Earnings Smoothing and the Underpricing of Seasoned Equity Offerings (SEOs)

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Abstract

We argue that high quality firms that expect larger quantity of cash flows in the near future are more likely to actively smooth earnings via discretionary accruals before seasonal equity offerings to reduce underpricing. If high quality firms are confident about future earnings, it is also plausible to assume that they also push their offer prices up more aggressively, and lessen the degree of SEO underpricing. This paper presents empirical evidence that smooth performance is negatively related to the under pricing of seasonings equity offerings. We also document that smooth earnings resulting from discretionary accruals improve earnings informativeness. Our results are consistent with risk management and signaling theories and suggest that managers' efforts to produce smooth earning reports may add value to their firms by reducing SEO underpricing and improving earnings informativeness.

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1. Introduction

This paper examines whether high quality firms with persistent earnings smoothing before a seasoned equity offering (SEO) can add value by reducing the offerings' underpricing. It contributes to the literature insofar as it provides new evidence on the positive relation between earnings smoothing and firm value through SEO episodes, and its support of the view that earnings smoothing via discretionary accruals improves the informativeness of future earnings. Managerial opportunism and information revealing hypothesis have been used in the literature to motivate earnings smoothing. Managerial opportunism motives argue that managers use accruals to exploit information asymmetry, manipulating current earnings to achieve various benefits to themselves or their firms. Information revealing motives argue that managers smooth earnings to reveal information about the firms' future prospect. Both hypotheses have received support from a number of theoretical and empirical studies.

Studies supporting the hypotheses that managers are eager to stabilize their earnings in order to meet their bonus target or protect their job include the following. Bergstresser and Philippon (2006) document that managers whose compensation packages are sensitive to company share prices are more likely to lead their companies with higher level of earnings management. Fudenberg and Tirole (1995) construct a model to explain that managers use earnings smoothing as a vehicle to secure their job positions, and a series of studies, including Defond and Park (1997), have empirically supported this model.

Studies supporting the hypotheses that earnings smoothing can add value to firms by reducing information asymmetry include the following. Trueman and Titman (1988) provide evidence that high perceived earnings volatility increases the perceive risk of bankruptcy probability of the firms, hence its cost of external financing. Francis et al. (2006) examine the relation between cost of equity and seven attributes of earnings, including earnings smoothness, and find that earnings smoothness is negatively associated with cost of equity, even after accounting for cash flow volatility. Sankar and Subramanyam (2001) find that earnings smoothing can reveal managers' private information about future earnings, and conclude that there is information advantage to allowing reporting discretion when managers have private information beyond current earnings in a multi period framework. More recently, Tucker and Zarowin (2006) find that firms with earnings smoothing improve the use of current and past earnings in informing about future earnings forecasts leading to a higher firm values. An

implication from their results is that earnings smoothing should result in value premium, *ceteris paribus.*

The present paper we expects that firms with smoother earnings performance prior to an SEO offer date may experience a lower degree of underpricing than those with volatile earnings. Using a sample of more than three thousands SEOs during the 21 year period 1989-2009, we find that smooth performance is negatively related to underpricing of seasoned equity offerings. We also find evidence that earnings smoothing via discretionary accruals adds value to firms by reducing the degree of SEO underpricing, while smoothing via cash flows does not.

Our findings are consistent with the results of recent studies on the effects of smooth performance on firm value. Graham et al. (2005) document that corporate managers perceived a positive market premium for lower earnings volatility, and Carter et al. (2006) find that the use of derivatives to stabilize earnings improves firm value. Roundtree et al. (2008) also find, using Tobin's Q as a proxy for firm value, that cash flow volatility has negative effect on firm value. However, in contrast to our findings, they also find that earnings smoothing via accruals does not add value.

Our findings that earnings smoothing reduces the degree of SEO underpricing lead us to also investigate whether the volatility of contemporaneous discretionary accruals convey information about future earnings, and through it, the underpricing of SEOs. The information revealing hypothesis suggests that earnings smoothing improves the informativeness of past and current earnings about future earnings. We consequently investigate the implications of this relationship for SEO underpricing.

To estimate discretionary accruals, we use a modified version of Jones (1991) model, and find that the volatility of discretionary accruals is negatively associated with SEO underpricing, whereas volatility of cash flow over five year period prior to the offer date is not related to the underpricing of SEOs. These results are somewhat consistent with the findings of Subramanyam (1996), which show that discretionary accrual returns are positively associated with future earnings, and discretionary accruals convey information about firms' future prospects. Our results are not sensitive to several proxies for earnings smoothness, different estimation techniques, or various sets of control variables. We control possible endogeneity problem by using three stages least square method (3SLS) and a system of simultaneous equations. The results obtained from 3SLS also support our results. We also re-examine our

results by using different proxies of earnings smoothing, including the ratio of standard deviation of cash flows to standard deviation of net income, and the correlation between accrual and cash flows. Our results are robust to these sensitivity tests.

The remainder of this paper is organized as follows. Section 2 provides related literature and motivation. Section 3 describes research design and our SEO sample. Section 4 presents our empirical results and Section 5-the results from various robustness tests. Section 6 concludes the paper.

2. Related Literature and Motivation

Research supporting the managerial opportunism hypothesis shows that managers may smooth earnings to meet the bonus target (Healy, 1985), to protect their job (Arya et al., 1998), or to inflate earnings before exercising stock options (Bergstresser and Philippon, 2006). Those supporting the information revealing hypothesis show that firms smooth earnings to lower their cost of equity and risk perceptions of investors, and signal high future performance and high quality of earnings.

Theoretical models have attempted to explain why smooth earnings help reveal information about firms' future prospects. Channey and Lewis (1995) develop a model in which high quality firms convey their future earnings through smooth earnings. They show that, with asymmetric information, high quality firms inflate income in their financial reports more than low quality firms, and that the former smooth earnings whereas the latter do not. In this model, high quality firm bear the cost of over reporting current period income via a tax burden to separate themselves from low quality firms, given that low quality firms are presumed unable to bear this burden. Only high quality firms can reveal information about future earnings by smoothing earnings. Ronen and Sadan (1981), using Spencer's (1973) signaling framework, also argue that high quality firms with good future prospect are more likely to smooth their earnings in order to reveal their quality. This is not to say that low quality firms may not also inflated earnings before some specific corporate events such as mergers and acquisitions,but they are unable to do so over a long period of time given their poor future earnings.

Graham et al. (2005) found that 97 percent of CFOs surveyed prefer smoothing earnings with the belief that they lower the cost of capital and lead to more precise analyst's earnings forecasts. Tucker and Zarowin (2006) find a positive association between the degree of earnings

smoothing and future stock returns, and Rountree et al. (2008) find that investors place higher value, measured by Tobin's Q, on firms with smoother performance.

The existing literature suggests that the market can infer firm quality based on a firm smoothing its earnings over a number of years. This research aims to see if this prospect can payoff for these firms when they engage in SEOs. We hypothesize that managers of high quality firms with long historical smooth performance are more likely to push up the offer price to maximize proceeds from equity offerings, such that firms with smooth earnings are more likely to experience a lower degree of SEO underpricing episodes, compared with firms that do not.

The SEO underpricing literature is extensive. Corwin (2003) finds that SEOs are more underpriced for firms with high price uncertainty and bigger offer sizes. When, Kim and Shin (2004) find, investigating short selling and underpricing, that offer discounts are negatively related to underwriter rank and positively related to return volatility and underwriter spread. Cotton et al. (2004) documents that price stabilization is negatively associated with trading volume, offer price, and return variance.

More recently, Kim and Park (2005) examine the relation between earnings management by SEO firms and their offer prices. They find that SEO firms that aggressively manage earnings also more likely to push up their offer prices and reduce the degree of underpricing. They do not, however, test for the relationship between earnings smoothing and SEO underpricing.

Indeed, the effects of smoothing performance on underpricing through SEO episodes have not received much attention. To our knowledge, no empirical research to date directly examines the relation between smooth performance and SEO underpricing. The objective of this paper is to fill this gap in the literature using a large sample of seasonal equity offerings from the last two decades, and providing new evidence on the determinants of SEO undepricing.

3. Sample description and methodology

3.1 Sample construction and offer date correction

The 1989-2009 sample of U.S. common stock seasoned equity offerings (SEOs) by non-regulated companies comes from the Securities Data Company's (SDC) New Issue Database. The sample excludes initial public offerings and issues by non-U.S firms, as well as utilities and financial firms. Only offerings after 1989 are considered because the 1987 SFAS No.95 mandated that firms provide cash flow statement in their financial reports.

The initial sample consisted of 6,859 offerings, with stock prices obtained from the Center for Research in Security Prices (CRSP) and accounting variables from Compustat. For an offering to enter the final sample, it was necessary that there be at least 8 quarterly accounting data points prior to the SEO, 250 prior trading days and 12 prior monthly returns, and sufficient other data to compute discretionary accruals. All sample firms were listed on the NYSE, NASDAQ, or AMEX. The methodology section explains in more detail where missing values necessary for obtaining discretionary accruals required us to eliminate firms from the sample. The sample size after these restrictions and deletions consists of 5,108 offerings.

Ritter's reputation rank for each underwriter, obtained from Jay Ritter's website, supplements the data for our SEO sample[1]. Ritter evaluates each underwriter's reputation based on scores ranging from 0 to 9 (highest quality). We use each SEO lead manager's name as the identifier to obtain the Ritter underwriter ranking scores. The merging process reduces the SEO sample to 3,156 offerings. Then, to avoid the effects of outliers, we winsorize the earnings smoothness (*Smooth*) and underpricing *(Underpricing)* variables at 1 and 99 percentiles. The final sample size consists of 2,004 firms with 3,034 offerings.

Prior studies (Lease, Masulis, and Page (1991), Eckbo and Masulis (1992)) show that offer dates directly obtained from SDC database are often in appropriate for analyzing the underpricing of SEOs due to the fact that some offers take place after the close trading. For example, Lease et al. (1991) investigate the time stamp from the Down Jones News Service (DNJS) and find that 25% of offers from 1981 through 1983 take place after the close of trading. To address this issue, researchers have been corrected offer dates for their analysis by applying a volume based correction method. For example, Safieddine and Wilhelm (1996) apply volume based correction method and find that 18.4 % of offers during the 1980-1991 require an offer date correction. Following their method, we adjust our sample offer date as follows: If trading volume on the day following the SDC offer date is (1) more than twice the trading volume on the SDC offer date, and (2) is more than twice the average daily trading volume over the previous 250 trading days, then the day following the SDC offer date is designated as offer date.

[1] Jay Ritter website at http://bear.warrington.ufl.edu/ritter/ipodata.htm

3.2 Control variables

Prior studies document that the major determinants of SEO underpricing include the level of information asymmetry, the level of uncertainty about firm value, underwriter's reputation, price uncertainty, relative offer size, and conventional underwriter pricing practices ((Altinkilic and Hansen, 2002; Corwin, 2003, Kim and Park, 2005). These variables, widely used in the literature and used in this paper, are defined as follows (the Appendix provides full descriptions).

Underpricing, the dependent variable in our multivariate analysis, is the closing price on the offer day minus the offer price, divided by the offer price. An alternative definition for our robustness tests is the closing price on the day prior to the offer minus the offer price, divided to the closing price on the day prior to the offer. Earnings smoothness, *Smooth*, is the ratio of the standard deviation of net income divided by the standard deviation of cash flows from operation (both scaled by average total assets). The volatility of net income is scaled by cash flow volatility in *Smooth* to measure the extent to which accruals are possibly used to smooth out the underlying volatility of the firm's operation, with higher values of this variable indicates more earnings volatility. We expect a negative coefficient for *Smooth*. The standard deviation of operating cash flows and of net income are measured over twelve consecutive quarters, with a required minimum of eight quarters. Our measure of *Smooth* is similar to that used in prior research (e.g., Leuz et al., 2003; Francis et al., 2006, McInnis, 2010). Our primary measure of net income is net income before extraordinary item scaled by average total assets. Cash flows equal net income less accruals. Accruals are the change in current assets minus the change in cash minus the change in current liabilities plus the change in shorter term debt minus depreciation.

Stock price uncertainty, *Volatility*, is defined as the standard deviation of stock returns over the period of 30 trading days ending 10 days prior to the offer. Corwin (2003) find that underpricing is associated with stock return volatility and bid-ask spread. Many studies show that higher return volatility is associated with higher levels of underpricing. We expect a positive coefficient for *Volatility*.

The effect of pre-offer price run up is controlled with the variable *PreCar*, calculated as the cumulative adjusted return over the period of five trading days prior to the offer. Loughran and Ritter (2002) show that equity issuers are more tolerant of excessive underpricing if they simultaneously learn about a post market valuation that is higher than what they expected. This suggests that issuers don't need much bargaining effort in their negotiations over the offer price

with their contracted underwriters if they see the greater recent increase in their stock price. This also implies that pre-offer abnormal stock returns are positively related to the magnitude of the SEO underpricing. Thus, we expect a positive coefficient for *PreCar*. We follow Corwin (2003) to control for the effects of price pressure with the variable *Offersize*, calculated as shares offered divided by the total number of shares outstanding prior to the offer. Consistent with prior studies, we expect *Offersize* to be positively related to underpricing.

Prior studies also find that conventional underwriter pricing practice may have an important effect on SEO underpricing. Mola and Louran (2001) find that SEOs are clustered at integers and do not tend to fall on odd eight fractions. Harris (1991) and Ball et al. (1985) argue that rounded prices may reflect underwriter desire to reduce the costs of negotiating the offer price and uncertainty about the underlying security's value. Such rounding practices may reflect the imprecise nature of the pricing process. Therefore, we include the control variable, *Tick*, which is a dummy variable equals to one if the decimal portion of the closing price on the day prior to the offer is less than $ 0.25, and zero otherwise. We also add the incremental variable *Ln(price)* and the interaction term, *Ln (price)*Tick* to our base regression model. Based on Corwin (2003), the sign of coefficients on *Ln (price)*Tick* and *Ln (price)* are expected to be negative and positive, respectively.

Previous studies document that Nasdaq issues are more underpriced than NYSE issues (Ritter and Welch (2002)) because of difference in trading practices. The dummy variable *Nasdaq*, equal to one if the issuer was listed on Nasdaq, and zero if on NYSE or AMEX at the time of offer, controls for this effect. We also include the variable *IPOUnderpricing* in our regressions, measured as the average underpricing across all IPOs during the same month as the SEO , where the monthly IPO underpricing estimates are obtained from Jay Ritter's website.

The effect of underwriter reputation on SEO underpricing is measured by the lead underwriter's ranking, also from Jay Ritter's website. Ritter refines Carter and Manaster's (1990) ranking method to construct a new ranking database for major underwriters, with rankings based on a 0-9 scale, from 1.0 to 9.0. Our final control variables are the firm's risk (*Beta*), firm's size (*Size*, log of market value of equity), and book to market (*BM*). We calculate beta from the regression of a firms' monthly raw returns on the monthly value-weighted market returns over the rolling five year window ending in the current fiscal year of the offer date. (The appendix provides full descriptions of all control variables in our regressions.)

3.3 Descriptive statistics

Table 1 summarizes the characteristics of our sample SEOs. Table 1, Panel A presents the descriptive statistics for the sample firms. Our sample firms have a $632.76 million mean value of assets and $750.2 million mean equity market value. On average, our sample's return on asset ratio is -0.0086 (median of 0.007) and earnings per share is 0.037 (median of 0.06). The mean and median of market to book ratio is 0.49 and 0.36 respectively.

Table 1, Panel B presents the descriptive statistic for selected variables for the full SEO sample during the entire 1989-2009 period. We define underpricing as the closing price on the offer day minus the offer price, divided by the offer price. The mean (median) value of the underpricing variable is 0.027 (0.013), which is statistically significant. The average underpricing is equal to 2.7% of the offer price for the sample period. The mean and median net income volatility is significantly higher than cash flow volatility. The mean (median) net income volatility is 0.035 (0.018) versus 0.062 (0.046) for cash flow volatility. Recall that given our definition of *Smooth*, the higher value of net income volatility relative to cash flow volatility, the lower the level of smoothing. The mean and median values of *Smooth* are 0.540 and 0.459 respectively. Stock return volatility during a 30 day period ending 11 days before the offer date is 0.033. A typical sample offer size is relatively large. The mean (median) of the relative offer size, calculated as the ratio of number of offered shares to the total shares outstanding prior to the offer, is 0.249 median of 0.18) or about 25% of shares outstanding.

Table 1, Panel C reports the offers' characteristics across exchange markets. Consistent with prior research, the degree of underpricing for Nasdaq offers is higher than NYSE and AMEX offers. The mean (median) for SEO underpricing is 0.034 (0.022) for the Nasdaq and 0.018 (0.007) for the NYSE and AMEX offers, with the mean differences statistically significant (*t*-value equal to -10.48). This is also the case for the volatility of cash flow and of net income. Generally, the Nasdaq offers have higher level of return volatility, net income volatility, and cash flow volatility than other exchange markets.

[Table 1 is about here]

Table 2 reports Pearson correlations among the control variables to show whether the correlations are generally consistent with our predictions. Our main variable of interest, *Smooth*,

where low values of *Smooth* indicate higher smoothing, as *Smooth* appears to be significantly positively associated with the level of SEO underpricing (ρ=0.094, $p<0.01$). Recall that it appears that higher smoothing via accruals is associated with a lower levels of SEO underpricing - *Underpricing* tends to be larger the greater the degree of earnings volatility.

We find no significant correlation between *Underpricing* and *Firmsize* suggesting that firm's size, on average, is not associated with the level of underpricing. However, relative offer size (*Offersize*) and volatility of returns (*Volatility)* are positively associated with *Underpricing* *(ρ=0.029, $p<0.01$ and ρ=0.166, $p<0.01$),* possibly reflecting the effects of price pressure on SEO underpricing. We also find, consistent with earlier findings, that high reputation of underwriters is negatively related to the level of underpricing (-0.153), and that higher pre-offer price run-ups are positively related to the level of underpricing. Overall, the correlations generally support our prediction that firms with smooth earnings are more likely to experience a lower degree of SEO underpricing.

[Table 2 is about here]

4. Empirical Results

4.1 Univatiate test

Table 3 presents the results of our simple univariate tests of the relation between earnings volatility and SEO underpricing, including the *t* statistics and *p*-value of the univariate test of difference in the level of underpricing between high and low smoothing quintiles. We first sort our sample into quintiles according to earnings smoothness (Panel A) or level of underpricing (Panel B), and then compute the mean and median SEO underpricing for each quintiles. We observed that both mean and median levels of SEO underpricing increase monotonically across earnings smoothness quintiles, with significant differences in the level of underpricing between firms with low versus high levels of earnings smoothing. The univariate results are consistent with our hypothesis that SEOs from firms with smooth performance are less underpriced when compared to those from firms with volatile earnings. Also, consistent with prior studies, variable *Rank* (*PreCar)* declines (increases) monotonically across earnings smoothness quintiles. Overall, our univariate tests demonstrate a strong negative relation between earnings smoothness and SEO underpricing.

[Table 3 is about here]

4.2 Multivariate tests

Our OLS regressions' results are presented in this section. The dependent variable is *Underpricing*, and the independent variable of interest is *Smooth*. The regressions control for other factors widely accepted in the literature on underpricing of SEOs. The control variables are (1) firm risk (*Beta*); (2) market to book (*BM*, using the ratio of the book value of total equity divided by the market value of total equity ; (3) cumulative market adjusted returns prior to the offer date (*PreCar*); (4) IPO underpricing (*IPO Underpricing)*; (5) return volatility (*Volatility*); (6) firm size (*Size*, the log of market equity); (7) relative offer size (*Offersize)*; underwriter's rank (*Rank*); (8) *Tick*; (9) *Ln(price*), and (10) the interaction term between *Tick* and *Ln(price)* (*Tick*Ln (price*). We also use dummy variables (*Nasdaq*) to control for conventional pricing practices and the different characteristics of stock exchanges. Our regression takes the following general form.

$$Underpricing = \alpha_0 + \alpha_1 Smooth + \alpha_2 Beta + \alpha_3 BM + \alpha_4 PreCar + \alpha_5 IPOunderpricing + \alpha_6 Volatility + \alpha_7 Size + \alpha_8 Offersizer + \alpha_9 Rank + \alpha_{10} Tick + \alpha_{11} Ln(price) + \alpha_{12} Tick*Ln(Price) + \alpha_{13} Nasdaq + \varepsilon \quad \textbf{(1)}$$

Table 4 presents the results for various specifications of this general regression, such that the control variables are added in sequence to a standard set of determinants of the SEO underpricing. The *p*-values shown in the table are based on White's heteroskedasticity consistent standard error.

[Table 4 is about here]

The results support our hypotheses on the role of earnings smoothing in underpricing, and are consistent with its information role. Specifically, the degree of SEO underpricing is negatively associated with earnings smoothness with the coefficient estimate of 0.008 (*p*-value<0.000). The results suggest that smooth performance improves information about future earnings, thereby leading to a lower degree of the SEO underpricing.

The coefficients of other control variables are also consistent with our expectations. For example, coefficient estimates on *PreCar*, *Offersize*, *Rank*, and *Nasdaq* are of the expected sign and statistically significant at conventional levels. In models 3, 4, and 5 (full model), we **s**equentially add *Tick, Ln (price)* and the interaction term *Tick*Ln(price)* to the base model, with consistent results between these models and models 1 and 2. Overall, coefficients for *Smooth* are negatively related to the degree of underpricing, and all other coefficient estimates are also consistent with predicted signs.

The coefficient on relative offer size (*Offersize*) is negative and significant at conventional levels in all model specifications, supporting the existence of price pressure effects on the degree of SEO underpricing . The coefficients of underwriter's rank, ranging from -0.0044 to -0.0032, are all negative and significant at the 1 % level in every specification, suggesting that underwriter's reputation plays an important role in reducing the level of underpricing. The coefficients on *Tick<0.25* are consistently positive, suggesting that offers are more underpriced when the previous days' closing price does not fall on an even dollar amount or $0.25 price increment. The results support the hypothesis that pricing practice is an important factor affecting the level of SEO underpricing. In model 5, the coefficient on *PreCar* is 0.2 (*p*-value<0.001), suggesting that large positive pre-offer returns lead to more underpricing. Unlike prior studies (e.g., Corwin, 2003; Kim and Park, 2005), the coefficients on *IPO Underpricing* are not statistically significant in our models, implying that SEO underpricing is not related to IPO underpricing. In addition, the coefficients on dummy variables *Nasdaq* are significantly positive, showing that firms listed on Nasdaq have a greater degree of underpricing.

4.3 Three Stage Least Squares (3SLS) Estimation Results

The results reported above may be biased if earnings smoothing, pre-offer stock returns, and SEO underpricing are jointly and endogenously determined. Therefore, following Kim and Park (2005), we examine the relationship between the SEO underpicing and earnings smoothness by estimating a 3SLS on the system of simultaneous equations.

The system of simultaneous equations is as follows:

$$Underpricing = \alpha_0 + \alpha_1 Smooth + \alpha_2 DA + \alpha_3 Beta + \alpha_4 Volatility + \alpha_5 Offersize + \alpha_6 Tick + \alpha_7 Rank + \alpha_8 Nasdaq + \varepsilon \quad \textbf{(2.1)}$$

$$Smooth = \alpha_{0+} \alpha_1 Underpricing + \alpha_2 PreCar + \alpha_3 Offersize + \alpha_4 Total\_acrual + \varepsilon \quad \textbf{(2.2)}$$

$$PreCar = \alpha_{0+} \alpha_1 Underpricing + \alpha_2 DA + a_3 Offersize + a_4 Size + \alpha_5 BM + \alpha_6 Nasdaq + \varepsilon \quad \textbf{(2.3)}$$

We measure discretionary accruals for year *t* as residuals from the following cross section version of Jones model, modified by Kothari et al. (2005):

$$Acrual_t = \alpha_0 (1/Asset_{t-1}) + \alpha_1 * \Delta Sale_t + \alpha_2 PPE_t + \alpha_3 ROA + \mu_t \quad \textbf{(3)}$$

The total accrual ($Acrual_t$); change in sales ($\Delta Sale_{t)}$; and gross property, plant, and equipment (*PPE*) are deflated by the average total assets (*Assets*) in this regression. We add an additional control variable, *ROA*, to the Jones model to account for the effect of firm performance because prior studies (Dechow et al., 1995; Kothari et al., 2005) find that the Jones model is misspecified for well performing or poorly performing firms. We estimate the above model regressions by two-digit SIC code and fiscal year. We then obtain discretionary accruals for the firm year *t* using the residuals from the estimated regression. We use two variables, *DA and Total_acrual*, in the three stage least square regression. *DA* is the total discretionary accruals over one year prior to the offer date, and *Total_acrual* is the cumulative discretionary accruals over five year period prior to the offer date.

In the first equation, if SEO firms smooth earnings before SEOs to reduce underpricing, then the coefficient on *Smooth* should be positive (note that the higher value of *Smooth,* the higher earnings volatility). If large pre-offer abnormal stock returns lead to more underpricing, then we should expect that the coefficient on *PreCar* is positive. If earnings smoothing convey managers' private information about future earnings, then the coefficient on *Underpricing* should be positive in the second equation. If positive news due to pre-offer abnormal returns encourages SEO firms to actively smooth earnings via discretionary accruals to convey future prospects, then the coefficient on *Smooth* should be negative in the third equation. We also expect that firms smooth earnings via discretionary accruals. If so, a negative coefficient on *Total_acrual* is expected in the second equation.

Table 5 reports the results obtained from three stage least square regressions. As predicted, the coefficient on *Smooth* in the first equation is significantly positive (0.0819, *p*-value<0.001). This result supports our prediction that earnings smoothness is negatively associated with the degree of SEO underpricing even after controlling for endogeneity by using three-stage least square method. The coefficient on *DA* is -0.00038 (*t-value=-0.57)* is not statistically significant, suggesting that the earnings management via discretionary one year prior to the SEO does not have a significant effect on SEO underpricing as smooth earnings does. Again, this support our hypothesis that earnings smoothing do have a significant effect on the degree of SEO underpricing, after controlling for endogeneity and other known factors affecting underpricing. Unlike prior studies (e.g., Kim and Park , 2005), we do not find any significant role in the SEO underpricing of abnormal stock returns prior the offer date, after controlling for endogeneity. In the second equation, the coefficient of *Total_accrual* is statistically and significant, implying that firms do smooth earnings via discretionary accruals. To summarize, we find clear evidence that earnings smoothness results in a lower degree of SEO underpricing, even after controlling for possible endogeneity.

[Table 5 is about here]

4.4 Cash flow volatility versus accrual volatility

Thus far, we have documented that the relation between earnings smoothness is negatively association with the level of SEO underpricing, and that relation is more consistent with the information revealing hypothesis than the garbling hypothesis. Information revealing hypothesis suggests that managerial discretion could enhance earnings' informativeness by allowing communication of private information (Watts and Zimmerman, 1986; Healy and Palepu, 1993; Subramanyam, 1996). Moreover, previous research shows that accruals, on average, have incremental information content above cash flow (Bowen, Burghstahler, and Daley, 1987; Dechow, 1994). In this section, we examine whether cash flow volatility or accrual volatility has more pronounced effects on SEO underpricing. We then test how each of two components of earnings volatility incrementally contribute to the relationship between earnings smoothing and SEO underpricing. Following the method adopted by Rountree et al. (2008), we decompose earnings volatility into cash flow volatility and accrual volatility as follows:

$$\delta^2_{Earnings} = \delta^2_{Cash\ flows} + \delta^2_{Acruals} + 2Cov(Cash\ flows, Acruals)$$

where accruals are constructed as earnings less cash flows as described in the appendix.

Table 6 presents regression estimates of *Underpricing* on earnings volatility and each component of earnings volatility. As expected, the results support the information revealing hypothesis, implying that *Acrual volatility* has strong negative relation to *SEO Underpricing.* In model 3, the coefficient estimate of *Acrual volatility* is -0.0045 (*t*=-1.83) indicates that a 1% change in accrual volatility leads to 0.004% change in SEO underpricing. Negative value of *Accrual volatility* indicates that higher accrual volatility results in a lower level of SEO underpricing, suggesting that smooth earnings via accruals add value to firms. While the coefficient of *Acrual volatility* is statistically significant at 10% level, the coefficient estimate on *Cash flow volatility* is not statistically significant at conventional levels. This result suggests that earnings smoothing via accruals certainly appear to reduce the degree of SEO underpricing beyond the cash flow volatility.

[Table 6 is about here]

Overall, the results from table 6 illustrate that earnings smoothing via accruals reveal information about firms' future prospect. The results further reveal that earnings smoothing via discretionary accruals over the number of years prior to the offer date leads to a lower level of SEO underpricing.

5. Robustness

Our results in table 4, 5 and 6 are based on *Smooth* as a primary proxy for earnings smoothness. To check the robustness of our results and gain more insight into the issues under investigation, we re-estimate our regression models using different proxies for earnings smoothness. In the first robustness test, we use the decile rank of the ratio of the standard deviation of net income to the standard deviation of cash flows as a proxy for earnings smoothness. The results are reported in column 1 in table 7. Again, we find that new

measurement of earnings smoothness (the decile rank of *Smooth*) is positively associated with *Underpricing.* The coefficient (*0.0008*, *p-value=0.000*) is positive and significant at 0.01 level.

[Table 7 is about here]

Leuz, Nanda, and Wysocki (2003) argue that firms may use accounting accrual to conceal economics shocks to the firms' operating cash flow. By using accounting accruals, a firm may buffer cash flows shocks, leading to smoother reported earnings. As a result, a more negative correlation is expected for a firm that actively uses accruals to smooth cash flows. Leuz et al. (2003) conclude that the correlation between cash flow and accruals is more direct measure of earnings smoothing via accruals. Thus, we use the correlation between accrual and cash flow as proxy for earnings smoothness in our second robustness test. Following Leuz et al. (2003) and Barton (2001), we use the correlation between quarterly cash flows and accruals over the period of five-year period prior to the offer date. It's noted that the more negative correlation would be consistent with the higher level of earnings smoothing.

The results with the correlation of cash flows and accruals as the proxy for earnings smoothness suggest that the more negative the correlation between accruals and cash flows is, the less degree of SEO underpricing. The results in column 2 in table 7 indicate underpricing increases as the correlation becomes more positive.

Finally, we re-estimate our regression specifications with an alternative measure of underpricing (*Underpricing_discount*) which is defined as the closing price on the day prior to the offer minus the offer price, divided by the closing price on the day prior to offer. Table 8 shows that our main results remain unchanged. The results are consistent with our hypothesis that earnings smoothing is associated with a lower degree of SEO underpricing.

[Table 8 is about here]

6. Conclusion

This study examines the relation between earnings smoothing and SEO underpricing. We argue that high quality firms that expect larger quantity of cash flows in the near future are more likely to actively manage earnings via discretionary accrual before seasonal equity

offerings to reduce the cost of capital and SEO underpricing. If high quality firms that are confident about future earnings actively smooth earnings, it is plausible to assume that they also push their offer prices up more aggressively.

In addition, market participants who observe a firm smoothing earnings over a number of years prior to SEOs are more likely able to infer firm quality, since smoothing over a longer period is more costly for lower quality firms. Taken together, we hypothesize that firms with smooth performance over a number of years prior to the SEOs would have a lesser degree of SEO underpricing.

Our empirical results are consistent with our predictions, such that earnings smoothness appears to result in less SEO underpricing, based on a sample of more than 3,000 SEOs from 1989 through 2009. This relationship holds regardless of estimation techniques, earnings smoothness proxies, or measures of SEO underpricing that are used. Three stage least squares estimation and other robustness tests also support our hypothesis, even after controlling for endogeneity problems.

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Table 1

Summary Statistics

Panel A: Descriptive Statistics on Sample-Firms (N=2,004 firms)

Variable	Mean	Std.	25%	Median	75%
Total Assets (M$)	632.76	2520	27.87	82.23	325.0
Equity Market Value (M$)	750.2	3663	43.33	122.7	378.9
Return on Assets(*ROA*)	-0.008	0.101	-0.016	0.007	0.021
Firm specific risk (*Beta*)	1.397	1.081	0.781	1.281	1.91
Earnings per share (*EPS*)	0.0375	3.00	-0.100	0.06	0.24
Book to market (*BM*)	0.491	0.537	0.231	0.366	0.582

Panel B: Descriptive Statistics on Sample-SEOs (N=3,034 SEOs)

Variable	Mean	Std.	25%	Median	75%
SEO Underpricing (*Underpricing*)	0.027	0.045	0.000	0.013	0.049
IPO Underpricing (*IPOunderpricing*)	0.195	0.193	0.097	0.149	0.202
Relative offer size (%) (*Offersize*)	0.249	0.343	0.112	0.180	0.287
Smoothness (*Smooth*)	0.540	0.356	0.239	0.459	0.811
Volatility of net income (std. dev.)	0.035	0.068	0.009	0.018	0.040
Volatility of cash flow (std. dev.)	0.062	0.072	0.029	0.046	0.075
Volatility of returns (*Volatility*)	0.033	0.017	0.021	0.029	0.040

Panel C: Descriptive Statistics for SEOs across Markets (N=3,034 SEOs)

Variable	NASDAQ (N=1785)		NYSE and AMEX (N=1249)		*t-Test*	
	Mean	Median	Mean	Median	t-Statistics	p-Value
SEO Underpricing (*Underpricing*)	0.0348	0.0225	0.0184	0.0071	-10.48	0.000
IPO Underpricing (*IPOunderpricing*)	0.2036	0.1497	0.1794	0.2347	-3.48	0.000
Relative offer size(%) (*Offersize*)	0.2585	0.1971	0.2347	0.1563	-1.74	0.081
Return on Assets (*ROA*)	-0.0164	0.0026	0.0043	0.0104	6.64	0.000
Volatility of net income (std. dev.)	0.0447	0.0247	0.0217	0.0128	-10.60	0.000
Volatility of cash flow (std.dev.)	0.0718	0.0526	0.0499	0.0368	-8.98	0.000
Volatility of returns (*Volatility*)	0.0385	0.0343	0.0252	0.0228	-23.41	0.000

This table presents descriptive statistics for our sample of firms and our sample of SEOs. The sample contains all SEO firms with available annual and quarterly data and matching data on CRSP during 1989-2009. The final sample (after winsorizing *Smooth* and *Underpricing* variables) consists of 2,004 firms with a total of 3,034 SEOs during 1989-2009. *Underpricing* is defined as the closing price on the offer day minus the offer price, divided by the offer price. *Accrual Volatility* is the standard deviation of quarterly accruals over the five year period prior to the offer. *Book-to-market (BM)* is the natural log of the ratio of book value of equity to market value of equity. Cash flow equals net income minus accruals. *Cash flow volatility* is the standard deviation of quarterly cash flows over the five year period prior to the offer. *Net income volatility* is the standard deviation of quarterly net income over the five year period prior to the offer date. *ROA* is the income before extraordinary items divided by average total assets. *IPOunderpricing* is the average underpricing across all IPOs during the same month as the SEO, where the monthly underpricing estimates for IPOs are obtained from Jay Ritter's website. *Offersize* is calculated as the total shares offered divided by the total number of shares outstanding prior to the offer. Net income is net income before extra ordinary items. *Smooth* is the ratio of standard deviation of net income (scaled by average total assets) divided by the standard deviation of cash flows from operation (scaled by average total assets). All variables are described in the appendix

Table 2 Spearman Correlation

	Smooth	PreCAR	Beta	Underpricing	Rank	BM	Volatility	Firmsize	Offersize
Smooth	1								
PreCAR	-0.039 *(0.029)*	1							
Beta	0.184 *(0.001)*	-0.004 *(0.800)*	1						
Underpricing	0.094 *(0.000)*	0.437 *(0.000)*	0.060 *(0.000)*	1					
Rank	-0.052 *(0.003)*	-0.004 *(0.808)*	0.013 *(0.442)*	-0.153 *(0.000)*	1				
Volatility	0.230 *(0.000)*	-0.088 *(0.000)*	0.308 *(0.000)*	0.173 *(0.000)*	-0.198 *(0.000)*	1			
BM	-0.130 *(0.000)*	0.008 *(0.632)*	-0.202 *(0.000)*	-0.021 *(0.237)*	-0.043 *(0.018)*	-0.132 *(0.000)*	1		
Firmsize	0.017 *(0.329)*	0.035 *(0.051)*	-0.011 *(0.532)*	-0.130 *(0.000)*	0.496 *(0.000)*	-0.291 *(0.000)*	-0.246 *(0.000)*	1	
Offersize	-0.051 *(0.004)*	-0.125 *(0.000)*	-0.063 *(0.000)*	0.114 *(0.000)*	-0.239 *(0.000)*	0.174 *(0.000)*	0.166 *(0.000)*	0.457 *(0.000)*	1

Table 3 Univariate Analysis

This table presents univariate results. We group SEOs into quintiles based on their *Underpricing* and *Smooth*. Panel A reports mean of *Underpricin*g and other independent variables for earning smooth quintiles arranged from low to high. The difference in mean of independent variables between the low and high quintiles is shown at the bottom of the table along with the associated *p*-values in parentheses. Panel B presents results sorting on *Underpricing* quintiles. All variables are described in the appendix

Panel A: Quintiles Based on *Smooth*							
	Underpricing	PreCar	Beta	Volatility	BM	Rank	IPOUnderpricing
Low	0.0212	-0.017	1.272	0.2830	0.527	8.126	0.177
2	0.0230	-0.023	1.247	0.0296	0.502	8.032	0.184
3	0.0252	-0.026	1.243	0.0316	0.519	7.992	0.197
4	0.0333	-0.027	1.554	0.0368	0.493	7.885	0.214
High	0.0343	-0.034	1.846	0.0391	0.433	7.879	0.201
Difference (Low-High)	-0.0131	0.017	-0.574	-0.010	0.094	0.152	-0.024
P-value	*(0.000)*	*(0.018)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.046)*	*(0.018)*

Panel A: Quintiles Based on *Smooth*					
	ROA	EPS1	EPS2	EPSOP	BM
Low	0.0162	0.2057	0.2031	0.2114	0.527
2	0.0125	0.1458	0.1567	0.1805	0.502
3	0.0032	0.0961	0.1089	0.1213	0.519
4	-0.0248	-0.2010	-0.2055	-0.0553	0.493
High	-0.0463	-0.0487	-0.0565	-0.1282	0.433
Difference (Low-High)	0.0153	0.0696	0.0884	0.0620	0.094
P-value	*(0.001)*	*(0.0418)*	*(0.3057)*	*(0.4877)*	*(0.000)*

Table 3 Univariate Analysis (Continued)

This table presents univariate results. We group SEOs into quintiles based on their *Underpricing* and *Smooth*. Panel A reports mean of *Underpricing* and other independent variables for earning smooth quintiles arranged from low to high. The difference in mean of independent variables between the low and high quintiles is shown at the bottom of the table along with the associated *p*-values in parentheses. Panel B presents results sorting on *Underpricing* quintiles. All variables are described in the appendix

Panel B
Quintiles Based on *Underpricing*

	Smooth	PreCar	Beta	Volatility	BM	Rank	IPOUnderpricing
Low	0.5004	-0.0753	1.3990	0.0301	0.4932	8.2345	0.2012
2	0.5061	-0.0534	1.3720	0.0306	0.5138	8.1385	0.1960
3	0.5191	-0.0368	1.3968	0.0308	0.4975	8.1590	0.1825
4	0.5256	-0.0024	1.3577	0.0322	0.4914	7.8737	0.1814
High	0.6173	-0.0335	1.5116	0.0403	0.4805	7.5121	0.2143
Difference (Low-High)	-0.080	-0.109	-0.117	-0.008	0.0127	0.7224	-0.0130
P-value	*(0.000)*	*(0.000)*	*(0.055)*	*(0.000)*	*(0.720)*	*(0.000)*	*(0.283)*

Table 4
Multivariate Analysis

The results shown this table are based on the regressions using the ratio of standard deviation of net income to standard deviation of cash flow a proxy for earnings smoothness. The table lists coefficients (*p*-values) from OLS regressions of underpricing on *Smooth*, defined as the ratio of standard deviation of net income to the standard deviation of cash flow, and a set of control variables. *P*-values are based on White's heteroskedasticity consistent standard errors. All variables are described in the appendix.

Dependent variable: *Underpricing*

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	0.04726	0.0473	0.0473	0.0620	0.0604
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Smooth	0.0080	0.0077	0.0078	0.0050	0.0050
	(0.000)	*(0.000)*	*(0.000)*	*(0.018)*	*(0.019)*
Beta	0.0004		-0.0002	-0.0006	-0.0006
	(0.650)		(0.792)	0.4378	(0.446)
BM		-0.0019	-0.0019	-0.0018	-0.0017
		(0.068)	*(0.035)*	*(0.049)*	*(0.051)*
PreCar	0.1655	0.1921	0.1921	0.2002	0.2002
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
IPOUnderpricing	-0.0047	-0.0060	-0.0060	0.0013	0.0013
	(0.267)	*(0.171)*	*(0.169)*	*(0.761)*	*(0.759)*
Volatility	0.4596	0.4626	0.4652	0.4329	0.4340
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Size	-0.0008	-0.0010	-0.0010	-0.0003	-0.0003
	(0.106)	*(0.056)*	*(0.058)*	*(0.555)*	*(0.573)*
Offersize	0.0064	0.0070	0.0070	0.0052	0.0052
	(0.009)	*(0.002)*	*(0.002)*	*(0.014)*	*(0.014)*
Rank	-0.0044	-0.0044	-0.0044	-0.0032	-0.0032
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Tick				0.0001	0.0063
				(0.917)	*(0.452)*
Ln(price)				-0.0084	-0.0078
				(0.000)	*(0.000)*
Ln(price)*Tick					-0.0020
					(0.431)

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Nasdaq	0.0063	0.0062	0.0063	0.0069	0.0068
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Adj. R^2	0.235	0.271	0.271	0.282	0.282

Table 5
Three-Stage Least Squares Estimation: Relation between Earnings Smoothing and SEO Underpricing

This table presents results the system of simultaneous equations as follows:
$Underpricing = \alpha_0 + \alpha_1 Smooth + \alpha_2 DA + \alpha_3 Beta + \alpha_4 Volatility + \alpha_5 Offersize + \alpha_6 Tick + \alpha_7 Rank + \alpha_8 Nasdaq + \varepsilon$ *(1)*
$Smooth = \alpha_{0+} \alpha_1 Underpricing + \alpha_2 PreCar + \alpha_3 Offersize + \alpha_4 Total\_accrual + \varepsilon$ *(2)*
$PreCar = \alpha_{0+} \alpha_1 Underpricing + \alpha_2 DA + a_3 Offersizer + a_4 Size + \alpha_5 BM + \alpha_6 Nasdaq + \varepsilon$ *(3)*
All variables are described in the appendix

	Underpricing (1)	**Smooth (2)**	**PreCar (3)**
Intercept	-0.0007	0.3657	0.0544
	(0.907)	*(0.000)*	*(0.000)*
Underpricing		4.5923	-1.6155
		(.000)	*(.000)*
Smooth	0.0762		
	(0.000)		
DA (1)/Total_acrual (2)	0.0001	-0.0004	
	(0.346)	*(0.014)*	
Beta	-0.0008		
	(0.314)		
PreCar	-0.0853	-3.1248	
	(0.091)	*(0.000)*	
Volatility	0.0446		
	(0.152)		
Offersize	0.0028	-0.14069	-0.03023
	(0.346)	*(0.000)*	*(0.000)*
Rank	-0.0022		
	(0.000)		
Size			-0.0094
			(0.000)
BM			-0.0057
			(0.000)
DA			0.0061
			(0.000)
Nasdaq	0.0058		0.0083
	(0.004)		*(0.247)*
System Adj. R^2	*0.013*		

Table 6
SEO Underpricing and Components of Earnings Volatility

This table presents results from cross sectional regressions of the *Underpricing* on each components of earnings volatility. The components of earnings volatility include accrual volatility, cash flow volatility, and the correlation of cash flows and accruals. All regressions include control variables that are described in the appendix. *P*-values are reported beneath the coefficient estimates in parentheses. All variables are described in the appendix

Model	**(1)**	**(2)**	**(3)**
Intercept	0.06994	0.0673	0.0640
	(0.000)	*(0.000)*	*(0.000)*
Ln(*Earnings volatility*)	0.0033		0.0042
	(0.001)		*(0.002)*
Ln (*Acrual volatility*)			-0.0045
			(0.067)
Ln (*Cashflow volatility*)		0.0017	0.0026
		(0.115)	*(0.311)*
Correlation	-0.0020	0.0039	-0.0067
	(0.498)	*(0.087)*	*(0.079)*
Beta	-0.0002	-0.0001	-0.000
	(0.767)	*(0.861)*	*(0.803)*
PreCAR	0.1748	0.1750	0.1754
	(0.000)	*(0.000)*	*(0.000)*
IPOUnderpricing	0.0017	0.0023	0.0018
	(0.648)	*(0.547)*	*(0.638)*
Rank	-0.0031	-0.0032	-0.0032
	(0.000)	*(0.000)*	*(0.000)*
Volatility	0.4242	0.4388	0.4264
	(0.000)	*(0.000)*	*(0.000)*
Offersize	0.0046	0.0046	0.0048
	(0.029)	*(0.033)*	*(0.025)*
Tick	0.0096	0.0096	0.0099
	(0.163)	*(0.161)*	*(0.149)*
Ln(price)	-0.0066	-0.0070	-0.0066

Model	**(1)**	**(2)**	**(3)**
	(0.000)	*(0.000)*	*(0.000)*
Ln(price)*Tick	-0.0032	-0.0033	-0.0034
	(0.140)	*0.1374*	*0.1257*
Nasdaq	0.0063	0.0067	(0.006)
	(0.000)	*(0.000)*	*(0.000)*
System Adj. R^2	0.244	0.246	0.247

Table 7
Robustness Regressions

The results tabulated in this table are based on the regressions using the decile rank of the ratio of the standard deviation of net income to the standard deviation of cash flow (model 1), and the correlation between cash flows and accruals (model 2) as proxies for earnings smoothness. *P*-values are reported beneath the coefficient estimates in parentheses. All variables are defined in the appendix.

Dependent variable: *Underpricing*

Model	**Model 1**	**Model 2**
Intercept	0.0582	0.0667
	(0.000)	*(0.000)*
Decile rank (*Smooth*) (model 1) Correlation (Cashflow/Acruals) (model 2)	0.0008	0.0052
	(0.0014)	*(0.033)*
Beta	-0.0009	-0.0006
	(0.341)	*(0.369)*
BM	-0.0017	-0.0019
	0.0903	*(0.037)*
PreCar	(0.202)	0.2035
	(0.000)	*(0.000)*
IPOunderpricing	(0.000)	0.0011
	(0.850)	*(0.761)*
Volatility	0.4401	0.4464
	(0.000)	*(0.000)*
Firmsize	-0.0002	-0.0002
	(0.705)	*(0.681)*
Offersize	0.0051	0.0054
	(0.016)	*(0.013)*
Rank	-0.0031	-0.0034
	(0.000)	*(0.000)*
Tick	0.0068	0.0051
	(0.420)	*(0.452)*
Ln(price)	-0.0078	-0.0077
	(0.000)	*(0.000)*
Ln(price)*Tick	-0.0024	-0.0018
	(0.359)	*(0.460)*
Nasdaq	0.0066	0.0072

	(0.000)	*(0.000)*
Adj. R^2	0.281	0.289

Table 8
Robustness Regressions (continued)

This table presents results obtained from regressing *Underpricing_discount* on alternative proxies for Smoothness, plus a set of control variables. *P*-values are reported beneath the coefficient estimates in parentheses. All variables are defined in the appendix.

Dependent variable: *Underpricing_discount*			
Model	**(1)**	**(2)**	**(3)**
Intercept	0.0624	0.0620	0.0674
	(0.000)	(0.000)	*(0.000)*
Smooth (model 1) Decile rank of Smooth (model 2) Correlation (Cashflow/Acrual) (model 3)	0.0038	0.0005	0.0037
	(0.020)	(0.004)	*(0.033)*
Beta	0.0008	0.0008	0.0008
	(0.146)	(0.156)	*(0.154)*
BM	-0.0007	-0.0007	-0.0007
	(0.286	(0.283)	*(0.288)*
PreCar	0.0764	0.0764	0.0765
	(0.000)	(0.000)	*(0.000)*
IPOunderpricing	-0.0060	-0.0062	-0.0056
	(0.041)	(0.035)	*(0.049)*
Volatility	0.3992	0.0396	0.4019
	(0.000)	(0.000)	*(0.000)*
Firmsize	-0.0001	-0.0001	-0.0001
	(0.717)	(0.654)	*(0.7805)*
Offersize	0.0026	0.0027	0.0026
	(0.098)	(0.093)	*(0.096)*
Rank	-0.0033	-0.0033	-0.0034
	(0.000)	(0.000)	*(0.000)*
Tick	0.0041	0.0041	0.0040
	(0.429)	(0.426)	*(0.442)*
Ln(price)	-0.0087	-0.0086	-0.0087
	(0.000)	(0.000)	*(0.000)*
Ln(price)*Tick	-0.0012	-0.0012	-0.0012
	(0.446)	(0.445)	*(0.457)*
Nasdaq	0.0034	0.0033	0.0034

	(0.009)	(0.011)	(0.009)
Adj. R^2	0.267	0.268	0.267

Appendix: Variable Definitions

Acrual Volatility: Standard deviation of quarterly accruals over the five year period prior to the offer. Accruals are calculated as the change in current assets minus the change in cash minus the change in current liabilities plus the change in short-term debt minus depreciation, scaled by average total assets.

Book-to-market (BM): The natural log of the ratio of book value of equity to market value of equity.

Cash flow: Net income minus accruals.

Cash flow volatility: Standard deviation of quarterly cash flows over the five year period prior to the offer.

Correlation: The correlation between quarterly cash flows and accruals over the five year period prior to the offer date.

DA: Total discretionary accruals over one year prior to the offer date.

EPS: Earnings per share (basic) / excluding extraordinary items.

EPS1: Earnings per share (diluted) / excluding extraordinary items.

EPSOP: Earnings per share from operations.

Beta: Computed from a regression of firms' monthly raw returns on the monthly value-weighted market returns over the rolling five year window ending in the current fiscal year of the offer date.

Firmsize: The natural log of market value of equity, measured at the end of fiscal year become available for the monthly regressions.

IPOunderpricing: the average underpricing across all IPOs during the same month as the SEO, where the monthly underpricing estimates for IPOs are obtained from Jay Ritter's website. To address the effects of underwriter reputation on SEO underpricing, we obtain underwriter ranking sample jay Ritter's website. Ritter refines Carter and Manaster's (1990) ranking method to construct a new ranking database for major underwriters and underwriters are ranked based on a 0-9 scale.

Ln(price): Natural log of of the closing price on the day prior to the offer date

Nasdaq: The dummy variable that equals one if the firms listed on the NAsdaq at the time of offer and zero otherwise.

Offersize : Shares offered divided by the total number of shares outstanding prior to the offer.

PreCar: Cumulative market adjusted returns over the period of five days prior to the offer date.

Returns Volatility: the standard deviation of stock returns over the period of 30 trading days ending 10 days prior to the offer.*Net Income:* Net income before extra ordinary items.

ROA : The income before extraordinary items divided by average total assets

Smooth: The ratio of standard deviation of net income (scaled by average total assets) divided by the standard deviation of cash flows from operation (scaled by average total assets). We scale the volatility of net income by cash flow volatility to measure the extent to which accruals are possibly used to smooth out the underlying volatility of the firm's operation. Our primary measure of net income is net income before extraordinary item scaled by average total assets. Cash flows equal net income less accruals. Accruals are the change in current assets minus the change in cash minus the change in current liabilities plus the change in shorter debt minus depreciation.

Tick: The dummy variable taking the value 1 if the decimal portion of the closing price on the day prior to the offer is less than $ 0.25, and zero otherwise.

Total_acrual: Total discretionary accruals over the five year period prior to the offer.

Underpricing: The closing price on the offer day minus the offer price, divided by the offer price.

Underpricing_discount: the closing price on the day prior to the offer minus the offer price, divided to the closing price on the day prior to the offer.