs, (5) reverse LBOs, (6) closed-end fund, unit investment trusts, REITs and limited partnerships, (7) rights and standby issues, (8) simultaneous or combined offers of several classes of securities such as unit offers of stock and warrants and (9) non-domestic and simultaneous domestic-international offers. This figure plots gross spreads (%) versus log of net proceeds ($million).

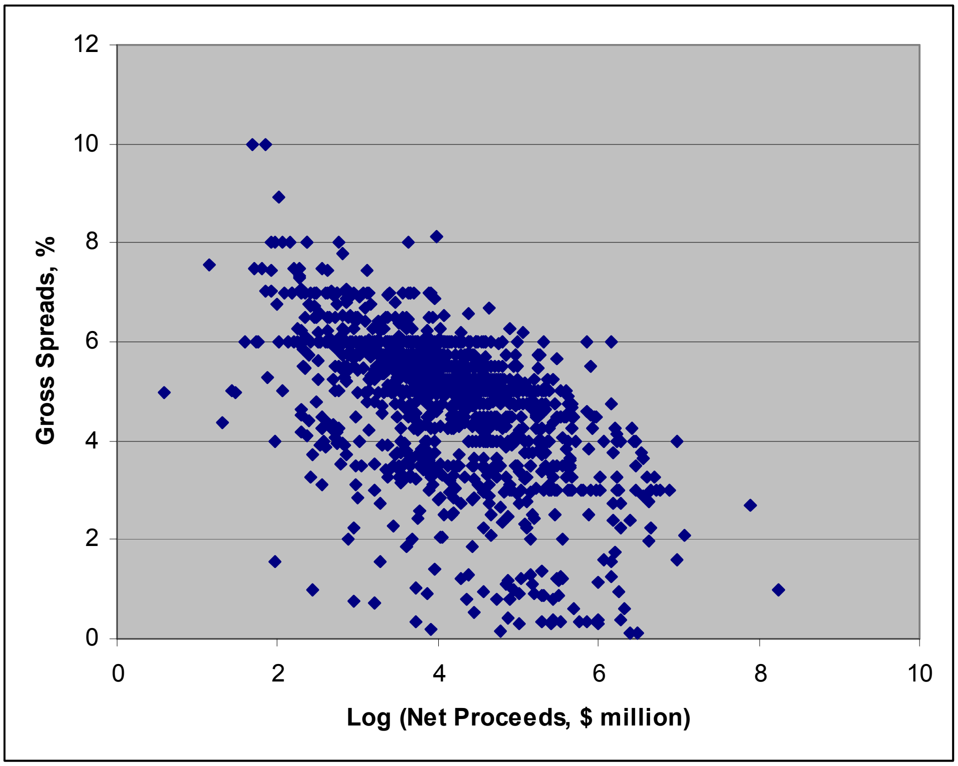

Table I. Descriptive Statistics of Accruals Quality

The SEO sample consists of 963 firm commitment agreements over the 1990 to 2002 period by U.S. issuers of common stock listed on the NYSE, Amex or Nasdaq, and excludes: (1) SEOs lacking CRSP daily stock returns and prices for the SEO announcement period and the prior 90 trading days, (2) firms lacking COMPUSTAT annual financial statement data for the 6 years prior to the SEO filing date, the offer year and the following year, which are needed to estimate firm accruals quality, (3) completed SEOs with offer prices less than $5 and withdrawn SEOs with filing range midpoints less than $5, (4) spin-offs, (5) reverse LBOs, (6) closed-end fund, unit investment trusts, REITs and limited partnerships, (7) rights and standby issues, (8) simultaneous or combined offers of several classes of securities such as unit offers of stock and warrants and (9) non-domestic and simultaneous domestic-international offers.
The MDD regression equation is as follows:

$$CA_t = c + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_3 CFO_{t+1} + \phi_4 \Delta Sales_t + \phi_5 PPE_t + v_t$$

where *CA* = total current accruals = Δ current assets (*Compustat item 4*) - Δ current liabilities (*item 5*) - Δ cash (*item 1*) + Δ debt in current liabilities (*item 34*), Δ = changes from year *t* to year *t-1*, *CFO* = cash flow from operation = net income before extraordinary items (*item 18*) – total accruals, and total accruals = current accruals – depreciation and amortization expense (*item 14*), *Sales* = total revenue (*item 12*), and *PPE* = property, plant, and equipment (*item 7*). All the variables are scaled by the average of total assets (*item 6)* between year *t-1* and year *t*. Estimation of the MDD model involves two steps. First, we estimate the equation for each of the Fama and French (1997) 48 industry groups having at least 20 firms over the years *t-4* through *t*. Then we calculate the standard deviation of firm *j's* residuals, i.e. $v_{j,t}$ through $v_{j,t-4}$. The FDD model is equivalent to the MDD model except that firm fixed effects are added. Panel A presents means, medians and quintiles of accruals quality. Panel B presents means squared errors of the demeaned residuals from estimating the accruals quality model. Residuals refer to errors from a firm's accruals quality model measured in event time relative to the SEO year and means refer to the average of the errors from the firm's accruals quality model estimates.

Panel A: Descriptive Statistics of Accruals Quality

Variable	Accruals Quality (MDD)	Accruals Quality (FDD)
Mean	0.0753	0.0633
Median	0.0438	0.0341
AQ Quintiles (1=high AQ score; 5=low AQ score)		
AQ1	0.0158	0.0120
AQ2	0.0330	0.0257
AQ3	0.0580	0.0457
AQ4	0.1085	0.0848
AQ5	1.1269	0.4759

Panel B: Time Series of $((\text{Residual - mean})^2)^{1/2}$

	Accruals Quality (MDD)	Accruals Quality (FDD)
t	0.0626	0.0526
t-1	0.0573	0.0454
t-2	0.0540	0.0447
t-3	0.0528	0.0443
t-4	0.0591	0.0516

Table II. Frequency of SEOs by Offer Year, Issuer, Offer Type, and Industry

The SEO sample consists of 963 firm commitment agreements over the 1990-2002 period by U.S. issuers of common stock listed on the NYSE, Amex or Nasdaq and excludes: (1) SEOs lacking CRSP daily stock returns and prices for the SEO announcement period and the prior 90 trading days, (2) firms lacking COMPUSTAT annual financial statement data for the 6 years prior to the SEO filing date, the offer year and the following year, which are needed to estimate firm accruals quality, (3) completed SEOs with offer prices less than $5 and withdrawn SEOs with filing range midpoints less than $5, (4) spin-offs, (5) reverse LBOs, (6) closed-end fund, unit investment trusts, REITs and limited partnerships, (7) rights and standby issues, (8) simultaneous or combined offers of several classes of securities such as unit offers of stock and warrants and (9) non-domestic and simultaneous domestic-international offers.

Panel A: Frequency distribution of SEOs by Offer Year

Year	Freq.	%	cum. %
1990	37	3.84	3.84
1991	120	12.46	16.3
1992	114	11.84	28.14
1993	117	12.15	40.29
1994	60	6.23	46.52
1995	70	7.27	53.79
1996	94	9.76	63.55
1997	79	8.2	71.75
1998	46	4.78	76.53
1999	37	3.84	80.37
2000	53	5.5	85.88
2001	44	4.57	90.45
2002	92	9.55	100
Total	963	100	

Panel B: Number of Offering Frequency

No. Offerings	Freq.	%	cum. %
1	626	65	65
2	120	25	90
3	25	8	98
4	3	1	99
5	2	1	100
Total	963	100	

Panel C: Frequency of Primary and Secondary Offerings			
Offer Type	Freq.	%	cum. %
Pure Primary	631	65.52	65.52
Mixed	263	27.31	92.83
Pure Secondary	69	7.17	100
Total	963	100	

Panel D: Frequency Distribution of SEOs by Industry			
Industry	Two-digit SIC Codes	Freq.	%
Oil and Gas	13,29	55	5.71
Food Products	20	11	1.14
Paper and Paper Products	24-27	28	2.91
Chemical Products	28	86	8.93
Manufacturing	30-34	32	3.32
Computer Hardware & Software	35,73	99	10.28
Electronic Equipment	36	84	8.72
Transportation	37, 39, 40-42, 44,45	49	5.09
Scientific Instruments	38	77	8.00
Communications	48	21	2.18
Electric, Gas, And Sanitary Services	49	111	11.53
Durable Goods	50	36	3.74
Retail	53, 54, 56, 57, 59	42	4.36
Eating and Drinking Establishments	58	15	1.56
Financial Services	61,62,64,65	26	2.70
Entertainment Services	70, 78, 79	18	1.87
Health	80	20	2.08
All Others		153	15.89
Total		963	

Table III. Estimates of the Offer Size and Accruals Quality Relation

This table presents regression estimates of issuer accruals quality on log of SEO net proceeds. The SEO sample consists of 963 firm commitment agreements over the 1990 to 2002 period by U.S. issuers. The dependent variable is the log of net proceeds. In the first two columns, we use the first proxy of accruals quality based on regular MDD and in the last two columns, we use the second proxy of accruals quality based on fixed effect model (FDD). The dependent and all the explanatory variables are defined in the Appendix. All regressions include a constant, year, and industry fixed effects. All tests use White heteroskedasticity robust standard errors with adjustment for SEO clustering by issuers. The absolute value of t statistics is in brackets. **, *, and † represent 1%, 5%, and 10% significance respectively.

	Accruals Quality (MDD)		Accruals Quality (FDD)	
	(1)	(2)	(3)	(4)
Accruals quality	0.851		0.655	
	[3.73]**		[2.87]**	
AQ1		-0.434		-0.509
		[6.99]**		[8.43]**
AQ5		0.151		0.093
		[3.53]**		[2.22]*
Log (total assets)	0.388	0.432	0.385	0.446
	[15.12]**	[20.05]**	[14.88]**	[20.81]**
Leverage	-0.045	-0.125	-0.065	-0.195
	[0.33]	[0.97]	[0.49]	[1.58]
Tobin's q	0.100	0.103	0.104	0.106
	[8.20]**	[9.87]**	[8.66]**	[10.69]**
Underwriter ranking	0.130	0.121	0.131	0.117
	[7.02]**	[7.11]**	[7.03]**	[6.79]**
Secondary shares	0.005	0.005	0.005	0.005
	[9.04]**	[9.08]**	[8.93]**	[8.89]**
Return volatility	-1.022	-1.115	-0.763	-0.592
	[0.83]	[0.93]	[0.62]	[0.53]
Share turnover	0.064	0.053	0.066	0.054
	[5.93]**	[5.32]**	[6.01]**	[5.40]**
Credit rating	-0.011	-0.022	-0.011	-0.026
	[0.18]	[0.37]	[0.17]	[0.45]
Rule 415 Shelf	-0.029	-0.049	-0.031	-0.041
	[0.47]	[0.83]	[0.50]	[0.69]
NYSE	0.154	0.122	0.152	0.115
	[3.02]**	[2.44]*	[2.96]**	[2.32]*
Capex	0.412	0.335	0.412	0.310
	[5.89]**	[5.17]**	[5.84]**	[4.90]**
Constant	-0.206	-0.295	-0.188	-0.305
	[1.31]	[1.92] †	[1.19]	[2.03]*
Year fixed effect	included	included	included	included
Industry fixed effect	included	included	included	included
Observations	963	963	963	963
Adj. R2	0.741	0.757	0.739	0.761

Table IV. Accruals Quality and Investment Banking Fees

The SEO sample consists of 963 firm commitment agreements over the 1990 to 2002 period by U.S. issuers of common stock listed on the NYSE, Amex or Nasdaq. Panel A shows the percentile of gross spreads, its major component of management, underwriting fee and selling concession, and accruals quality. Panel B and C show the quintile of gross spreads by accrual quality quintile (where a larger number represents poorer accruals quality).

Panel A: Investment Banking Fees and Accruals Quality Percentile

Percentile	Gross Spread(%)	Management Fee(%)	Underwriting Fee(%)	Selling Concession(%)
10%	3.250	0.688	0.602	2.000
25%	4.359	0.897	0.701	2.591
Median	5.250	1.062	0.901	3.037
75%	5.972	1.196	1.286	3.396
90%	6.500	1.356	1.481	3.733
Mean	5.085	1.062	1.104	2.972
Std. Dev.	1.268	0.511	0.347	0.681

Panel B: Gross Spreads by Accrual Quality (MDD) Quintile

Accruals Quality	Gross Spreads (%)				
	Smallest	2	3	4	Largest
Best	3.201	3.901	4.513	5.359	6.982
2	3.514	4.723	5.174	5.750	7.478
3	4.221	5.000	5.500	6.000	8.455
4	4.946	5.250	5.622	6.096	9.850
Poorest	5.000	5.522	6.000	6.500	8.000

Panel C: Gross Spreads by Accrual Quality (FDD) Quintile

Accruals Quality	Gross Spreads (%)				
	Smallest	2	3	4	Largest
Best	3.250	3.929	4.635	5.486	7.021
2	4.000	4.895	5.248	5.726	7.554
3	4.221	5.000	5.500	6.000	7.512
4	4.569	5.182	5.501	6.092	7.990
Poorest	5.000	5.699	6.000	6.500	8.181

Table V. Estimates of the Gross Spread and Accruals Quality Relation

This table presents regression estimates of SEO issuer accruals quality on underwriter gross spreads. The SEO sample consists of 963 firm commitment agreements over the 1990 to 2002 period by U.S. issuers of common stock listed on the NYSE, Amex, or Nasdaq. Panel A is based on 2SLS estimation, where the first stage regression has the form of Table III. The dependent variable of the second stage is the log of net proceeds. In the first two columns, the accruals quality measures is based on the modified Dechow-Dichev (MDD) model and in the last two columns, it is based on the modified firm fixed effect (FDD) model. The dependent and all the explanatory variables are defined in the Appendix. Ordered logit model is used for the Panel B, where dependent variables are ordered and assigned by percent of gross spreads. All regressions include an intercept and year and industry fixed effects. All tests use White heteroskedasticity robust standard errors with adjustment for issuer clustering. The absolute value of t statistics is in brackets. **, *, and † represent 1%, 5%, and 10% significance respectively.

Panel A: Accruals Quality (MDD)						
	OLS	OLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Accruals quality	6.706		1.793		2.021	
	[7.04]**		[2.56]*		[2.62]**	
AQ1		-0.354		-0.183		-1.057
		[2.86]**		[2.19]*		[3.06]**
AQ5		0.312		0.013		0.214
		[2.87]**		[0.20]		[1.78] †
Log (Net proceeds)			-0.335	-0.282	-0.556	-1.664
			[5.94]**	[4.24]**	[2.18]*	[2.85]**
Log (total assets)			-0.314	-0.389	-0.23	-0.328
			[9.45]**	[7.90]**	[2.09]*	[1.77] †
Leverage			0.213	0.384	0.267	0.301
			[1.58]	[2.72]**	[1.73] †	[1.33]
Tobin's q			-0.040	-0.041	-0.013	-0.049
			[2.10]*	[2.15]*	[0.36]	[1.69] †
Underwriter ranking			-0.094	-0.077	-0.067	-0.051
			[4.10]**	[3.41]**	[1.68] †	[1.69] †
Secondary shares			-0.002	-0.002	-0.002	-0.002
			[2.26]*	[2.35]*	[1.88] †	[1.78] †
Return volatility			5.735	6.014	5.849	8.163
			[3.51]**	[3.74]**	[3.43]**	[3.10]**
Share turnover			-0.058	-0.06	-0.04	-0.019
			[3.22]**	[3.46]**	[1.78] †	[1.47]
Credit rating			0.026	0.039	0.007	-0.108
			[0.35]	[0.53]	[0.09]	[0.79]
Rule 415 Shelf			-0.418	-0.442	-0.429	-0.689
			[3.68]**	[3.97]**	[3.73]**	[4.79]**
NYSE			-0.086	-0.077		
			[1.49]	[1.34]		
Capex			-0.052	-0.02		
			[0.41]	[0.17]		
Constant	5.227	5.296	8.962	9.002	8.894	8.095
	[19.33]**	[17.93]**	[38.11]**	[38.55]**	[33.34]**	[16.13]**
Year fixed effect	included	included	included	included	included	included
Industry fixed effect	included	included	included	included	included	included
Observations	963	963	963	963	963	963
Adj. R2	0.31	0.29	0.70	0.72	0.69	0.65

Panel B: Accruals Quality (FDD)						
	OLS	OLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Accruals quality	2.018		0.684		0.545	
	[5.94]**		[2.47]*		[2.39]*	
AQ1		-0.339		-0.324		-1.149
		[2.65]**		[3.49]**		[2.70]**
AQ5		0.391		0.096		0.289
		[3.68]**		[1.40]		[2.66]**
Log (Net proceeds)			-0.331	-0.172	-0.551	-1.806
			[5.78]**	[2.73]**	[2.13]*	[2.68]**
Log (Total assets)			-0.319	-0.45	-0.234	-0.412
			[9.37]**	[9.32]**	[2.09]*	[1.69] †
Leverage			0.236	0.342	0.295	0.245
			[1.73] †	[2.35]*	[1.84] †	[1.09]
Tobin's q			-0.04	-0.055	-0.015	-0.03
			[2.12]*	[2.91]**	[0.40]	[1.69] †
Underwriter ranking			-0.096	-0.085	-0.07	-0.06
			[4.17]**	[3.63]**	[1.69] †	[1.70] †
Secondary shares			-0.002	-0.002	-0.002	-0.003
			[2.17]*	[2.11]*	[2.09]*	[1.80] †
Return volatility			5.827	7.308	5.829	8.979
			[3.61]**	[4.34]**	[3.42]**	[3.43]**
Share turnover			-0.06	-0.06	-0.042	-0.029
			[3.34]**	[3.49]**	[1.88] †	[1.64]
Credit rating			0.014	0.053	-0.007	-0.122
			[0.19]	[0.66]	[0.09]	[0.86]
Rule 415 Shelf			-0.421	-0.508	-0.433	-0.684
			[3.70]**	[4.67]**	[3.75]**	[4.59]**
NYSE			-0.081	-0.097		
			[1.41]	[1.60]		
Capex			-0.052	-0.093		
			[0.41]	[0.84]		
Constant	5.372	5.448	9.042	8.943	8.973	8.015
	[22.20]**	[22.30]**	[37.51]**	[35.35]**	[33.11]**	[14.83]**
Year fixed effect	included	included	included	included	included	included
Industry fixed effect	included	included	included	included	included	included
Observations	963	963	963	963	963	963
Adj. R2	0.29	0.30	0.70	0.70	0.69	0.69

Table VI. Abnormal Returns on the SEO Announcements

This table shows the mean (panel A) and median (panel B) values of abnormal daily common stock returns surrounding initial announcements of 963 SEOs. CAR (*t1*, *t2*) represents the cumulative abnormal return over event days (*t1*, *t2*) using a one factor market model, where the market return is measured by the CRSP value weighted index and the parameters are estimated by OLS using the stock's daily returns over trading days -160 to -11 prior to the SEO announcement. Estimation errors in the MDD and FDD accruals models are used to measure accruals quality. AQ1 and AQ5 represent the best and worst quintiles of accruals quality issuers. The dependent and all the explanatory variables are defined in the Appendix. Event day 0 represents the SEO announcement date. The absolute values of the t statistics and Wilcoxon signed rank statistics for the differences between the AQ1 and AQ5 issuer CARs are in brackets. **, *, and † represent 1%, 5%, and 10% significance respectively.

Panel A: Mean CARs			
	CAR(-2,2)	CAR(-1,1)	CAR(0,1)
All	-0.0282	-0.0271	-0.0267
	[10.63]**	[13.58]**	[13.59]**
Accruals Quality (MDD)			
AQ1	-0.0034	-0.0086	-0.0079
AQ5	-0.0478	-0.0395	-0.0424
t statistic	[7.14]**	[6.03]**	[7.29]**
Accruals Quality (FDD)			
AQ1	-0.0083	-0.0097	-0.0095
AQ5	-0.0450	-0.0403	-0.0394
t statistic	[9.23]**	[8.18]**	[8.03]**

Panel B: Median CARs			
	CAR(-2,2)	CAR(-1,1)	CAR(0,1)
All	-0.0233	-0.0249	-0.0269
	[11.47]**	[14.11]**	[14.59]**
Accruals Quality (MDD)			
AQ1	-0.0002	-0.0052	-0.0056
AQ5	-0.0456	-0.0385	-0.0381
Wilcoxon Signed Rank Statistic	[13.43]**	[8.95]**	[9.66]**
Accruals Quality (FDD)			
AQ1	-0.0045	-0.0052	-0.0069
AQ5	-0.0415	-0.0354	-0.0347
Wilcoxon Signed Rank Statistic	[9.18]**	[9.13]**	[7.96]**

Table VII. Estimates of the Announcement Return and Accruals Quality Relation

This table presents regression estimates of issuer accruals quality on SEO announcement returns based on a 2SLS model, where the first stage regression has the form of Table III. The dependent variable, CAR, represents the cross-sectional average abnormal returns continuously compounded over the 2 day trading period (0, 1). In the first two columns, accruals quality is based on the MDD model and in the last two columns, it is based on the FDD fixed effect model. The dependent and all the explanatory variables are defined in the Appendix. All regressions include an intercept and year and industry fixed effects. All tests use White heteroskedasticity robust standard errors with adjustment for SEO clustering by issuers. The absolute value of the t statistics is in brackets. **, *, and † represent 1%, 5%, and 10% significance respectively.

Panel A: Accruals Quality (MDD)						
	OLS	OLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Accruals quality	-0.100		-0.090		-0.085	
	[3.93]**		[3.90]**		[3.54]**	
AQ1		0.009		0.007		0.009
		[2.16]*		[1.75] †		[1.69]†
AQ5		-0.014		-0.012		-0.011
		[2.15]*		[2.00]*		[1.78]†
Log (Net proceeds)			0.001	0.003	0.007	0.002
			[0.02]	[1.24]	[1.13]	[1.50]
Log (Total assets)			0.003	0.001	0.006	0.004
			[1.79]†	[1.02]	[1.69]†	[0.67]
Leverage			-0.004	-0.001	-0.002	0.001
			[0.49]	[0.02]	[0.17]	[0.04]
Tobin's q			0.003	0.002	0.002	0.003
			[1.81]†	[0.43]†	[2.13]*	[2.16]*
Underwriter ranking			-0.001	-0.001	-0.001	-0.003
			[0.59]	[0.62]	[0.08]	[0.15]
Secondary shares			0.006	0.006	0.008	0.008
			[1.67] †	[1.71] †	[1.76] †	[1.73] †
Return volatility			-0.085	-0.125	-0.173	-0.097
			[2.13]*	[2.14]*	[2.15]*	[2.13]*
Share turnover			-0.002	-0.001	-0.001	-0.001
			[1.04]	[0.76]	[0.68]	[0.81]
Credit rating			-0.001	0.000	-0.001	0.000
			[0.22]	[0.05]	[0.31]	[0.35]
Rule 415 Shelf			0.015	0.014	0.015	0.015
			[3.09]**	[2.91]**	[3.09]**	[3.15]**
NYSE			0.002	0.004		
			[0.06]	[0.56]		
Capex			0.022	0.035		
			[1.12]	[1.55]		
Constant	-0.012	-0.014	-0.035	-0.038	-0.036	-0.036
	[0.51]	[0.55]	[2.35]*	[2.32]*	[2.35]*	[2.38]*
Year fixed effect	included	included	included	included	included	included
Industry fixed effect	included	included	included	included	included	included
Observations	963	963	963	963	963	963
Adj. R2	0.11	0.10	0.09	0.09	0.09	0.09

Panel B: Accruals Quality (FDD)						
	OLS	OLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Accruals quality	-0.104		-0.089		-0.087	
	[3.76]**		[3.68]**		[3.52]**	
AQ1		0.007		0.008		0.013
		[1.68]†		[1.90]†		[1.67]†
AQ5		-0.010		-0.012		-0.013
		[1.69]†		[1.77]†		[1.88]†
Log (Net proceeds)			0.002	0.001	0.006	0.003
			[0.02]	[0.25]	[0.84]	[0.15]
Log (Total assets)			0.004	0.003	0.006	0.003
			[1.97]*	[1.08]	[1.68]†	[0.67]
Leverage			-0.007	-0.005	-0.010	-0.009
			[0.63]	[0.43]	[0.91]	[0.84]
Tobin's q			0.003	0.002	0.003	0.001
			[1.78]†	[1.71]†	[1.99]*	[1.74]†
Underwriter ranking			-0.001	-0.001	-0.001	-0.003
			[0.34]	[0.41]	[0.44]	[1.01]
Secondary shares			0.006	0.006	0.008	0.007
			[1.78] †	[1.75] †	[1.63] †	[1.67] †
Return volatility			-0.092	-0.170	-0.102	-0.063
			[2.09]*	[2.12]*	[2.60]**	[2.91]**
Share turnover			-0.002	-0.001	-0.001	-0.003
			[1.09]	[0.90]	[0.78]	[1.53]
Credit rating			-0.001	-0.001	-0.001	-0.004
			[1.20]	[0.08]	[0.28]	[0.64]
Rule 415 Shelf			0.015	0.016	0.016	0.019
			[3.16]**	[3.06]**	[3.16]**	[3.31]**
NYSE			0.001	0.001		
			[0.04]	[0.57]		
Capex			0.024	0.035		
			[1.20]	[1.61]		
Constant	-0.016	-0.021	-0.038	-0.036	-0.037	-0.038
	[0.76]	[0.93]	[2.53]*	[2.38]*	[2.47]*	[2.44]*
Year fixed effect	included	included	included	included	included	included
Industry fixed effect	included	included	included	included	included	included
Observations	963	963	963	963	963	963
Adj. R2	0.11	0.09	0.10	0.09	0.09	0.08

Table VIII. Accruals Quality of Withdrawn Versus Completed SEOs

The SEO sample consists of 963 completed offers and 89 withdrawn offers by U.S. issuers of common stock listed on the NYSE, or Amex or Nasdaq over the 1990-2002 period. Accruals quality: equals the standard deviation from either the MDD model or the FDD fixed effect accruals quality model estimated over the 6 years prior to the SEO year and through the year after the SEO. The MDD regression equation is as follows:

$$CA_t = c + \phi_1 CFO_{t-1} + \phi_2 CFO_t + \phi_3 CFO_{t+1} + \phi_4 \Delta Sales_t + \phi_5 PPE_t + v_t$$

where *CA* = total current accruals = Δ current assets (*Compustat item 4*) - Δ current liabilities (*item 5*) - Δ cash (*item 1*) + Δ debt in current liabilities (*item 34*), Δ = changes from year *t* to year *t-1*, *CFO* = cash flow from operation = net income before extraordinary items (*item 18*) – total accruals, and total accruals = current accruals – depreciation and amortization expense (*item 14*), *Sales* = total revenue (*item 12*), and *PPE* = property, plant, and equipment (*item 7*). All the variables are scaled by the average of total assets (*item 6)* between year *t-1* and year *t*. Estimation of the MDD model involves two steps. First, we estimate the equation for each of the Fama and French (1997) 48 industry groups having at least 20 firms over the years *t-4* through *t*. Then we calculate the standard deviation of firm *j's* residuals, i.e. $v_{j,t}$ through $v_{j,t-4}$. The FDD model is equivalent to the MDD model except that firm fixed effects are added. Panel A and B present descriptive statistics of accruals quality for issuers of withdrawn and completed SEOs based on the MDD (Panel A) and FDD (Panel B) accruals quality models. The last column of Panel A and B presents p-value of accruals quality differences in means tests (t-test) and differences in median tests (Wilcoxon test).

Panel A: Accruals Quality (MDD)			
	Not Withdrawn	Withdrawn	p-value
Mean	0.0753	0.8358	0.0452
10%	0.0088	0.034	
25%	0.0195	0.0475	
Median	0.0438	0.0645	0.0010
75%	0.0898	0.1081	
90%	0.1707	0.1671	

Panel B: Accruals Quality (FDD)			
	Not Withdrawn	Withdrawn	p-value
Mean	0.0633	0.0775	0.0320
10%	0.0064	0.0301	
25%	0.0149	0.0406	
Median	0.0341	0.0603	0.0000
75%	0.0726	0.1001	
90%	0.1467	0.1606	

Table IX. Estimates of the Relationship of the Probability of SEO Withdrawal to Accruals Quality

This table presents IV probit regression results. The dependent variable is 1 if the issue is withdrawn from registration and 0 if the issue is completed. In the first two columns, accruals quality is based on the MDD model and in the last two columns, it is based on the FDD fixed effect model. The dependent and all the explanatory variables are defined in the Appendix. All regressions include an intercept and year and industry fixed effects. The absolute values of the z statistics are in brackets. †, *, and ** represent 10%, 5%, and 1% significance respectively.

	Accruals Quality (MDD)		Accruals Quality (FDD)	
	(1)	(2)	(3)	(4)
Accruals quality	1.257		1.276	
	[2.50]*		[2.47]*	
AQ1		-0.917		-0.990
		[7.70]**		[8.05]**
AQ5		0.307		0.254
		[3.76]**		[3.15]**
Log (Net proceeds)	-1.440	-1.517	-1.441	-1.528
	[24.05]**	[24.47]**	[24.37]**	[24.88]**
Log (Total assets)	0.608	0.728	0.610	0.751
	[10.72]**	[13.17]**	[10.92]**	[13.95]**
Leverage	0.159	0.161	0.162	0.166
	[8.47]**	[8.89]**	[8.40]**	[9.24]**
Tobin's q	-0.094	-0.069	-0.064	-0.079
	[0.33]	[0.22]	[0.22]	[0.30]
Underwriter ranking	0.183	0.166	0.183	0.163
	[7.08]**	[6.73]**	[7.07]**	[6.38]**
Secondary shares	0.014	0.013	0.014	0.013
	[6.65]**	[6.40]**	[6.68]**	[6.36]**
Return volatility	13.183	8.878	13.445	10.162
	[4.75]**	[3.33]**	[4.85]**	[3.86]**
Credit rating	0.07	0.039	0.067	0.033
	[0.59]	[0.34]	[0.56]	[0.30]
Constant	-0.505	-0.345	-0.501	-0.412
	[1.76] †	[1.29]	[1.75] †	[1.52]
Year fixed effect	included	included	included	included
Industry fixed effect	included	included	included	included
Observations	1,052	1,052	1,052	1,052
Log pseudo-likelihood	-1368.16	-1315.92	-1368.01	-1311.67
p-value of Wald test of exogeneity	0.00	0.00	0.00	0.00

Table X. SEO Issuer Characteristics for Non-selected and Selected SEO Samples

This table shows the differences in issue characteristics between the non-selected SEO sample and sample used in this study. The non-selected sample includes 2,176 SEOs by US issuers of common stocks listed on the NYSE, Amex or Nasdaq over the 1990-2002 period and excludes (1) SEOs where issuer daily stock returns and prices are unavailable around the announcement and for 60 trading days prior to SEO filing date, (2) completed SEOs with offer prices less than $5 and withdrawn SEOs with filing range midpoints less than $5, (3) spin-offs, (4) reverse LBOs, (5) closed-end fund, unit investment trusts, REITs and limited partnerships, (6) rights and standby issues, (7) simultaneous offers or combined offers of several classes of securities such as unit offers of stock and warrants, and (8) simultaneous domestic-international offers. The selected sample also requires 6 years of COMPUSTAT annual financial data is available immediately prior to the SEO filing date. All the dependent and explanatory variables are defined in the Appendix. The selected sample consists of 963 SEOs. P-values for t-tests and Wilcoxon sign ranked tests are reported in the last column.

		Not Selected (Obs=2,176)	Selected (Obs=963)	p-value
Gross spreads (%)	mean	5.293	5.085	0.0000
	median	5.350	4.250	0.0002
Underwriter ranking	mean	7.77	7.82	0.3370
	median	8.10	8.10	0.2835
Leverage	mean	0.175	0.217	0.0000
	median	0.105	0.178	0.0000
Offer price	mean	23.51	23.97	0.4585
	median	20.00	21.00	0.7786
PPE/Total assets	mean	0.447	0.555	0.0000
	median	0.312	0.426	0.0000
Return volatility.	mean	0.035	0.031	0.000
	median	0.031	0.028	0.000
Tobin's q	mean	2.613	2.099	0.000
	median	1.847	1.488	0.000
Total assets	mean	1250	2243	0.097
	median	174	284	0.000
Net proceeds	mean	73.05	84.23	0.0288
	median	43.40	44.00	0.4570

Table XI. Heckman Selection Model Estimates of the Relationships of Gross Spread and SEO Announcement Return to Accruals Quality

This table presents the selection adjusted estimates using a MLE version of the Heckman (1979) selection model to examine the effect of accruals quality on underwriter gross spreads (panel A) and stock announcement returns, based on its daily abnormal return continuously compounded over the 2 day announcement period (0, 1) (panel B). The dependent variable in the first stage is the log of net proceeds. In the first two columns, the accruals quality measure is based on the MDD model and in the last two columns, it is based on the FDD fixed effect model. All the dependent and explanatory variables are defined in the Appendix. All regressions include an intercept and year and industry fixed effects. All tests use White heteroskedasticity robust standard errors with adjustment for issuer clustering. The absolute value of z statistics is in brackets. **, *, and † represent 1%, 5%, and 10% significance respectively. ρ is the correlation between the first and second stage error terms.

Panel A: Gross Spreads (%)				
	Accruals Quality (MDD)		Accruals Quality (FDD)	
	(1)	(2)	(3)	(4)
Accruals quality	1.763		0.582	
	[2.55]*		[2.45]*	
AQ1		-0.188		-0.256
		[2.29]*		[1.66] †
AQ5		0.011		0.136
		[0.17]		[2.00]*
Log (Net proceeds)	-0.347	-0.281	-0.334	-0.359
	[6.60]**	[4.33]**	[6.27]**	[6.04]**
Log (Total assets)	-0.320	-0.395	-0.332	-0.311
	[9.57]**	[8.12]**	[9.76]**	[7.87]**
Leverage	0.196	0.372	0.190	0.221
	[1.47]	[2.67]**	[1.11]	[1.65] †
Tobin's q	-0.038	-0.039	-0.040	-0.036
	[2.01]*	[2.13]*	[2.17]*	[1.97]*
Underwriter ranking	-0.095	-0.079	-0.096	-0.097
	[4.25]**	[3.63]**	[4.28]**	[4.31]**
Secondary shares	-0.002	-0.002	-0.002	-0.001
	[2.24]*	[2.36]*	[2.25]*	1.96]*
Return volatility	5.980	6.286	6.102	6.037
	[3.67]**	[3.93]**	[3.76]**	[3.74]**
Share turnover	-0.056	-0.057	-0.059	-0.058
	[3.18]**	[3.37]**	[3.34]**	[3.31]**
Credit rating	0.007	0.023	-0.002	-0.007
	[0.09]	[0.31]	[0.02]	[0.09]
Rule 415 Shelf	-0.426	-0.448	-0.427	-0.430
	[3.82]**	[4.12]**	[3.81]**	[3.87]**
Constant	9.014	9.033	9.121	9.071
	[38.71]**	[39.41]**	[38.32]**	[38.62]**
Year fixed effect	included	included	included	included
Industry fixed effect	included	included	included	included
Observations	2,176	2,176	2,176	2,176
Log pseudo-likelihood	-1867.72	-1845.85	-1870.83	-1868.53
p-value of Wald test of exogeneity	0.00	0.00	0.00	0.00

Panel B: Announcement CARs				
	Accruals Quality (MDD)		Accruals Quality (FDD)	
	(1)	(2)	(3)	(4)
Accruals quality	-0.093		-0.086	
	[4.12]**		[2.06]*	
AQ1		0.007		0.008
		[1.78]†		[2.27]*
AQ5		-0.012		-0.009
		[2.18]*		[1.95]†
Log (Net proceeds)	0.001	0.003	0.006	0.003
	[0.34]	[0.84]	[0.85]	[0.79]
Log (Total assets)	0.003	0.001	0.002	0.002
	[1.73]†	[0.40]	[1.88]†	[0.80]
Leverage	-0.004	-0.001	-0.007	-0.005
	[1.00]	[0.86]	[0.86]	[0.44]
Tobin's q	0.003	0.001	0.003	0.001
	[1.77]†	[1.45]	[1.96]*	[1.32]
Underwriter ranking	-0.001	-0.001	-0.001	-0.001
	[0.06]	[0.59]	[0.77]	[0.43]
Secondary shares	0.003	0.003	0.003	0.003
	[1.72] †	[1.76] †	[1.80]†	[1.83] †
Return volatility	-0.076	-0.115	-0.090	-0.106
	[2.12]*	[2.13]*	[2.09]*	[2.18]*
Share turnover	-0.002	-0.001	-0.004	-0.002
	[1.12]	[1.04]	[1.18]	[1.56]
Credit rating	-0.001	-0.001	0.004	0.003
	[0.61]	[0.46]	[0.72]	[0.50]
Rule 415 Shelf	0.015	0.014	0.015	0.016
	[3.18]**	[3.03]**	[3.06]**	[3.17]**
Constant	-0.032	-0.032	-0.034	-0.032
	[2.29]*	[2.21]*	[2.34]*	[2.25]*
Year fixed effect	included	included	included	included
Industry fixed effect	included	included	included	included
Observations	2,176	2,176	2,176	2,176
Log pseudo-likelihood	286.63	285.78	263.83	282.43
p-value of Wald test of exogeneity	0.12	0.11	0.13	0.11