Earnings Timeliness and Seasoned Equity Offering Announcement Effect

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Abstract

This paper examines the relation between the Seasoned Equity Offering (SEO) announcement effect and earnings timeliness. I predict that firms with greater earnings timeliness tend to have less information asymmetry between managers and investors, thus decreasing the magnitude of the price drop at the SEO announcement. As anticipated, I find that SEO negative announcement effect varies inversely with earnings timeliness.

Key words: Earnings timeliness; seasoned equity offering; financial reporting qualities; Information asymmetry

JEL Classification: D82, G14, M41

1. Introduction

This paper examines the relation between the Seasoned Equity Offering (SEO) announcement effect and earnings timeliness. I predict and test the hypothesis that firms with greater earnings timeliness have less negative SEO announcement-period returns. My hypothesis builds on the theory that the stock price drop at an equity issue announcement is caused by information asymmetry between managers and investors (Myers and Majluf 1984) and on the empirical studies about earnings timeliness by Bushman et al. (2004) and Ball et al. (2008).

In the world of information asymmetry, rational firm managers will not issue new stocks when prices are low relative to managers' private information about firm value. Knowing this, investors view an SEO announcement as a negative signal that reveals managers' perceptions on a firm's current stock price. Investors respond to this negative signal by reducing the stock price significantly. Measured as the adjusted R^2 from a regression of annual earnings on contemporaneous stock returns, earnings timeliness describes the ability of earnings numbers to capture current value-relevant information. Because earnings are important to investors in assessing firm performance and earnings with greater timeliness capture firms' information in a more efficient way, greater earnings timeliness can reduce information asymmetry between managers and investors.

The above analysis suggests that earnings with greater timeliness can reduce information asymmetry between managers and investors and that less information asymmetry implies a less negative SEO announcement effect. Thus, I hypothesize that the market responds less negatively to SEO announcements from firms with greater earnings timeliness.

I test the above hypotheses on a sample of SEO events from 1984 to 2006, requiring that the sample firms have enough time-series data to compute a firm-specific measure of earnings timeliness. In order to calculate the announcement-period return, I also require that the sample firms have CRSP daily stock returns during the SEO announcement period. Finally, I regress the SEO announcement-period return on the earnings timeliness and find that the firms with greater earnings timeliness experience less negative SEO announcement return.

In an additional test, I explore whether the impact of earnings timeliness on the SEO announcement effect would be subsumed by other earnings attributes. I reexamine the relation between the SEO announcement effect and earnings timeliness with other earnings attributes in the regression. As in Lee and Masulis (2009), I find that accrual quality is negatively correlated with the magnitude of stock price drop at the SEO announcement. But the significant influence of earnings timeliness on the SEO announcement effect still holds when all other earnings attributes are considered. This suggests that earnings timeliness has a unique and irreplaceable impact on the stock return at the SEO announcement

This study makes several contributions. First, accounting researchers have long been interested in the causes and consequences of financial reporting qualities. This paper contributes to the literature about the consequences of financial reporting qualities by examining the effects of earnings timeliness in a financing event.

Thus, in a broader sense, taken together with other studies that address the roles of financial reporting qualities on investment efficiency, debt contracting efficiency or stock price synchronicity (e.g., Biddle et al. 2009; Zhang 2008; Hutton et al. 2009), my paper enriches the literature and fills a need by examining the effect of earnings timeliness in the financing event.

Second, my paper provides empirical evidence on the relation between earnings attributes and firms' information environments. Francis et al. (2004) study the relation between earnings attributes and information risk. However, information risk is difficult to measure and the causal chain between these attributes and information risk involves many links and assumptions. This study proposes that information asymmetry can serve as one link between earnings attributes and information risk because information asymmetry increases investors' uncertainty regarding firms and information risk is, thus, positively correlated with information asymmetry. Studying the link between earnings attributes and measures of information asymmetry can enhance our confidence that these quality measures are causally linked to characteristics of firms' information environments.

Third, this paper enriches the current, limited literature about earnings timeliness. By measuring the extent to which current earnings numbers capture value-relevant information, earnings timeliness plays important roles in capital market. However, only a few papers conduct research on earnings timeliness. Ball et al (2008) explore the debt contracting value of earnings timeliness. Bushman et al. (2004) investigate how earnings timeliness affects corporate governance factors such as board structure. Francis et al. (2004) examine the relation between the cost of equity capital and earnings attributes, including earnings timeliness. My paper is the first to explore the impact of earnings timeliness on the transaction costs of an equity offering.

Finally, this paper also contributes to the literature seeking to explain the cross-sectional variation in announcement-period return and is among the first to examine whether earnings attributes can be used to proxy the information asymmetry and describe the information environment.

The remainder of this paper is organized as follows: Section 2 reviews prior research concerning the SEO announcement effect; Section 3 discusses the role of earnings timeliness in influencing information asymmetry and develops the hypotheses; Section 4 introduces the sample and research design; Section 5 presents empirical results; Section 6 supplies a summary and conclusion.

2. Literature Review

Seasoned Equity Offerings (SEO) refer to the event during which a publicly traded firm issues additional stock. The SEO is a kind of primary offering because the firm issues new shares and the proceeds go to the firm. This is as opposed to a secondary offering, during which corporate insiders and block-shareholders sell shares while the number of shares outstanding remains the same after the offering. It is well-documented that the announcement of a common stock offering engenders a significant stock-price drop in the magnitude of between -2% and -3% (Masulis and Kowar 1986; Asquith and Mullins 1986; Mikkelson and Partch 1986). Such a negative SEO announcement effect reflects the large transaction costs of the new issues. Researchers suggest different theories to explain this phenomenon.

Leland and Pyle (1977) show that, in markets with asymmetric information, the equity fraction in the project retained by the self-interested entrepreneur has a positive association with a future project's quality. Well-informed managers would only sell their stock shares when they believe that the shares are overvalued. So, share sales by managers serve as a negative signal about a firm's intrinsic value. The Leland and Pyle signaling theory applies to pure primary offerings and to a combination of secondary offerings and primary offerings because secondary offerings decrease the insiders or block-shareholders' shares. Myers and Majluf (1984) take their findings beyond those of Leland and Pyle. In their adverse selection model, they assume that managers always work for the interests of existing shareholders and will not issue stocks when the firm is undervalued, because doing so would dilute the fractional ownership of existing shareholders. Thus, even when managers do not sell their own shareholdings, the mere act of equity offering conveys a negative signal that the current stock price is too high. Knowing this, rational investors adjust their valuation of a firm and the stock price drops as a consequence. The Myers and Majluf adverse selection model applies to all kinds of offerings: primary offerings, secondary offerings and a combination. Jung, Kim and Stulz (1996) propose a theory based on agency problems, claiming that when management has misaligned interests with the shareholders, rational investors respond to the equity offering announcement negatively because they are afraid of potential misuse of proceeds.

A substantial volume of literature also tries, with carrying findings, to explain the cross-sectional variation in the SEO announcement-period returns. For example, some researchers examine whether equity characteristics contribute to cross-sectional variation and find mixed results in the relation between the relative size of the offering and the subsequent drop. Asquith and Mullins (1986) document that announcement-period return is negatively related to the relative size of the issue, computed as the ratio of the planned proceeds to a firm's equity value before the announcement. Dierkens (1991), however, does not find a significant relation between the price drop and the relative size of the issue, measured as the ratio of the number of new shares to the number of shares outstanding before the announcement. Mikkelson and Partch (1986) also do not find a relation between the stock price effects and the amount of new financing or the size of offering.

Use of proceeds is another characteristic of an offering that can explain cross-sectional variation in the announcement returns to some extent. Mikkelson and Partch (1986) document a less negative announcement effect when it is stated that the proceeds are to be used for capital expenditures, rather than for debt refinance. Asquith and Mullins (1986) examine whether a firm's pre-issue performance can be a factor used to explain cross-section variation in an SEO announcement return. They find that such announcement-period return is positively related to the previous eleven-month cumulative excess return. Masulis and Korwar (1986) document a negative relation of stock announcement return to the previous two-month firm return and a positive relation of stock announcement return to the previous two-month market return.

In terms of the timing of an announcement, Choe, Masulis, and Nanda (1993) document a less negative SEO announcement effect when the economy is in an expansionary period of the business cycle, which implies less adverse selection risk. Dierkens (1991) documents a significantly positive relation between the announcement-period return and the firm's growth opportunities, the ratio of the market value of the equity to the book value of the equity for one fiscal year before the announcement.

Lang and Lundholm (2000) find by examining firms' behavior patterns that issuing firms tend to reduce the information asymmetry by making optimistic disclosures more frequently, starting six months before the registration date, and that the announcement-period return increases with such changes in firms' disclosure behavior. Korajczyk,Lucas, and McDonald (1991) report that the negative announcement effect is less pronounced with a decrease in the time difference between the offering announcement and the preceding earnings announcement. They argue that a decrease in the information asymmetry resulting from the earnings announcement reduces the magnitude of the price drop at the offering announcement.

With regard to CEO compensation structure, Brazel and Webb (2006) document that when the proportion of CEO equity-based compensation is large, investors tend to view the equity offering as a last-resort source of capital and respond to the SEO announcement effect more negatively.

In this paper, I examine whether firms with earnings timeliness of different magnitude experience different price drops during the SEO announcement period. My study will not only enrich the literature regarding the consequences of financial reporting qualities, but will also provide a potential link, information asymmetry, to the argued relation between earnings attributes and information risk. Of course, the paper will also contribute to literature that explains the cross-sectional variation in the SEO announcement-period return and literature about earnings timeliness.

3. Hypothesis Development

Earnings are important sources for investors to assess firm performance. Measured as the adjusted R^2 of the firm-specific regression of annual earnings on annual returns (Equation 1), earnings timeliness is one measure of financial reporting quality and one of the three market-based earnings attributes in Francis et al. (2004).

$$\frac{E_{j,t}}{MKTCAP_{j,t-1}} = b_{j,0} + b_{j,1}NEG_{j,t} + b_{j,2}RET_{j,t} + b_{j,3}NEG_{j,t}RET_{j,t} + \varepsilon_{j,t} \qquad (1)$$

In Equation 1, $E_{j,t}$ is the earnings before extraordinary items, discontinued operations and special items for a given firm in fiscal year t; $MKTCAP_{j,t-1}$ is the market capitalization at the end of fiscal year t-1; $RET_{j,t}$ is the stock return of firm j from nine months before the end of fiscal year t to three months after the end of fiscal year t;

$NEG_{j,t}$ is a dummy variable equal to 1 if $RET_{j,t}$ is negative and 0 otherwise. Earnings timeliness, TL, is equal to the adjusted R^2. Larger values of TL correspond to greater earnings timeliness.

Stock prices aggregate all publicly available information about firm value. Accounting numbers provide more detailed information about the sources of firm-value changes by gathering, classifying and summarizing the financial effects of firms' investment, operating and financing activities (Bushman et al., 2004). Timely and precise accounting numbers, including earnings, can help even less sophisticated investors extract the underlying information from stock prices and help them to understand equity values' changes better. Therefore, timely and efficient accounting numbers provide cleaner and less noisy information, enabling outside investors to monitor firm performance, thus, improving the transparency of the operations and activities of the firm to outside investors.

Earnings timeliness records the inherent ability of current earnings to capture value-relevant information in a timely fashion. The greater timeliness (higher adjusted R^2) implies that the earnings have the ability to capture new information in a more efficient manner. The presentation of earnings numbers is, therefore, more informative and highly qualitative to outside investors and will decrease the information asymmetry between managers and investors.

Among the few papers that talk about earnings timeliness, Ball et al. (2008) explore the debt contracting value of earnings timeliness. Bushman et al. (2004) investigate how earnings timeliness affects corporate governance factors, such as board structure. Francis et al. (2004) examine the relation between the cost of equity capital and earnings attributes, including earnings timeliness. I argue in this study that greater timeliness also has implications in capital raising events because it mitigates potential adverse selection problems in SEO events and lead to a less negative SEO announcement effect.

Hypothesis: *Ceteris paribus*, negative SEO announcement effect is less for firms with greater earnings timeliness.

4. Data and Research Design

4.1 Sample selection

I collect the initial SEO samples from 1984 to 2006 from the Securities Data Company's (SDC's) New Issue Database. The offerings consist of pure primary offerings or a combination of primary and secondary offerings. I require the samples to be common stocks listed on NYSE, NASDAQ, or AMEX. I exclude: 1) limited partnership; 2) right's issue; 3) unit issues; 4) closed-end fund; 5) SEOs lacking information about filing date, issue date, offer price, shares filed, filing amount; 6) SEOs with offer prices less than $5; 7) SEOs with more than one issue for the same filing; 8) SEOs with a lag in issue date as compared to the filing date < 5 days or > 60 days. I use this restriction because short time differences between the filing date and issue date imply mixed stock responses during both announcement period and issue period. Also, if the filing date is much earlier than the issue date, then this may not mean that managers think that the stock price (on the filing date) is overvalued; 9) SEOs lacking CRSP daily stock returns/prices around the SEO filing date; and 10) SEOs without a one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

4.2 Filing date and announcement date

Because of data availability, I use the filing dates in the SDC new issue database for the announcement dates. This treatment is consistent with some of the previous studies (Clarke et al., 2001; Denis, 1994). My argument is that the true SEO announcement releases information about future issuances and later SEO filing further confirms the future issuance so the stock price also drops at the filing date. Considering the fact that information about equity offerings would likely have leaked to some extent prior to the announcement date, using a filing date to proxy the announcement date may underestimate the adverse relation between earnings timeliness and SEO announcement effect.

4.3 Dependent variable

Referring to the filing date as day 0, I define trading days -1, 0, and 1 as an event period and compute the cumulative abnormal return (CAR) in this period as the dependent variable (Brown and Warner, 1985).

I first use OLS to estimate the market model in order to compute the cumulative abnormal returns in the event period.

$$R_{j,t} = \eta_{0,j} + \eta_{1,j} R_{M,t} + \sigma_{j,t} \qquad \text{t=-180, -179, … , -10} \qquad (2)$$

$$AR_{j,t} = R_{j,t} - \hat{\eta}_{0,j} - \hat{\eta}_{1,j} R_{M,t} \qquad \text{t=-1, 0, 1} \qquad (3)$$

$$Model\_CAR_j = \sum_{t=-1,0,1} (R_{j,t} - R_{M,t}) \qquad (4)$$

The estimation period is from trading day -180 to trading day -10. The CRSP equally weighted index is used as the market return $R_{M,t}$. $R_{j,t}$ is firm j's raw return on day t. $\hat{\eta}_{0,j}$ and $\hat{\eta}_{1,j}$ are estimated coefficients from the estimation period. $AR_{j,t}$ is the abnormal return of firm j on day t. Dependent variable, cumulative abnormal return $Model\_CAR_j$, is the sum of abnormal returns in the event period.

In the sensitivity test, I also use the market-adjusted returns in the event period to obtain the cumulative abnormal return.

$$AR_{j,t} = R_{j,t} - R_{M,t} \qquad \text{t=-1, 0, 1} \qquad (5)$$

$$Adjusted\_CAR_j = \sum_{t=-1,0,1} AR_{j,t} \qquad (6)$$

$Adjusted\_CAR_j$ is the sum of market adjusted returns in event period.

4.4 Control variables

Control variables I consider are as follows:

Offer size (REL_SIZE, ABS_SIZE): The size of the equity offering measures the size of the negative informative signal. The relative size of the issue, REL_SIZE, is computed as the number of filing shares to the number of shares outstanding (Compustat #25) before SEO announcement. The absolute size of the issue, ABS_SIZE, is the log of filing proceeds. Although theories of information asymmetry and the alternative models based on the optimal capital structure predict that an increase in the size of the issue will increase the magnitude of the price drop (Smith, 1986), prior empirical work finds mixed results (Asquith and Mullins, 1986; Mikkelson and Partch, 1985). I try both relative offer size and absolute offer size in my empirical tests and find that absolute offer size has a significantly negative relation with SEO announcement-period return.

Firm size (FIRM_SIZE): FIRM_SIZE is computed as the natural logarithm of total assets (Compustat #6). A larger firm is usually followed by more analysts and has more media attention. Therefore, the information asymmetry between managers and investors is less for a larger firm than for a smaller firm (Lee and Masulis, 2007). So, I predict that large firm experiences less price drop at SEO announcement.

Investment opportunities (MTB): I use market-to-book ratio, MTB, as the proxy of investment opportunities (Jung et al., 1996). MTB is computed as ([Compustat #199 * Compustat #54 +Compustat #6 - Compustat #60] / [Compustat #6]). A higher MTB implies that the firm has more intangible assets and greater information asymmetry and tends to have more profitable investment opportunities. Investors tend to interpret the announcement of equity issues from firms with higher MTB as reflecting the need to fund future promising projects and the reduction of the information asymmetry about future investment opportunities. Therefore, I predict a significant positive coefficient on this variable.

4.5 Tests of hypothesis

I hypothesize a positive relation between the SEO announcement-period return and earnings timeliness (i.e., a negative relation between the SEO announcement effect and earnings timeliness). I test the hypothesis by estimating the following model:

$$CAR_j = \beta_0 + \beta_1 \times TL_j + \beta_2 \times OFFER\_SIZE_j + \beta_3 \times FIRM\_SIZE_j + \beta_4 \times MTB_j + \tau_j \qquad (7)$$

TL_j is the value of firm j's earnings timeliness. $OFFER\_SIZE_j$ is the issue's size. I test both relative offer size and absolute offer size in the regression. $FIRM\_SIZE_j$ is the natural log of the total assets of the SEO firm j. Market-to-book ratio, MTB_j, describes the growth opportunities of firm j.

I close this section by addressing two potential selection bias issues with my empirical design. First, as discussed above, I sample only firms that issued new stocks. Bias may result if firms that decide to issue SEOs instead of debt are those with greater or less earnings timeliness. As an illustration, I compare the earnings timeliness of the sample firms with that of firms in Francis et al. (2004) and find that SEO firms tend to have significantly smaller earnings timeliness values than those reported by Francis et al. (2004). SEO firms, then, tend to be more opaque than non-SEO firms. Second, selection bias may result because time-series calculations require the use of firms with a minimum number of survival years before SEO events. Thus, the sample firms tend to be large and successful firms. Large and successful firms tend to be more transparent than small and young firms.

5 Empirical Results

5.1 Descriptive statistics

Table 1, Panel A presents the descriptive statistics of the cumulative abnormal return in SEO announcement period. The average stock return at 3045 SEO announcement is from around -2% to -3%, depending on the method used to calculate the CAR. To obtain earnings timeliness, I further require at least 6 yearly data points from 8 years prior to the SEO filing date to 1 year prior to the SEO filing date. Using OLS, I obtain earnings timeliness (TL) from Equation 1 in Section 3. In order to reduce the effects of outliers, I exclude the observations in the top or bottom 1% of dependent and independent variables in each equation.

Descriptive statistics of earnings timeliness can be found in Panel B, Table 1. The earnings timeliness measure, TL, has a mean (median) value of 0.109 (0.093).

5.2 Earnings timeliness vs. SEO announcement-period return

In order to reduce the effects of outliers, I exclude the observations in the top or bottom 1% of all available earnings timeliness and SEO announcement-period return. The SEO sample consists of 947 SEOs by 723 firms.

Table 2 presents the frequency distribution of SEOs by filing year and the number of offerings per firm. Panel A shows that SEOs were more frequent at the beginning of the 1990s. Panel B shows that about 80 percent of firms issue SEO only once.

Table 3 provides evidence on whether negative SEO announcement effect is less severe for firms with greater earnings timeliness. I run the regressions using market-model-based CAR and market-adjusted CAR as dependent variables, respectively. I first start from the base model that includes only offer size, firm size and growth opportunities. Columns 1 and 4 show that there is no significant relation between the SEO announcement-period return and the relative offer size (REL_SIZE). Columns 2 and 5 show a significant, negative relation between SEO announcement-period return and the absolute issue size (ABS_SIZE). Therefore, I use the absolute issue size, log of filing proceeds, as the proxy of offer size, hereafter. Columns 3 and 6 show that earnings timeliness has a significant, positive relation with SEO announcement-period return. Using a different calculation of cumulative abnormal returns at the announcement, the regressed coefficient is from 0.6% to 0.7%, with a 10% or 5% significance level. This means that firms reporting earnings in a more timely fashion experience less price-drops at the SEO announcement. This result is consistent with the hypothesis.

5.3 Additional tests

In this section, I examine whether the impact of earnings timeliness on the SEO announcement effect is unique and would not be subsumed by other earnings attributes. To be specific, these earnings attributes are accrual quality, persistence, predictability, smoothness and value relevance. I do not compute firm-specific conservatism because many SEO firms do not have enough negative annual returns in the estimation period to calculate conservatism. Accrual quality describes the effectiveness of current accruals to map into cash flows in prior, current and subsequent periods (Dechow and Dichev, 2002; Francis et al., 2004). One measure of accrual quality is the negative of the standard deviation of the residuals in the firm-specific regression of accruals on lagged, current and future cash flows:

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi_{0,j} + \varphi_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \nu_{j,t} \qquad (8a)$$

where $TCA_{j,t}$ is firm j's total current accruals in year t; $CFO_{j,t}$ is firm j's cash flow in year t; $Asset_{j,t}$ is the average of firm j's total assets between fiscal year t and t-1. Accrual quality, AQ1, is equal to $-\sigma(\hat{\nu}_{j,t})$.

McNichols (2002) improves the model in Equation 8a. He finds that the explanatory power in cross-sectional regressions is greatly improved by including deflated changes in sales and deflated property, plant and equipment. He proposes the model below:

$$\begin{aligned}\frac{TCA_{j,t}}{Assets_{j,t}} &= \varphi'_{0,j} + \varphi'_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi'_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi'_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} \\ &+ \varphi'_{4,j}\frac{\Delta SALES_{j,t}}{Assets_{j,t}} + \varphi'_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + e_{j,t}\end{aligned} \qquad (8b)$$

Accrual quality as defined in this model, AQ2, is equal to $-\sigma(\hat{e}_{j,t})$. Larger values of AQ1 (AQ2) correspond to better accrual quality. I include AQ2 as the measure of accrual quality in the regression to examine whether earnings timeliness' influence on the SEO announcement period return would be suppressed by accrual quality.

Greater accrual quality, i.e., reduced variation in the residual, indicates that earnings information provided by the firm is a more reliable measure of a firm's cash flow and performance, so higher accrual quality can increase information quality provided by earnings and decrease the information asymmetry between managers and investors. Therefore, greater accrual quality mitigates potential adverse selection problems in SEO events and leads to a less negative SEO announcement effect (Lee and Masulis, 2009).

Value relevance measures the ability of earnings level and earnings change to explain the returns (Francis et al., 2004). One measure of value relevance is the adjusted R^2 of the regression of annual returns on contemporaneous earnings and changes in earnings.

$$RET_{j,t} = \delta_{0,j} + \delta_{1,j}\frac{E_{j,t}}{MKTCAP_{j,t-1}} + \delta_{2,j}\frac{\Delta E_{j,t}}{MKTCAP_{j,t-1}} + \mu_j \qquad (9)$$

In Equation 9, $E_{j,t}$, $MKTCAP_{j,t-1}$and $RET_{j,t}$ are defined as Equation 1 and $\Delta E_{j,t}$ as equals $E_{j,t}$ minus $E_{j,t-1}$. Value relevance, VR, is equal to the adjusted R^2. Larger values of VR correspond to greater value relevance.

Francis et al. (2004) define earnings smoothness (SMTH) as the negative of the standard deviation of the deflated earnings divided by the standard deviation of the deflated cash flows.

$$SMTH_j = -\frac{\sigma(E_{j,t} / Assets\_end_{j,t-1})}{\sigma(CFO_{j,t} / Assets\_end_{j,t-1})} \qquad (10)$$

where $E_{j,t}$ and $CFO_{j,t}$ are the earnings and cash flows for firm j in fiscal year t; $Assets\_end_{j,t-1}$ is the total assets at the end of fiscal year t-1. Larger values of SMTH correspond to more earnings smoothness.

The time-series persistence of earnings describes the autocorrelation between past earnings and future earnings, while the predictability of earnings reflects the ability of past earnings to predict future earnings (Lipe, 1990; Francis et al., 2004). One measure of earnings persistence is the autocorrelation coefficient in AR(1) model for adjusted earnings and one measure of earnings predictability is the standard deviation of the negative of the standard deviation of the residuals in the AR(1) model for adjusted earnings.

$$X_{j,t} = \phi_{0,j} + \phi_{1,j}X_{j,t-1} + \varsigma_{j,t} \qquad (11)$$

where $X_{j,t}$ is firm j's split-adjusted earnings per share in fiscal year t; earnings persistence, PER, is equal to $\hat{\phi}_{1,j}$ and earnings predictability, PRED, is equal to $-\sigma(\hat{\zeta}_{j,t})$. Larger values of PER and PRED correspond to better earnings persistence and greater predictability, respectively.

In calculating for each earnings attribute, I require at least 6 yearly data points from 8 years prior to the SEO filing date to 1 year prior to the SEO filing date. Using OLS, I obtain accrual qualities (AQ2), value relevance (VR) and smoothness (SMTH) from Equations 8 through 10. Using a maximum likelihood method, I obtain earnings persistence (PER) and predictability (PRED) from the AR(1) model in Equation 11. As in the calculation of earnings timeliness, I exclude the observations in the top or bottom 1% of dependent and independent variables in my calculation of each earnings attribute to reduce the effects of outliers. Table 1, Panel B presents descriptive statistics of all earnings attributes. As discussed previously, earnings timeliness measure, TL, has a mean (median) value of 0.109 (0.093). In comparison, Francis et al. (2004) report a mean (median) value of 0.466 (0.465). The measure of value relevance, VR, has a mean (median) value of 0.142 (0.116), while Francis et al. (2004) give a mean (median) value for value relevance as 0.423 (0.416). My results on accrual quality are comparable to those reported by Francis et al. (2004).

This pattern may arise from the self-selection problems inherent in my research design. To review, all sample firms cited in my work are those that issue new shares. It is possible, though, that firms deciding to issue these shares are also those that do not include value-relevant information in a timely manner or are those with earnings data that do not account for their returns well.

In order to examine whether other attributes subsume earnings timeliness, I run the regression and examine whether the coefficient and significance level of earning timeliness still holds in the presence of the others:

$$\begin{aligned} CAR_j &= \beta'_0 + \beta'_1 \times TL_j + \beta'_2 \times AQ_j + \beta'_3 \times VR_j + \beta'_4 \times EP_j + \\ &\beta'_5 \times PRED_j + \beta'_6 \times SMTH_j + \beta'_7 \times OFFER\_SIZE_j + \\ &\beta'_8 \times FIRM\_SIZE_j + \beta'_9 \times MTB_j + \tau'_j \end{aligned} \qquad (12)$$

I also exclude the observations in the top or bottom 1% of each earnings attribute and SEO announcement-period return. The final sample consists of 495 SEOs by 379 firms. Table 4 presents the frequency distribution of SEOs by filing year and number of offerings per firm. Panel A shows that SEOs are more frequent at the beginning of 1990s. Panel B shows that about 80% firms issue SEO only once.

As in Lee and Masulis (2009), Table 5 shows that negative SEO announcement effect is less for firms with better accrual quality at the 5% level (t statistics: 2.34). No significant relations are found between the SEO announcement effect and earnings persistence, earnings predictability, value relevance or earnings smoothness. More importantly, it also shows that the effect of earnings timeliness on the SEO announcement period return still holds at the 5% level (coefficient: 1.53%; t statistics: 2.45) when other earnings attributes, including accrual quality, are considered, suggesting that earnings timeliness captures its own dimension in the cost of financing activities. Table 5 shows that both accounting-based and market-based financial reporting qualities may affect SEO announcement effect. However, it is necessary to point out that, compared with accounting-based earnings attributes, all market-based measures have their inherent limitations in event studies. Market-based accounting attributes, such as earnings timeliness, value relevance and conservatism, are calculated in the way that the stock market is regarded as being efficient. However, even studies in SEO, earnings announcements or merger and acquisitions, usually deal with situations in which stocks are overvalued or undervalued and investors regard these events as signals that reveal the true value of stock prices.

6. Conclusions

This paper examines whether the fact that a firm reports its earnings in a timely way affects investors' responses at the time of a firm's announcement of its SEO financing decision. I find that firms with greater earnings timeliness tend to experience less price drops at SEO announcements. The results present evidence that timely financial reporting can help investors to assess firm performance by reducing the information asymmetry between managers and investors. So, this paper contributes to literature about the consequences of financial reporting quality.

This study provides empirical evidence on the relation between earnings attributes and a firm's information environment and proposes that information asymmetry can be one link between earnings attributes and information risk. This paper also enriches the scarce literature about earnings timeliness. This study suggests two potential avenues for future research. First, it may be intriguing to examine whether SEO firms tend to be less transparent firms and, thus, set up a link between corporate governance and corporate investment decisions. Second, distinguishing primary offerings and secondary offerings may yield some interesting topics.

References

Asquith, P., and D. W. Mullins Jr. 1986. Seasoned equity offerings. *Journal of Financial Economics* 15: 61–89.

Ball, R., R. Bushman, and F. Vasvari. 2008. The Debt-Contracting Value of Accounting Information and Loan Syndicate Structure. *Journal of Accounting Research* 46: 247-287.

Basu, A. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24: 3–37.

Biddle, G., G. Hillary, and R. Verdi. 2009. How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics* 48: 112-131.

Brazel J., and E. Webb. 2006. CEO compensation and the seasoned equity offering decision. *Managerial and Decision Economics* 27: 363–378.

Brown, S., and J. Warner. 1985. Using daily stock returns: The case of event studies. *Journal of Financial Economics* 14: 3-31.

Bushman, R., Q. Chen, E. Engel, and A. Smith. 2004. Financial accounting information, organizational complexity and corporate governance systems. *Journal of Accounting and Economics* 37: 167–201.

Choe, H., R. Masulis, and V. Nanda. 1993. Common stock offerings across the business cycle: Theory and evidence. *Journal of Empirical Finance* 1: 3–31.

Clarke, J., C. Dunbar, and K. Kahle. 2001. Long-run performance and insider trading in completed vs. canceled seasoned equity offerings. *Journal of Financial and Quantitative Analysis* 36: 415-430.

Dechow, P., and I. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77 (supplement): 35–59.

Denis, D. 1994. Investment opportunities and the market reaction to equity offerings. *Journal of Financial and Quantitative Analysis* 19: 159 –177.

Dierkens, Nathalie. 1991. Information asymmetry and equity issues. *Journal of Financial and Quantitative Analysis* 26: 181–99.

Francis, J., R. Lafond, P. M. Olsson, and K. Schipper. 2004. Costs of equity and earnings attributes. *The Accounting Review* 79: 967–1010.

Hutton, A.P., A.J. Marcus, and H. Tehranian. 2009. Opaque financial reports, R2, and crash risk. *Journal of Financial Economics* 94: 67-86.

Jung, K., Y. Kim, and R. Stulz. 1996. Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics* 42: 159–185.

Korajczyk, R., D. Lucas, and R. McDonald. 1991. The effect of information releases on the pricing and timing of equity issues. *Review of Financial Studies* 4 (4): 685–708.

Lang, M., and R. Lundholm. 2000. Voluntary disclosure and equity offerings: reducing information asymmetry or hyping the stock? *Contemporary Accounting Research* 17: 623-662.

Lee, G., and R. Masulis, 2009. Seasoned equity offerings: quality of accounting information and expected flotation costs. *Journal of Financial Economics* 92: 443-469.

Leland, H., and D. Pyle, 1977. Information asymmetries, financial structure, and financial intermediation. *Journal of Finance* 32: 371–387.

Lipe, R. 1990. The relation between stock returns and accounting earnings given alternative information. *The Accounting Review* 65: 49–71.

Masulis, R. W., and A. N. Korwar. 1986. Seasoned equity offerings: An empirical investigation. *Journal of Financial Economics* 15: 91–117.

McNichols, M. 2002. Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77 (supplement): 61–69.

Mikkelson, W., and M. Partch. 1986. Valuation effects of security offerings and the issuance process. *Journal of Financial Economics* 15: 31–60.

Myers, S., and N. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13: 187–221.

Smith, C. 1986. Investment banking and the capital acquisition process. *Journal of Financial Economics* 15: 3–29.

Zhang, J. 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics* 45: 27-54.

Table 2.1

Descriptive statistics

The initial samples consists of 3045 SEOs from 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, shares filed, filing amount, 6) SEOs with offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

Model_CAR is the cumulative abnormal return in the event period using the OLS market model. Adjusted_CAR is the cumulative market-adjusted return in the event period. (Filing date: day 0; event period: trading day -1, 0, 1; estimation period: period from trading day -180 to trading day -10).

For each earnings attribute's calculation, at least 6 years' necessary financial statements data are required within 8 years prior to the SEO filing date.

Accrual quality has two measures: AQ1 and AQ2. AQ1 is equal to $-\sigma(\hat{v}_{j,t})$ in

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi_{0,j} + \varphi_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + v_{j,t}.$$

AQ2 is equal to $-\sigma(\hat{e}_{j,t})$ in

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi'_{0,j} + \varphi'_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi'_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi'_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \varphi'_{4,j}\frac{\Delta SALES_{j,t}}{Assets_{j,t}} + \varphi'_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + e_{j,t}.$$

Earnings persistence (EP) and predictability (PRED) are measured as $\hat{\phi}_{1,j}$ and $-\sigma(\hat{\varsigma}_{j,t})$ in

$X_{j,t} = \phi_{0,j} + \phi_{1,j}X_{j,t-1} + \varsigma_{j,t}$, respectively.

Earnings smoothness (SMTH) is measured as $-\dfrac{\sigma(E_{j,t} / Assets\_end_{j,t-1})}{\sigma(CFO_{j,t} / Assets\_end_{j,t-1})}$.

Value relevance (VR) and earnings timeliness (TL) are measured as the adjusted R^2 in

$$RET_{j,t} = \delta_{0,j} + \delta_{1,j}\frac{E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} + \delta_{2,j}\frac{\Delta E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} + \mu_j \text{ and}$$

$$\frac{E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} = b_{j,0} + b_{j,1}NEG_{j,t} + b_{j,2}RET_{j,t} + b_{j,3}NEG_{j,t}\square RET_{j,t} + \varepsilon_{j,t}.$$

TCA	Total current accruals = ΔCA - ΔCL - ΔCash + ΔSTDEBT (Δ: change between year t-1 to year t);
CA	Current asset (Compustat #4);
CL	Current liabilities (Compustat #5);
Cash	Cash and short-term investments (Compustat #1);
STDEBT	Debt in current liabilities (Compustat #34);
CFO	Cash flow from operations = E –TCA + depreciation amortization (Compustat #14);
Assets	Average total assets (Compustat #6) in year t and year t-1;
Sales	Sales (Compustat #12);
Assess_end	Total assets at the end of fiscal year;
PPE	Property, plant and equipment (Compustat #7);
X	Split-adjusted earnings per share (Compustat #58);
RET	Twelve-month raw return ending three months after the end of fiscal year t;
E	Earnings before extraordinary items, discontinued operations, and special items (Compustat #18);
$SHARES$	Common shares outstanding (Compustat #25);
P	Stock price – fiscal year – close (Compustat #199).

Table 2.1

Panel A: Descriptive statistics of SEO announcement period returns

	Mean	Std. Dev.	10%	25%	Median	75%	90%
Model_CAR	-0.0284	0.0666	-0.1072	-0.0627	-0.0259	0.0054	0.0404
Adjusted_CAR	-0.0194	0.0646	-0.0924	-0.0529	-0.0200	0.0113	0.0494

Panel B: Descriptive statistics of earnings attributes

	N	Mean	Std. Dev.	10%	25%	Median	75%	90%
AQ1	598	-0.0317	0.0273	-0.0676	-0.0453	-0.0240	-0.0109	-0.0053
AQ2	573	-0.0236	0.0236	-0.0530	-0.0312	-0.0152	-0.0072	-0.0037
EP	1106	0.2529	0.3744	-0.2485	-0.0106	0.2827	0.5412	0.7422
PRED	1106	-0.9950	1.0399	-2.2110	-1.1936	-0.6370	-0.3603	-0.2166
SMTH	944	-0.7438	0.4423	-1.2521	-0.9773	-0.6956	-0.4333	-0.2472
VR	950	0.1424	0.3642	-0.3302	-0.1503	0.1164	0.4069	0.6540
TL	958	0.1086	0.4403	-0.4437	-0.2205	0.0933	0.4450	0.7284

Table 2.2

Frequency distribution

The samples consists of 947 SEOs by 723 firms from 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, filing shares, filing amount, 6) SEOs with an offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

Panel A: Frequency distribution of SEOs by filing year

SEO_year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1984	26	2.75	26	2.75
1985	51	5.39	77	8.13
1986	58	6.12	135	14.26
1987	41	4.33	176	18.59
1988	16	1.69	192	20.27
1989	29	3.06	221	23.34
1990	24	2.53	245	25.87
1991	73	7.71	318	33.58
1992	69	7.29	387	40.87
1993	75	7.92	462	48.79
1994	37	3.91	499	52.69
1995	51	5.39	550	58.08
1996	52	5.49	602	63.57
1997	31	3.27	633	66.84
1998	30	3.17	663	70.01
1999	30	3.17	693	73.18
2000	33	3.48	726	76.66
2001	41	4.33	767	80.99
2002	44	4.65	811	85.64
2003	41	4.33	852	89.97
2004	40	4.22	892	94.19
2005	27	2.85	919	97.04
2006	28	2.96	947	100.00

Panel B: Frequency distribution of SEOs by number of offerings

N	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	573	79.25	573	79.25
2	107	14.80	680	94.05
3	24	3.32	704	97.37
4	11	1.52	715	98.89
5	5	0.69	720	99.59
6	2	0.28	722	99.86
7	1	0.14	723	100.00

Table 2.3

Regression of SEO announcement effect on earnings timeliness

This table presents OLS regression estimates of SEO announcement-period return on earnings timeliness (TL). The SEO sample consists of 947 filings by 723 firms over the period from 1984 to 2006. In the first 3 columns, I use model-based cumulative abnormal return as the dependent variable. In the last 3 columns, I use market-adjusted cumulative abnormal return as the dependent variable. The absolute value of t statistics is in brackets. ***,**, and * represent 1%, 5%, and 10% significance respectively.

	Model_CAR			Adjusted_CAR		
	1	2	3	4	5	6
REL_SIZE	-0.0005			-0.0009		
	[1.35]			[0.24]		
ABS_SIZE		-0.0073	-0.0071		-0.0040	-0.0039
		[5.17]***	[3.74]***		[2.16]**	[2.09]**
MTB	0.0015	0.0022	0.0022	0.0028	0.0032	0.0032
	[2.52]***	[3.58]***	[3.51]***	[4.88]***	[5.35]***	[5.29]***
Firm_Size	0.0034	0.0061	0.0062	0.0019	0.0035	0.0035
	[3.89]***	[5.54]***	[5.58]***	[2.28]**	[3.22]***	[3.25]***
TL			**0.0075**			**0.0062**
			[2.01]**			**[1.71]***
Intercept	-0.0456	-0.0340	-0.0356	-0.0326	-0.0266	-0.028
	[7.35]***	[5.17]***	[5.38]***	[5.43]***	[4.15]***	[4.32]***
N	947	947	947	947	947	947
Adj_R2	0.0162	0.0310	0.0342	0.0234	0.0281	0.0301

Table 2.4

Frequency distribution

The initial samples consists of 495 SEOs by 379 firms from the period of 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, filing shares, filing amount, 6) SEOs with an offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, and 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP. I also require at least 6 data points within 8 years prior to the SEO filing date in calculating for 6 earnings attributes: timeliness, value relevance, accrual quality, earnings persistence, predictability, and smoothness.

Panel A: Frequency distribution of SEOs by filing year

SEO_year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1984	20	4.04	20	4.04
1985	20	4.04	40	8.08
1986	28	5.66	68	13.74
1987	27	5.45	95	19.19
1988	9	1.82	104	21.01
1989	16	3.23	120	24.24
1990	17	3.43	137	27.68
1991	33	6.67	170	34.34
1992	40	8.08	210	42.42
1993	39	7.88	249	50.30
1994	26	5.25	275	55.56
1995	34	6.87	309	62.42
1996	29	5.86	338	68.28
1997	23	4.65	361	72.93
1998	16	3.23	377	76.16
1999	14	2.83	391	78.99
2000	16	3.23	407	82.22
2001	19	3.84	426	86.06
2002	23	4.65	449	90.71
2003	17	3.43	466	94.14
2004	14	2.83	480	96.97
2005	15	3.03	495	100.00

Panel B: Frequency distribution of SEOs by number of offerings

N	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	304	80.21	304	80.21
2	49	12.93	353	93.14
3	15	3.96	368	97.10
4	9	2.37	377	99.47
6	2	0.53	379	100.00

Table 2.5

Relation between SEO announcement-period return and earnings attributes

This table presents OLS regression estimates of SEO announcement-period return on earnings attributes. The SEO sample consists of 495 filings by 379 firms over 1984 to 2006. The dependent variable is the model-based cumulative abnormal return in SEO event period. The absolute value of t statistics is in brackets. ***,**, and * represent 1%, 5%, and 10% significance respectively.

	1	2	3	4	5	6	7	8
ABS_SIZE	-0.0124	-0.0123	-0.0107	-0.0124	-0.0125	-0.0124	-0.0116	-0.0102
	[4.33]***	[4.27]***	[3.65]***	[4.34]***	[4.33]***	[4.33]***	[3.97]***	[3.44]***
MTB	0.0057	0.0056	0.0061	0.0057	0.0058	0.0058	0.0059	0.0064
	[3.66]***	[3.62]***	[3.92]***	[3.66]***	[3.66]***	[3.68]***	[3.75]***	[4.08]***
Firm_Size	0.0112	0.0113	0.0093	0.0111	0.0112	0.0109	0.0104	0.0081
	[5.73]***	[5.82]***	[4.43]***	[5.69]***	[5.71]***	[5.46]***	[5.17]***	[3.60]***
TL		**0.0113**						**0.0153**
		[2.09]**						**[2.45]****
AQ2			0.2702					0.2798
			[2.47]**					[2.34]**
VR				-0.0017				-0.0109
				[0.25]				[1.41]
EP					-0.0016			-0.0026
					[0.24]			[0.41]
PRED						-0.0013		-0.0040
						[0.52]		[1.47]
SMTH							0.0090	0.0047
							[1.42]	[0.68]
Intercept	-0.0501	-0.0528	-0.0401	-0.0496	-0.0500	-0.0501	-0.0431	-0.0355
	[5.31]***	[5.56]***	[3.92]***	[5.12]***	[5.21]***	[5.31]***	[4.05]***	[3.13]***
N	495	495	495	495	495	495	495	495
Adj_R2	0.0594	0.0657	0.0691	0.0576	0.0576	0.0580	0.0613	0.0758