ESSAYS ON CORPORATE FINANCIAL REPORTING

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This dissertation examines changes in managers' financial reporting around two major corporate financing events, accelerated share repurchases (ASRs) and seasoned equity offerings (SEOs). The first essay provides evidence on managerial motives for initiating ASRs, a recent and important innovation in repurchase methods, by examining managers' financial reporting behavior around ASRs and post-ASR performance. ASR firms report positive discretionary accruals in the quarter of the repurchase announcement and that the upward earnings management increases with the percentage of equity repurchased, initiation of the repurchase earlier in the quarter, and CEO's bonus compensation as a fraction of total compensation. There is however a negative association between the ASR announcement returns and pre-repurchase positive discretionary accruals, suggesting that investors perceive the positive discretionary accruals as the result of managerial opportunism (i.e., boosting EPS) rather than managerial optimism (i.e., signaling undervaluation). Further, ASR announcements are not followed by an increase in operating performance. There is also no evidence of positive long-run abnormal stock performance during the post-ASR period. The results suggest that managers use ASRs along with positive discretionary accruals to manage reported EPS rather than to signal their favorable private information about firms' prospects.

The second essay examines the relation between firms' financial constraints and their financial reporting during periods when they attempt to raise equity capital. Specifically, I investigate whether financially constrained firms tend to manage their earnings more aggressively around SEOs as compared to financially unconstrained firms. By using different measures of financial constraints, I document that constrained issuers, which cannot credibly signal the absence of aggressive earnings management, report higher income-increasing accruals than unconstrained issuers. I also find that investors correctly conjecture this greater earnings inflation and adjust issuers' stock prices accordingly at the time of the offering. The evidence suggests that the aggressive earnings management by constrained issuers is not simply the result of managerial opportunism but rather a rational response to anticipated market behavior at offering announcements.

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1.0 CHAPTER 1: MANAGERIAL OPTIMISM VERSUS OPPORTUNISM AS A MOTIVATION FOR REPURCHASES: THE CASE OF ACCELERATED SHARE REPURCHASES

1.1 INTRODUCTION

Managers often cite undervaluation as the motivation for repurchases (Brav et al. 2005). That is, a repurchase announcement communicates to the market that the firm's shares are undervalued and thus, constitute a good investment. This also seems to be the case with accelerated share repurchases (ASRs)— a recent and important innovation in repurchase methods, which emerged as a significant part of firms' repurchase programs, amounting to $131 billion between 2004 and 2008 and representing 26% of total repurchase program announcements in 2007 (Bargeron, Kulchania, and Thomas, 2011).[1] While investment bankers, too, argue that the biggest attraction of ASRs is communicating a stronger signal as ASR firms actually repurchase their shares rather than just announce a potential buyback, financial press has pointed out a controversial motivation for ASRs, managing earnings per share (EPS).[2]

The goal of this article is to distinguish between managerial optimism (i.e., signaling undervaluation) and opportunism (i.e., boosting EPS) as a motive for ASRs by examining managers' financial reporting behavior around the repurchase, as well as the post-repurchase

[1] Bargeron et al. (2011) report "undervaluation" as the most commonly stated motivation (60 percent) among the ASR firms that explicitly state a motivation for the repurchase.
[2] See, for instance, the May 30, 2007, *Financial Times* article "Speeded-up buyback wheeze provokes fair share of criticism", the May 30, 2007, *Wall Street Journal* article "IBM Hones the Stock Buyback", and the January 31, 2006, *Wall Street Journal* article "Buybacks via loophole can have hidden cost".

performance of ASR firms. Previous research suggests that analyzing the financial reporting behavior around share repurchases may provide valuable insights into the managerial intent behind repurchases (see, for instance, Louis and White (2007) for tender offers and Gong, Louis, and Sun (2008) for open market repurchases).

Firms undertaking ASRs commit themselves to buy a specified amount of shares through a financial intermediary. Specifically, an ASR firm enters into a contract with an investment bank which delivers a block of borrowed shares to the firm immediately and receives an initial cash amount based on a previously agreed per share price. The contract between the two parties is then settled at a later point in time once the investment bank completes the repurchase of the firm's shares on the open market and the final cost of the repurchase is determined based on the volume-weighted average price of the open market repurchases conducted by the bank. An interesting feature of ASRs is that under current accounting rules, the transaction results in an immediate reduction of the outstanding shares used to calculate the weighted average number of shares for EPS. Further, current accounting for ASRs does not require firms to record in income any additional cost arising from post-repurchase price increase (Dickinson, Kimmel, and Warfield 2012). Thus, ASR firms realize a quick boost in EPS, while any losses associated with the ASR contract bypass the income statement and are reported in equity. This unique structure of ASRs gave rise to discussions as to whether firms use them primarily as a signaling or earnings management device.

The evidence in this paper supports the earnings management hypothesis. Specifically, I find that firms undertaking ASRs report significantly positive discretionary accruals (DA) in the quarter of the repurchase (median DA_0 = 0.44% of total assets) and insignificant DA in the quarter prior to the repurchase (median DA_{-1} = 0.04% of total assets). Further, the upward

earnings management in the quarter of the ASR announcement increases with the percentage of outstanding equity repurchased through the ASR transaction. This finding suggests that ASR firms' tendency to increase the numerator of EPS through discretionary accruals is positively associated with the magnitude of repurchase-driven reduction in the denominator of EPS. This result is robust to controlling for several factors that may affect the use of discretionary accruals such as analyst following, leverage, and litigation risk, as well as using the instrumental variable approach. Another piece of evidence consistent with the earnings management hypothesis is that firms initiating ASRs earlier rather than later in the quarter (which results in a greater reduction in the weighted average number of shares) report higher positive discretionary accruals in the repurchase quarter. I also document that that the magnitude of discretionary accruals reported in the ASR quarter is positively associated with CEO's pre-ASR bonus compensation (as a fraction of total compensation).

Previous research suggests that upward earnings management around such corporate events as repurchases and stock splits may also be an indication of managerial optimism (rather than opportunism). In fact, Louis and White (2007) find that firms engaging in fixed-price tender offers report positive but insignificant abnormal accruals (i.e., 0.15% of total assets) prior to the repurchase and that the announcement returns for fixed-price repurchases are positively related to pre-repurchase discretionary accruals. They conclude that managers use their reporting discretion optimistically to reinforce the undervaluation signal conveyed through fixed-price repurchases. My results are inconsistent with this signaling hypothesis. I find a negative relation between the ASR announcement returns and positive discretionary accruals reported prior to the repurchase, indicating that investors perceive income-increasing accruals reported by ASR firms as the result of opportunistic behavior rather than managerial optimism.

The results also reveal that while ASR firms consistently beat the analyst consensus estimate (four months prior to the earnings announcement) during the pre-repurchase quarters, they either miss or just meet the consensus forecast during the post-repurchase period. Further, although ASR firms usually perform better than their industry peers both in the pre- and post-repurchase period, they do not exhibit a significant improvement in their operating performance during the post-repurchase period. Similarly, there is no indication of positive abnormal stock performance of ASR firms during the 12- and 24-month period following the announcement. Overall, the decline in the post-ASR EPS performance, along with the lack of improvement in operating and stock return performance, casts significant doubt on the argument that managers initiate ASRs to signal their favorable private information.

The present study contributes to the literature on share repurchases, in particular the growing body of research on ASRs. Bargeron et al. (2011), for instance, find that the probability of a firm including an ASR in its repurchase program increases with the liquidity of the firm's shares and decreases with the volatility of the firm's share price. A recent paper by Dickinson et al. (2012) documents that the market discounts post-repurchase earnings of ASR firms due to uncertainty regarding the actual cost of the repurchase, which is not known until the investment bank completes the repurchase of the company's shares on the open market. An earlier study by Michel et al. (2010) reveals that ASR firms suffer from a poor stock return performance during the nine-month period following the repurchase. This study complements and extends prior studies by providing insights into the managerial motives for initiating ASRs. My results indicate that managers use ASRs along with positive discretionary accruals opportunistically to increase reported EPS in the quarter of the repurchase. Upward earnings management bundled with the repurchase may help managers meet or beat EPS targets and thus, enable them to strengthen their

positions within the company and maintain their reputation in the executive labor market (Graham, Harvey and Rajgopal, 2005), as well as secure their compensation (Cheng, Harford, and Zhang, 2010).

This paper is also related to prior research examining managers' financial reporting behavior to infer managerial motives behind repurchases. Gong et al. (2008a), for instance, find that firms deflate their earnings around OMRs via negative discretionary accruals to depress stock price and reduce the overall cost of the repurchase, suggesting that these companies, on average, are not concerned with either boosting EPS or signaling undervaluation. This result also holds true for firms undertaking Dutch-auction repurchases (Louis and White 2007). On the other hand, increasing EPS seems to be a relevant concern for firms initiating ASRs.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature on accelerated share repurchases, discusses the role of earnings management around repurchases and develops testable hypotheses. Section 3 describes the variable measurement process. Section 4 discusses the dataset. Section 5 describes the empirical methodology and presents the results. Section 6 reports the results of additional analysis. Section 7 concludes the paper with the discussion of the importance of the findings.

1.2 RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

Under an ASR contract, a firm repurchases a block of its shares immediately from an intermediary, typically an investment bank which borrows the shares from investors, and the investment bank receives an initial cash payment determined based on the current share price. At the same time, the firm enters into a forward contract to protect the investment bank against loss

on its short position. During the post-announcement period, the investment bank purchases the shares in the market to replace borrowed shares and the ASR contract is settled based on the volume-weighted average price paid by the investment bank to purchase the specified amount of shares. If the investment bank purchases the shares at a total cost that is less than the initial payment, the firm can choose to receive additional shares or cash payment from the investment bank. On the other hand, if the total cost of open market repurchases by the investment bank exceeds the initial amount paid by the firm, the investment bank is compensated either by cash or new shares issued by the firm. Contractual caps are therefore used by some ASR firms to limit the amount of the cost stemming from post-repurchase price increase beyond a certain level. However, the use of such contractual caps of course increases the cost of the repurchase.[3] Another potential cost associated with ASRs is that repurchasing firm compensates the investment bank for the dividends declared during the period until the repurchase is completed.

As outlined above, an ASR is a fast and costly way to repurchase shares. Thus, it is a credible commitment on the part of managers, increasing its attractiveness for firms trying to send credible signals of undervaluation to market participants. Another important yet controversial feature of ASRs is that it leads to an immediate decrease in the number of shares used to calculate EPS, resulting in a quick, artificial improvement in the reported earnings performance when there is actually none. Since the execution of an ASR reduces the number of shares outstanding starting with the day following the transaction, undertaking the repurchase

[3] For instance, Family Dollar notes that the company paid $1.3 million cap premium plus $0.2 million as commissions and fees for its $199.7 million ASR transaction announced on October 4th, 2005. The cap was equal to 115% of the investment bank's average repurchase price (i.e., the bank is not compensated for the price increase that is above 15% of the initial price). It is worth stressing that information on investment banking fees for ASR transactions is not commonly available and that Family Dollar is one of the few companies in my sample which provide such information.

earlier in the quarter leads to a higher reduction in the weighted average number of shares and thus, a greater boost in EPS.

As opposed to its impact on EPS, the potential costs associated with the settlement of the ASR contract are not realized for a certain period of time, since it usually takes several months for the investment bank to repurchase the specified amount of shares.[4] In addition, any losses incurred on the forward contract are recorded in equity and thus, have no impact on reported earnings.[5] This is because under current rules, firms initiating ASRs have the option to settle the forward contract using either shares or cash. If the contract were only to be settled in cash (like currency forward contracts), ASR firms would have to mark the contact to market and recognize any potential losses on the income statement. On the other hand, the contracts to be settled in shares are not marked to market. Due to this unique structure, an ASR provides immediate financial reporting benefits, while its potential costs are delayed and bypass income when they are eventually recorded on the company's books.

As noted at the outset of the paper, managers and investment bankers emphasize the signaling role of ASRs, while potential earnings management role of these transactions has also gathered considerable attention, particularly in financial press. Below I outline my hypotheses related both motivations and conduct several empirical tests to distinguish between the two.

[4] Bargeron et al. (2011) note that the average number of days to settlement in their sample is 140 days.
[5] The FASB's Emerging Issues Task Force (EITF) Issue 99-7 ("Accounting for an Accelerated Share Repurchase Program) outlines the details of accounting procedures related to an ASR transaction. The task force concluded that a firm undertaking an ASR should account for the repurchase as two separate transactions: (1) as shares of common stock acquired in a treasury stock transaction recorded on the acquisition date and (2) as a forward contract indexed to its own common stock. It is also noted in the issue that the settlement of the forward contract would be recorded in equity.

1.2.1 Earnings Management Hypothesis

A number of studies have examined the earnings management role of share repurchases (e.g., Bens et al., 2003; Hribar et al., 2006). For instance, Brav et al. (2005) report that 75% of the executives participated in their survey consider the increase in EPS as an important factor influencing their share repurchase decisions. Relatedly, Bens et al. (2003) find that executives try to undo the dilutive effect of outstanding employee stock options on EPS through increasing the amount of their firms' share repurchases. They also find that executives enhance their firms' share repurchase programs when the current level of earnings is not high enough to sustain EPS growth. Similarly, Kahle (2002) finds that firms with higher number of exercisable employee stock options are more likely to repurchase shares rather than increase dividends and that the amount of shares actually repurchased also increases with the number of exercisable options. Furthermore, Hribar et al. (2006) document that accretive repurchases are significantly more common among firms which would have missed earnings forecasts if they had not repurchased their shares. Finally, Myers, Myers, and Skinner (2007) find that firms reporting long strings (i.e., at least 20 quarters) of consecutive increases in EPS seem to strategically time their share repurchases not to experience declines in EPS.

The notion that share repurchases are used as earnings management devices is in line with previous studies documenting that executives manage earnings to sustain earnings growth, make at least last year's or quarter's earnings, meet analysts' consensus forecast, and report positive profits (e.g., Burgstahler and Dichev, 1997; DeGeorge et al., 1999; Das and Zhang, 2003). Graham, Harvey and Rajgopal (2005) point out that executives are concerned with meeting EPS targets due to several motivations such as stock price driven motivation,

stakeholder motivations, compensation driven motivation and career concerns.[6] For instance, they note that 86% of executives participated in their survey agree that meeting EPS benchmarks builds credibility with the capital markets. Furthermore, most participants think that not being able to meet EPS benchmarks is considered "managerial failure" by the executive labor market. The authors also highlight that severe investor response to small EPS misses (Skinner and Sloan, 2002) can result from the fact that investors tend to interpret a firm's inability to find one or two cents to meet EPS target as a sign of hidden financial or operational problems at the firm. Consequently, they find that executives do not refrain from making sacrifices to meet EPS targets, which enables them to avoid negative investor reaction, as well as securing their compensation (Cheng, Harford, and Zhang, 2010).[7]

I refer to the idea that firms repurchase their shares due to EPS related concerns as the *earnings management hypothesis* (EMH). This hypothesis posits that repurchasing firms tend to bundle income-increasing accruals with repurchases to report higher EPS. As Bens et al. (2003, p. 55) succinctly put it: "If important earnings benchmarks are typically denominated in EPS terms (as seems likely), it is natural to expect corporate executives to manage the denominator as well as the numerator of this ratio." Thus, the EMH predicts that ASR firms engage in upward earnings management around the repurchase and the extent of upward earnings management is positively associated with the amount of equity repurchased through the ASR transaction. However, if the announcement of an ASR alerts investors to managers' motivation to boost

[6] For instance, related to the compensation motivation, Matsunaga and Park (2001) document that missing quarterly earnings benchmarks (i.e., earnings for the same quarter of last year or consensus analyst forecast) has a significant incremental adverse effect on CEOs' annual cash bonuses, providing them with economic incentives to manage earnings upward.

[7] Cheng et al. (2010) find that share repurchases increase CEOs' likelihood of receiving a bonus, as well as the magnitude of the bonus payment, when CEOs' bonus plans are tied to EPS performance. Furthermore, their examination of the proxy statements filed by repurchasing firms suggests that the compensation committees generally do not adjust for the impact of repurchase while deciding whether EPS goals are achieved (though only a small fraction of proxies, less than 0.5% of the total sample size, mentions the impact of repurchase on EPS).

quarterly EPS, there should be a negative association between positive discretionary accruals and ASR announcement returns. Further, the EMH predicts that firms undertaking ASRs earlier rather than later in the quarter (which results in a greater reduction in the weighted average number of shares) report higher discretionary accruals. Finally, the lack of positive abnormal operating and stock return performance accompanied with a decline in EPS performance during the post-ASR period would be consistent with the EMH. Table 1.1 summarizes these predictions.

1.2.2 Signaling Undervaluation Hypothesis

Managers' use of positive discretionary accruals around the repurchase is not conclusive evidence that they are concerned about EPS because it may also be an indication of signaling motivation. For instance, Louis and White (2007) find that firms initiating fixed-price repurchases report positive (but insignificant) discretionary accruals prior to the repurchase. The authors contend that managers use income-increasing accruals to reinforce the undervaluation signal conveyed through the repurchase. That is, since positive earnings management prior to a repurchase is a costly signal (due to increased cost of repurchase), managers will inflate earnings only when they are highly optimistic about their firms' prospects and try to signal their optimism to the market participants. This argument is in line with the previous studies suggesting that managers use discretionary accruals to signal private information (e.g., Guay, Kothari, and Watts, 1996; Louis and Robinson, 2005).[8] Consistent with the signaling motivation, Louis and White (2007) also document a positive relation between the pre-repurchase discretionary accruals and announcement returns for the fixed-price repurchase tender offers. Furthermore,

[8] For instance, Louis and Robinson (2005) find that managers report income-increasing accruals in the quarter prior to stock split announcements to communicate their favorable beliefs to market. The authors also point out that the market correctly prices positive abnormal accruals at the announcement of the stock split as there is a positive relation between abnormal accruals and announcement returns.

they document that repurchasing firms with the highest accruals experience the largest long-run positive abnormal returns following the repurchase.

I refer to the idea that managers initiate repurchases to communicate their favorable private information to the market participants as the *signaling undervaluation hypothesis* (SUH). Similar to the EMH, the SUH also posits that positive discretionary accruals and repurchases act as complements. Hence, it predicts that ASR firms report positive discretionary accruals around the repurchase and the magnitude of discretionary accruals increases with the size of the repurchase. That is, ASR firms' desire to signal undervaluation through repurchase of a large block of shares should be positively associated with their desire to reinforce this signal with positive discretionary accruals. However, as opposed to the EMH, the SUH predicts that ASR firms reporting higher positive discretionary accruals will experience higher announcement returns. In other words, if investors perceive positive discretionary accruals as the result of managerial optimism rather than managerial opportunism, there should be a positive relation between ASR announcement returns and positive discretionary accruals. Also, assuming that market-to-book ratio proxies for overvaluation of an equity as some argue (e.g., Baker, Foley, and Wurgler, 2009), observing a negative relation between market-to-book ratio and discretionary accruals would provide support for the SUH. Further, the SUH predicts that firms undertaking ASRs experience positive abnormal stock return and operating performance following the repurchase.

1.2.3 Alternative hypotheses

Inconsistent with the earnings improvement and signaling motivations, a recent study by Gong et al. (2008a) finds that firms repurchasing their shares on the open market manage their earnings

downward around the announcement quarter. The authors also document that the discretionary accruals reported by OMR firms are negatively associated with both the percentage of equity repurchased and CEO equity ownership. Thus, they maintain that the motivation of deflating earnings around OMRs is to depress the firm's stock price and acquire the shares at a lower cost. In a related study, Louis and White (2007) find that firms undertaking Dutch-auction repurchases also report significantly negative abnormal accruals in the quarter prior to the announcement quarter. Further, the authors find no relation between pre-repurchase discretionary accruals and announcement returns, indicating that investors fail to undo the stock price impact of the downward earnings management. They conclude that firms undertaking Dutch-auction repurchases also try to deflate their stock prices through managing earnings downward prior to the announcement and thereby, reduce the cost of repurchase. This "cost minimization hypothesis" posits that managers conducting repurchases for reasons other than boosting EPS or signaling undervalution (e.g., adjusting towards target leverage, distributing excess cash) have incentives to bundle income-decreasing discretionary accruals with repurchases. If this argument holds true for ASRs, one would expect that managers report negative discretionary accruals around the ASR and that the reported discretionary accruals decrease with the percentage of shares repurchased.

Previous research also proposes rational explanations for changes in managers' financial reporting behavior around corporate events. For instance, Shivakumar's (2000) "managerial response hypothesis" posits that since managers cannot credibly signal the absence of positive earnings management around SEOs, investors discount issuers' stock prices at the announcement and thus, managers rationally manage earnings upward. However, the managerial response hypothesis is not suitable for the cases where there is uncertainty among market participants

regarding the manager's reporting objective (Fischer and Verrecchia 2000). As discussed above, previous studies document conflicting reporting objectives around share repurchases and thus, in the ASR context there would be ex-ante uncertainty about the manager's reporting behavior. For instance, if investors believe that ASR firms would try to boost EPS via positive discretionary accruals and managers cannot credibly signal the absence of upward earnings management, managers' best response is to report positive discretionary accruals. Interestingly, the same argument applies for downward earnings management as well since managers may tend to use their reporting discretion to reduce the cost of the repurchase and an ASR firm with such motivation is expected to report negative, rather than positive, discretionary accruals. As a result, the managerial response hypothesis does not make a clear prediction about the sign of the discretionary accruals around ASRs. Thus, I will not discuss this hypothesis further in the paper.

1.3 VARIABLE MEASUREMENT

I measure discretionary accruals by using a modified version of Jones (1991) model as suggested by Louis and White (2007), Gong et al. (2008a, 2008b), and Louis, Robinson, and Sbaraglia (2008). Specifically, for each industry (two-digit SIC code) and calendar quarter, I estimate Equation (1) using all the firms that have necessary accounting data on COMPUSTAT and total assets greater than $1M.

$$TA_i = \sum_{j=1}^{4} \beta_{j-1} FQ_{j,i} + \beta_4 \Delta SALE_i + \beta_5 PPE_i + \beta_6 LTA_i + \beta_7 ASSET_i + \varepsilon_i \qquad (1)$$

where, *TA* is total accruals calculated according to the cash flow approach (i.e., income before extraordinary items minus cash flow from operations (*IBCY* – (*OANCFY* – *XIDOCY*))[9]; FQ_j is a dummy variable which takes value of one for fiscal quarter j and zero otherwise; Δ*SALE* is the quarterly change in sales (*SALEQ*); *PPE* is property, plant, and equipment (*PPENTQ*) at the end of the quarter; *LTA* is the lag of total accruals; *ASSET* is total assets (*ATQ*) at the beginning of the quarter; ε is the regression residual.

Consistent with Gong et al. (2008a, 2008b), all the variables, including the dummy variables for fiscal quarters and *ASSET*, are scaled by total assets at the beginning of the quarter. Due to scaling, *ASSET* variable is equal to one for all observations, allowing estimation of the model with the standard intercept. To mitigate the effects of outliers, for each calendar-quarter, I delete the top and bottom one percentiles of the deflated *TA*, Δ*SALE*, *PPE* and *LTA*. I also require there be at least 20 observations in each industry and calendar quarter to accurately estimate the regression coefficients.

Equation (2) estimates expected total accruals using the coefficient estimates obtained from Equation (1) with an adjustment for the change in accounts receivables (Dechow, Sloan and Sweeney, 1995):

$$ETA_i = \sum_{j=1}^{4} \hat{\beta}_{j-1} FQ_{j,i} + \hat{\beta}_4(\Delta SALE_i - \Delta AR_i) + \hat{\beta}_5 PPE_i + \hat{\beta}_6 LTA_i + \hat{\beta}_7 ASSET_i \qquad (2)$$

where, $\hat{\beta}_0$ to $\hat{\beta}_7$ are the estimated coefficients from Equation (1); *ETA* is the expected total accruals; Δ*AR* is the quarterly change in accounts receivable (*RECTQ*). Estimated abnormal accruals is the difference between the total accruals and expected total accruals.

Finally, Kothari, Leone, and Wasley (2005) show that performance-adjusted accruals are well-specified and yield powerful tests. Therefore, I adjust the estimated abnormal accruals for

[9] Compustat (quarterly) variable names are in parentheses.

performance. Specifically, following previous studies (e.g., Louis, 2004; Louis and Robinson, 2005; Gong et al., 2008a), I build four portfolios, each of which consists of at least five firms, by sorting the data into quartiles based on return-on-assets (i.e., operating income (*OIBDPQ*) divided by cash-adjusted total assets) from the four quarters prior to the ASR. The performance-adjusted discretionary accruals for a sample firm are the estimated abnormal accruals for the firm minus the median estimated abnormal accruals for its respective industry-performance-matched portfolio. As suggested by Gong et al. (2008a, 2008b), the portfolio benchmarking approach allows researchers to control not only for performance but also for random effects stemming from other events which may impact accruals or other managerial incentives to engage in earnings management.

1.4 SAMPLE FORMATION AND DESCRIPTIVE STATISTICS

Since Bargeron et al. (2011) note that ASR transactions gained momentum after 2003, I limit my sample period to 2004 through 2007. ASR firms included in the sample are identified through inspection of company filings (e.g., 10-K, 10-Q, 8-K, etc.) which are available in the U.S. Securities and Exchange Commission (SEC) Edgar online database. First, I used Edgar Full-Text search to identify all the filings that mention accelerated share repurchases. Then, I manually checked every filing to gather relevant information (e.g., transaction date, number of shares repurchased) about each ASR transaction. However, since Edgar-Full Text searchable database includes a rolling window of the previous four years of SEC filings, I was able to search only filings dated after July 2005. Therefore, to identify ASRs undertaken between January 2004 and

July 2005, I searched Factiva for news stories that mention an ASR transaction.[10] I also used news stories identified through Factiva for the rest of the sample period to supplement my inspection of SEC filings. Finally, I searched for ASR announcements through other internet sources and databases such as ABI/INFORM and Google.com. I recorded the ASR transaction date reported in the SEC filings as the announcement date. However, if I was not able to locate the actual transaction date from the company reports, I used the earliest day in which the ASR transaction appeared in the news. As a result of my search, I was able to identify 217 ASR transactions conducted between 2004 and 2007.[11] The final sample consists of 178 observations with available discretionary accruals data in the ASR quarter.

Table 1.2 reports the sample characteristics. Panel A presents the year and fiscal quarter distribution of ASRs. The yearly distribution shows that ASR transactions have become increasingly popular over the sample period and reached a high of 81 in 2007, representing 45.51% of the sample. The fiscal quarter distribution shows that 71.91% of ASRs are undertaken during the interim quarters. Furthermore, the median number of days between the initiation of the ASR and the end of the fiscal quarter is 42 days. Panel B summarizes several characteristics of ASR firms including total assets (*ATQ*), market value of equity (*PRCCQ* x *CSHOQ*), market-to-book ratio ((*PRCCQ* x *CSHOQ*)/*CEQQ*), leverage ratio ((*DLCQ*+*DLTTQ*)/*ATQ*) and cash-to-asset ratio (*CHEQ*/*ATQ*) as of the end of the quarter preceding the announcement quarter. ASR firms tend to be fairly large with a median (mean) market value of $6.23 ($13.46) billion.

[10] Keywords used for Edgar search are as follows: accelerated share repurchase, accelerated stock repurchase, accelerated equity repurchase, accelerated share buyback, accelerated stock buyback, accelerated equity buyback, overnight share repurchase, overnight stock repurchase, overnight equity repurchase, overnight share buyback, overnight stock buyback, overnight equity buyback, accelerated buyback, accelerated repurchase, overnight buyback, overnight repurchase. Following Bargeron et al. (2011), I used the following search terms for Factiva: "(accelerated or overnight) and (share or equity or stock) and (repur* or buyback or buy-back or buy back)".

[11] I do not extend my sample period beyond 2007 as firms cut repurchases aggressively during the financial crisis (Floyd, Li, and Skinner 2011). I identified 26 ASRs undertaken in 2008, comparable to 25 ASRs identified by Bargeron et al. (2011) during the same period. Including these observations (with the available accruals data) in the analysis does not materially alter my main conclusions.

Panel C reports descriptive statistics regarding the transaction characteristics. The median (mean) transaction value is $250.00 ($608.48) million. The largest ASR transaction in the sample was undertaken by IBM, which repurchased $12.5 billion of its common stock on May 29, 2007. The median (mean) firm repurchases 3.71% (5.38%) of its outstanding equity. The percentage of ASR contracts with collar provisions, which establish the minimum and maximum post-repurchase price adjustments, is 26%. The percentage of contracts including only cap and floor provisions is 12% and 3%, respectively.

1.5 RESULTS

1.5.1 Discretionary Accruals around the ASR announcement

I examine the time-series of discretionary accruals around the ASR quarter as an initial test of the proposed hypotheses. Table 1.3 reports the median performance-adjusted discretionary accruals for quarters [-6, +6]. The median firm that undertakes an ASR reports statistically significant discretionary accruals of about 0.44% of total assets ($p < 0.05$) in the quarter of the ASR announcement (i.e., quarter 0), while there is no indication of significant earnings management during the four quarters prior to the announcement quarter. For instance, the median discretionary accruals in quarter -1 is 0.04% of total assets ($p = 0.359$). These results are consistent with the earnings management and signaling motivations.

Examination of immediate post-ASR quarters reveals that ASR firms also report positive discretionary accruals in quarter +2 (0.30%, $p < 0.05$) followed by negative discretionary accruals in quarter +3 (-0.21%, $p < 0.10$). Since discretionary accruals tend to reverse over time, the negative discretionary accruals reported in quarter +3 are more likely to be the outcome of

the reversal of the previously reported positive discretionary accruals than an intentional downward earnings management activity. Further, given that ASR contracts are generally settled in a period less than 6 months after the repurchase announcement (Bargeron et al. 2011), the use of income-decreasing accruals in the third quarter after the repurchase quarter is unlikely to have an impact on the cost of the repurchase.[12] Overall, the positive discretionary accruals observed around the ASR announcement lend support for the EMH and SUH.

1.5.2 Regression of performance-adjusted accruals in the quarter of the ASR announcement

Although the previous analysis documents that ASR firms alter discretionary accruals in the quarter of the announcement, it does not provide any insights into the cross-sectional determinants of their financial reporting behavior. Thus, in this section, I conduct a more rigorous test of the proposed hypotheses in a multivariate setting. In particular, if ASR firms are concerned with boosting their EPS, we should observe a positive relation between the percentage of equity repurchased and the discretionary accruals reported in the announcement quarter. A positive relation between the two variables would also be consistent with the SUH since it may also represent managers' desire to reinforce the undervaluation signal conveyed through the repurchase program.

Further, according to the EMH, one would expect that firms initiating ASRs earlier rather than later in the quarter report higher discretionary accruals since undertaking an ASR earlier in the quarter results in a greater reduction in the weighted average number of shares. Another variable of interest is market-to-book ratio, which proxy for equity misvaluation as some argue

[12] Previous studies (Gong et al., 2008a; Louis and White, 2007) document that the downward earnings management intended to depress the stock price takes place in the quarter of and the quarter prior to the repurchase.

(e.g., Baker et al. 2009). If managers use ASRs along with positive discretionary accruals to signal undervaluation, one would expect to see a negative relation between market-to-book ratio and discretionary accruals.

Finally, examining the link between executive compensation and discretionary accruals reported by ASR firms can also provide additional insight into the managerial intent. Particularly, if CEOs of the sample firms are concerned with boosting EPS quickly through ASRs to secure their bonus payments, one would expect to see a positive relation between the CEO's bonus compensation as a fraction of total compensation and discretionary accruals.

To test the hypothesized relations, I estimate the following regression model (Equation 3), which includes the main variables of interest (i.e., percentage of equity repurchased, within quarter timing of the ASR, market-to-book ratio, and CEO bonus compensation), as well as several control variables suggested in the previous literature (e.g., Ayers, Ramalingegowda, and Yeung, 2011; Gong et al., 2008a). Since, as pointed out by Gong et al. (2008a), the relation between earnings management and the percentage of outstanding equity repurchased may be endogenous, I report the results obtained from both the OLS and two-stage least squares (2SLS) regressions (the details regarding the instrumental variables are provided below).

$$\begin{aligned} PADJACC = {} & \alpha_0 + \alpha_1 EQREP + \alpha_2 EARLY + \alpha_3 MB + \alpha_4 BONUS + \alpha_5 COLLARS\_CAPS \\ & + \alpha_6 EXERCISABLE + \alpha_7 UNEXERCISABLE + \alpha_8 OWNERSHIP \\ & + \alpha_9 MVALUE + \alpha_{10} ANALYST + \alpha_{11} LEV + \alpha_{12} LITIGATION \\ & + Year\ fixed\ effects + v \end{aligned} \quad (3)$$

where, *PADJACC* is the performance-adjusted discretionary accruals in the quarter of the ASR announcement; *EQREP* is the percentage of outstanding equity repurchased through the ASR transaction; *EARLY* is a dummy variable equal to 1 if an ASR is initiated earlier rather than later

in the quarter (i.e., the number of days between the ASR date and the end of the fiscal quarter is greater than the sample median of 42 days) and 0 otherwise; *MB* is the natural log of the market-to-book ratio in the quarter preceding the announcement quarter*; BONUS* is the CEO's performance-related bonus payments divided by his/her total compensation in the fiscal year prior to the announcement[13]; *COLLARS_CAPS* is a dummy variable equal to 1 if an ASR contract includes a provision specifying the maximum post-repurchase price adjustment and 0 otherwise. *EXERCISABLE* and *UNEXERCISABLE* are, respectively, the ratio of exercisable and unexercisable options held by the CEO to the total number of shares outstanding prior to the announcement; *OWNERSHIP* is the number of shares held by the CEO divided by the total number of shares outstanding prior to the announcement; *MVALUE* is the natural log of the market value in the quarter preceding the announcement quarter; *ANALYST* is the number of analysts following the firm during the ASR quarter; *LEV* is the industry-median adjusted leverage in the quarter preceding the announcement quarter; *LITIGATION* is a dummy variable equal to 1 if a firm's SIC code is 2833-2836, 8731-8734, 7371-7379, 3570-3577, 3600-3674 and 0 otherwise (Barton and Simko, 2002; Cohen and Zarowin, 2010). The high litigation risk industries include pharmaceuticals/biotechnology and computers/electronics.

The model includes a variable to control for whether the ASR contract has a collar or cap provision. On the one hand, the presence of such contractual provisions may be associated with greater monitoring by the investment bank and thereby, less use of discretionary accruals. On the

[13] To test this prediction, I hand-collect the data on CEO compensation from the firms' last proxy statements filed prior to the announcement. One complication with the compensation data over the sample period is that the SEC changed the reporting requirements for executive compensation after December 2006. Under the new requirements, firms are currently reporting discretionary bonus (i.e., bonuses that are not related to performance measures and are under the discretion of the board) under the "Bonus" column, whereas performance-related bonus payments are reported under the title of "Non-equity Incentive Pay". However, as also noted by Kim and Yang (2010), firms sometimes report the numbers in the wrong columns. Thus, I define the bonus compensation measure (*BONUS*) as the bonus payment plus non-equity incentive pay (available only in 2007) divided by total compensation. However, I read the footnotes accompanying the compensation tables to ensure that non-performance bonus payments (e.g., signing bonus for the new CEO, year-end holiday gift payments) are not included in the bonus measure.

other hand, the use of collared or capped contracts may be associated with greater use of discretionary accruals because these provisions limit the company's risk stemming from post-repurchase price increase. Further, given that the use of discretionary accruals to manage earnings is more pronounced at firms where the CEO's potential total compensation is more closely tied to the value of option and stock holdings (Cheng and Warfield 2005; Bergstresser and Philippon 2006), the model controls for CEO's equity incentives. The model also controls for the number of analyst following the firms because previous research finds that firms followed by more analysts manage their earnings less (e.g., Yu 2008). Additionally, I control for financial leverage because prior studies document that firms use income-increasing accruals to avoid violating debt covenants (e.g., DeFond and Jiambalvo 1994). Finally, since firms operating in high litigation risk industries use discretionary accruals less aggressively (e.g., Cohen and Zarowin 2010), the model includes an industry-based litigation dummy variable.

The results are presented in Table 1.4. The OLS regression results indicate that there is a statistically significant positive association between the discretionary accruals and the percentage of equity repurchased (coef. = 0.125, $p < 0.05$; column (4)). The documented relation is economically significant as well. One standard deviation (i.e., 4.32 percentage point) increase in the percentage of equity repurchased is associated with 0.54 percentage point increase in the reported discretionary accruals. However, if the relation between the two variables is endogenous, the OLS estimate is biased. To address this issue, I re-estimate Equation (3) using the 2SLS. I use two instruments for the percentage of equity repurchased: (1) "cash-to-asset ratio of the ASR firm" and (2) "the imputed interest rate on borrowing the shares of the ASR firm" (in the month prior to the announcement; calculated as in Diether and Werner (2008))[14]. First, the

[14] Following Bargeron et al. (2011), imputed interest rates are calculated each month separately for NYSE/Amex and Nasdaq firms using the stock exchange specific estimated regression coefficients reported in Diether and

rationale for the "cash-to-asset ratio" is that larger cash reserves enable ASR firms to acquire higher percentage of their equity without using external capital. Unreported correlation and regression analyses show that, while significantly positively related to the percentage of equity repurchased, cash-to-asset ratio is not significantly related to the performance-adjusted discretionary accruals. Second, the rationale for the "the imputed interest rate on borrowing the firm's shares" is that the cost of undertaking an ASR increases with the borrowing rate since ASRs require an intermediary to borrow a significant number of repurchasing firm's shares. Thus, higher imputed interest rate on borrowing the firm's shares is expected to reduce the percentage of equity repurchased. As expected, unreported correlation and regression results show that there is a negative and significant relation between the two variables. As further diagnostic checks for 2SLS, I find that the over-identification restriction of both IVs holds (p-value of the over-identification test is 0.691) and the F-statistic for the joint significance of the two IVs in the first stage is 9.92. These results suggest that the 2SLS estimation does not significantly suffer from the choice of weak IVs.

The 2SLS regression results reveal a significant relation between the percentage of equity repurchased and performance-adjusted abnormal accruals. The estimated coefficient on the percentage of equity is 0.460 and significant at 0.01 level. That is, it suggests that ASR firms' tendency to increase the numerator of EPS via discretionary accruals is positively associated with the magnitude of repurchase-driven reduction in the denominator of EPS. This finding can also be interpreted as follows. Firms that aim at sending stronger signals of undervaluation

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Werner (2008). For instance, for NYSE/Amex firms, I calculate the imputed rates as 1.913 - 0.008xlog(Market Value) - 0.021xlog(BM) - 0.308x$Return_{month\ t-1}$ - 0.174x$Return_{month\ [t-12,\ t-2]}$ - 0.466xInstutional_Ownership - 0.051xlog(Share Price) + 0.218xlog(Turnover) + 3.330x$StdDev_Daily_Returns_{month\ [t-12,\ t-1]}$ - 0.097xlog(1+ Number of Analysts) + 29.731xR_f.

through repurchasing higher percentage of their outstanding equity report higher discretionary accruals to reinforce this signal.

However, consistent with the EMH, the estimated coefficient on "Early" dummy is also positive (0.010) and significant at 0.05 level. Specifically, firms undertaking ASRs earlier in the quarter report discretionary accruals that are, on average, 1 percentage point higher than those undertaking ASRs later in the quarter. On the other hand, the estimated coefficient on market-to-book ratio is close to zero and insignificant, casting doubt on the validity of the SUH, which predicts a negative relation between market-to-book ratio and magnitude of discretionary accruals. Finally, the OLS regression results show that there is a significantly positive relation between the CEO's performance-related bonus compensation (as a fraction of total compensation) and discretionary accruals reported in the quarter of the announcement. The estimated coefficient on "Bonus" is 0.035 ($p < .01$), implying that one standard deviation (i.e., 0.194 or 19.4%) increase in the CEO's bonus compensation as a fraction of total compensation is associated with 0.68 percentage point increase in the discretionary accruals. This finding suggests that ASR firms at which the fraction of CEO's wealth tied to bonus compensation is higher tend to engage in more aggressive earnings management, providing additional support for the EMH.

Regarding the control variables, the OLS regression results reveal that discretionary accruals reported in the ASR quarter increase with the industry-adjusted leverage and presence of a collar or cap provision in the ASR contract and decrease with the number of analysts following the firm. Although the other variables enter the regression equation with expected signs, they do not have statistically significant coefficients.

1.5.3 Stock performance before and around the ASR announcement

In this section, I estimate the ASR firms' stock performance before and around the repurchase announcement. I use the market model to calculate the abnormal stock return performance. The market model parameters are estimated over trading days -300 to -49 prior to the ASR announcement date (day 0) by using the CRSP value-weighted index as the market portfolio. I measure the pre-repurchase stock performance from day -150 to day -45 (approximately five months) and from day -44 to day -4 (approximately two months) relative to the repurchase announcement day. I measure the market reaction to ASR announcements over the three days centered on the announcement date.

The results are reported in Table 1.5. Over the window [-150, -45], the median firm undertaking an ASR experiences insignificant abnormal returns of -0.48% (p = 0.270). Similarly, there is no indication of significant abnormal stock performance over the window [-44, -4]. The median abnormal return during that period is -0.26% (p = 0.458). These results are inconsistent with the conjecture that ASR firms time their repurchases to coincide with temporary declines in their stock price (or when their equity is undervalued) and that managers of firms engaging in ASRs take actions to reduce their firms' stock price prior to the repurchase.

I find that ASR announcements are associated with positive abnormal returns. The median (mean) three-day announcement return is 0.94% (1.37%), which is significant at 0.01 level.[15] These figures are comparable to 0.95% (1.43%) reported in Bargeron et al. (2011). It is worth noting that Bargeron et al. (2011) find no evidence of stronger market reaction to ASR announcements as compared to OMR announcements. In their sample, the median (mean) three-day announcement return for OMR programs not associated with any ASR is 1.21% (1.46%),

[15] As compared to ASRs, the average announcement returns for the fixed-price tender offers (i.e., 14.03%) and Dutch-auction tender offers (i.e., 9.14%) are considerably higher (Louis, Sun, and White, 2010).

casting significant doubt on the relative signaling power of ASRs. It is also important to note that, in the case of ASRs (but not OMRs), the announcement and completion of the repurchase usually overlap. Thus, the reduction in the supply of shares induces upward price pressure from an increase in relative demand, elevating the ASR announcement returns.

1.5.4 Regression of ASR announcement returns

In this section, I analyze the association between pre-ASR discretionary accruals and the market reaction to the ASR announcement. I calculate performance-adjusted discretionary accruals (DA) for the quarterly earnings announcement that immediately precedes the repurchase announcement. Further, to directly examine the relation between income-increasing/decreasing discretionary accruals and announcement returns, I create two variables labeled positive discretionary accruals (PDA) and negative discretionary accruals (NDA), which are created as follows:

$$\text{PDA} = \begin{cases} \text{DA if DA} > 0 \\ 0, \text{otherwise} \end{cases} \qquad \text{NDA} = \begin{cases} \text{DA if DA} < 0 \\ 0, \text{otherwise} \end{cases}$$

Under the signaling hypothesis, I expect the pre-repurchase positive discretionary accruals to be positively associated with the ASR announcement returns. In contrast, under the earnings management hypothesis, I expect a negative relation between positively discretionary accruals and ASR announcement returns, indicating that investors construe pre-ASR earnings inflation as opportunistic rather than optimistic. To test these predictions, I estimate the following model with OLS:

$$\begin{aligned} CAR3 = {} & \alpha_0 + \alpha_1 PDA + \alpha_2 NDA + \alpha_3 POSDUMMY + \alpha_4 STDEV + \alpha_5 EQREP \\ & + \alpha_6 PRIORRET + \alpha_7 MB + \alpha_8 MVALUE + \alpha_9 ILLIQUIDITY \\ & + \alpha_{10} CASH + Year\ fixed\ effects + \zeta \end{aligned} \qquad (4)$$

where, *CAR3* is the three-day cumulative abnormal returns around the ASR announcement date; *PDA* (*NDA*) is the positive (negative) discretionary accruals reported for the earnings announcement that immediately precedes the ASR announcement; *POSDUMMY* is a dummy variable equal to 1 if a firm reports positive discretionary accruals and 0 otherwise; *STDEV* is the pre-ASR standard deviation of returns calculated over the period of 300 trading days prior to the repurchase announcement and ending 49 trading days prior to the repurchase announcement; *EQREP* is the percentage of outstanding equity repurchased through the ASR transaction; *PRIORRET* is the cumulative abnormal returns over trading days -44 and -4 prior to the repurchase announcement; *MB* is the natural log of the market-to-book ratio in the quarter preceding the announcement quarter*; MVALUE* is the natural log of the market value in the quarter preceding the announcement quarter; *ILLIQUIDITY* is the log of Amihud (2002) measure of illiquidity, which is calculated as the absolute price change per dollar of trading volume over the period starting 300 trading days prior to the repurchase announcement and ending 49 trading days prior to the repurchase announcement; *CASH* is the cash-to-asset ratio in the quarter preceding the announcement quarter. The independent variables are winsorized at the 1% and 99% levels and standard errors are clustered by firm.

Table 1.6 reports the regression results. I find significantly negative association between the ASR announcement returns and the positive discretionary accruals reported prior to the repurchase (coef. = -0.247, $p < 0.05$; column (3)). The estimated coefficient on PDA indicates that one standard deviation (i.e., 1.61 percentage points) increase in pre-repurchase positive discretionary accruals is associated with 0.40 percentage points decline in the three-day cumulative abnormal returns around the ASR announcement date. The negative relation between the positive discretionary accruals and ASR announcement returns suggests that investors

perceive positive discretionary accruals as the result of opportunistic behavior (i.e., boosting EPS) rather than managerial optimism (i.e., signaling undervaluation). This finding provides support for the EMH, whereas it is inconsistent with the SUH.

Furthermore, there is a marginally significant positive relation between the ASR announcement returns and the negative discretionary accruals reported prior to the repurchase (coef. = -0.406, $p < 0.10$; column (3)). That is, the market reaction to the ASR announcements is less positive as the repurchasing firms report higher income-decreasing accruals prior to the repurchase. This surprising result may be attributed to the notion that investors perceive negative discretionary accruals as the outcome of "expectations management" (for the upcoming bad quarter). Accordingly, investors revise downward (rather than upward) the stock prices of ASR firms reporting negative discretionary accruals prior to the repurchase.

1.5.5 Post-ASR long-run stock performance

As an additional test of distinguishing between the signaling and earnings management motivations, I examine the post-repurchase long-run stock performance of ASR firms, as well as the association, if any, between the discretionary accruals reported by ASR firms and post-repurchase long-run stock performance. Louis and White (2007) document that fixed-price repurchasers experience positive abnormal stock performance during the post-repurchase period and that superior long-run performance is strongest for the firms that report the largest discretionary accruals. They conclude that consistent with the signaling motivation, high discretionary accruals reported by fixed-price repurchases are indicators of superior long-term performance. Thus, under the SUH, I expect that ASR firms, on average, experience positive abnormal stock performance during the post-repurchase period and that superior performance is

more pronounced for the firms reporting the highest discretionary accruals. In contrast, under the EMH, I expect that ASR firms, on average, do not exhibit any positive long-run stock performance and that long-run stock performance does not increase with reported discretionary accruals.

To calculate long-run abnormal stock returns, I estimate the Carhart (1997) four-factor calendar-time regressions over the 12- and 24-month period following the ASR announcement. The calendar-time portfolio approach introduced by Jaffe (1974) and Mandelker (1974) is commonly used in the literature (e.g., Mitchell and Stafford, 2000; Louis and White, 2007; Gong et al., 2008a) since it corrects for the potential bias in statistical inferences stemming from the cross-sectional dependence of event-firm abnormal returns that are overlapping in calendar time. The results are presented in Table 1.7.

The dependent variable in the calendar-time regressions is the ASR firm monthly portfolio returns in excess of risk-free rate. In Panel A (B), ASR firm returns are included in portfolio returns for the period from one to twelve (twenty four) months after the month of the ASR announcement. These portfolios are rebalanced each month to drop all firms that reach the end of their respective post-ASR periods and add all firms that have announced an ASR. To obtain reliable estimates, I exclude the calendar months where there are less than five observations. Furthermore, since the number of observations changes across calendar months, I use weighted-least square regression, where the weighting vector is the number of event firms having non-missing returns in a relevant calendar month (e.g., Lyandres, Sun, and Zhang, 2008). Further, I calculate p-values based on heteroskedasticity-robust standard errors.

The results for the full sample do not suggest any abnormal stock performance during the post-ASR period. Equally- and value-weighted regression alphas are negative and statistically

insignificant in both 12- and 24-month period ($\alpha_{EW\text{-}12}$ = -0.01%, p = 0.980; $\alpha_{VW\text{-}12}$ = -0.13%, p = 0.556; $\alpha_{EW\text{-}24}$ = -0.06%, p = 0.754; $\alpha_{VW\text{-}24}$ = -0.32%, p = 0.113). These results fail to support the signaling motivation. I also estimate the calendar-time regressions separately for the high and low discretionary accrual firms. Firms with ASR quarter discretionary accruals (DA) above the sample median are classified in the high DA group; otherwise they are included in the low DA group. The results reveal that the high DA group does not experience higher abnormal returns than the low DA group in either period. In fact, equally- and value-weighted alphas for the high DA group are consistently lower than those of the low DA group, albeit the differences in alphas between the two groups are not statistically significant. These results are again inconsistent with the SUH, while they lend support for the EMH.

1.6 EXTENSIONS AND ADDITIONAL ANALYSIS

1.6.1 Earnings per share (EPS) performance around the ASR announcement

In this section, I analyze the quarterly EPS performance before and after the ASR quarter (quarters -4 through +4) to see whether ASR firms actually needed a boost in their EPS performance. I also examine the time-series pattern of consensus analyst estimate around the ASR announcement date to understand how analysts respond to the ASR announcements. The results are reported in Table 1.8.

Panel A presents the quarterly EPS surprise (cents per share), which is defined as the difference between the firm's actual EPS for a given quarter and the median consensus analyst estimate *four months* prior to the quarterly earnings announcement date. Both actual EPS and estimated EPS data are obtained from the First Call database. Following previous research (e.g.,

Louis, 2004), I do not use the latest consensus forecast prior to the earnings announcement since executives try to manage analysts' expectations during the months prior to the earnings announcements and lead them to revise their estimates downward enough to yield nonnegative surprise upon announcement (Chan, Karceski, and Lakonishok, 2007).

The results suggest that ASR firms consistently beat/meet the consensus analyst estimate in quarters -4 through -2. For instance, in quarter -2, the mean (median) EPS surprise is 2.08 (1.00) cents and significant at 0.05 level. However, in quarters -1 through +2, ASR firms never beat the consensus forecast. In particular, the mean (median) EPS surprise is -0.51 (0.00) cents in the quarter of the ASR announcement. This finding is consistent with the argument that the sample firms' desire to enhance their EPS performance in the announcement quarter (and possibly the upcoming quarter) is associated with their decision to undertake an ASR. Finally, in quarters +3 and +4, the actual quarterly EPS reported by ASR firms fall short of the analysts' forecasts.

Panels B and C present the time-series of the median consensus analyst estimate for the ASR quarter earnings over the period 120 days prior to the ASR announcement date and 30 days after the ASR announcement date. Specifically, Panel B reports the consensus estimate for those analysts who constantly follow the ASR firms beginning at least 120 days before the ASR.[16] Panel C, however, does not impose any restrictions on the analyst following period. As shown in Panel B, the median consensus estimate 120 days before the ASR date is 57.00 cents. Nonetheless, consistent with the suggestion that managers guide analysts' expectations to "beatable" levels, a considerable decline is evident in the analysts' earnings forecasts by the time

[16] For instance, an analyst who provided his/her first estimate (for the ASR quarter) 110 days before the ASR date is not included in this group. Similarly, if an analyst stops providing an estimate anytime before the earnings announcement for the ASR quarter is excluded (even though s/he provides an estimate at least 120 days before the ASR date).

of the ASR. The last consensus estimate on the day before the ASR is 54.00 cents, which is also the last consensus estimate 1 day, 10 days, and 30 days after the ASR (as well as before the earnings announcement). These results suggest that analysts constantly following the ASR firms do not adjust their estimates following the ASR announcement. Although the results for the non-restricted analyst sample reveal an upward revision in the consensus estimate after the announcement of the ASRs, this revision is only temporary. In particular, the last consensus estimate 1 day before (10 days after) the ASR is 53.00 (54.00) cents. However, the consensus estimate drops back to 53.00 cents by the end of the month following the ASR announcement and stays at the same level before the announcement of the quarterly earnings. Overall, the results suggest that managers of firms undertaking ASRs engage in "expectations management" and guide analysts' forecasts downward during the pre-ASR period, making it easier for them to meet the EPS targets. In addition, the positive impact of ASRs on reported EPS does not seem to be fully reflected in analysts' last consensus estimate prior to the earnings announcement for the ASR quarter. These results are consistent with the conjecture that managers use ASRs along with positive discretionary accruals to boost EPS performance.

1.6.2 Operating performance around the ASR announcement

Finally, I analyze how operating performance of ASR firms changes in the post-repurchase period. If managers undertake ASRs to signal their optimism about firms' prospects, the sample firms are expected to experience a significant improvement in their operating performance following the repurchase. On the other hand, if managers initiate ASRs to boost quarterly EPS performance, ASR announcements are not expected to be followed by an increase in operating performance.

Following Lie (2005), operating performance is defined as the operating income divided by the average cash-adjusted total assets (i.e., total assets minus cash and cash equivalents) at the beginning and end of the fiscal quarter. I examine unadjusted, industry-adjusted (two-digit SIC level), and performance-adjusted operating performance. Industry-adjusted performance is calculated by subtracting the industry-median performance from the ASR firm's operating performance.

The performance-adjusted measure is the firm's operating performance minus the operating performance of its respective industry-, performance-, and M/B-matched control firm. I select the control firms using the matching procedure suggested by Lie (2005). Specifically, for each sample firm, I first identify all firms that operate in the same two-digit industry as the sample firm and that have (1) operating performance within 20% or within 0.01 of the performance of the sample firm in the announcement quarter (i.e., quarter 0), (2) operating performance for the four quarters ending with the quarter 0 within 20% or within 0.01 of that of the sample firm, and (3) pre-announcement market-to-book value of assets within 20% or within 0.1 of that of the sample firm.[17] If I cannot identify a potential control firm that meets the above criteria, I search among one-digit SIC codes. If still no firm meets the criteria, I relax the SIC code, performance, and market-to-book criteria. From all the potential matches, I choose the firm with the lowest sum of absolute performance difference, defined as

$$\left| \text{Performance}_{\text{Quarter 0, Sample Firm}} - \text{Performance}_{\text{Quarter 0, Firm } i} \right| + \left| \text{Performance}_{\text{Quarters -3 through 0, Sample Firm}} - \text{Performance}_{\text{Quarters -3 through 0, Firm } i} \right| \quad (4)$$

Table 1.9 presents both the levels of and changes in unadjusted and adjusted operating performance measures. The median unadjusted performance is 3.48% in the quarter of the ASR

[17] Market-to-book value of assets is the market value of equity plus the book value of debt scaled by the book value of assets (*PRCCQ* x *CSHOQ* +*ATQ* – *CHEQ) / ATQ*).

announcement. The changes in the unadjusted performance from quarter 0 to future quarters (i.e., quarters +1 through +4) suggest no improvement in the operating performance of ASR firms. Similarly, the industry-adjusted performance shows that although ASR firms do better than the median firm in their industries, their performance with respect to their peers does not improve following the ASR announcement. Finally, examination of the performance-adjusted measure reveals that ASR firms do not exhibit a significant change in their operating performance during the post-repurchase period as compared to the ASR announcement quarter. Overall, the results presented in Table 1.9 indicate that operating performance of ASR firms do not improve during the year following the repurchase, which is inconsistent with the signaling hypothesis but provides some support for the earnings management hypothesis.

1.6.3 Robustness tests

Bargeron et al. (2011) point out that firms are more likely to include ASRs in their repurchase programs when they have recently completed asset sales and been takeover targets. One might argue that firms undertaking ASRs following asset sales use the ASR more as a means of returning cash to investors quickly than managing EPS or signaling undervaluation. Thus, including such firms in the sample may bias reported results. Accordingly, I exclude firms with the absolute value of discontinued operations (Compustat item DOQ) scaled by total assets greater than 0.005 in the quarter of or the quarter prior the ASR. This restriction eliminates thirteen observations from the final sample but it does not qualitatively change the results. Further, given that managers may use repurchases to deter takeovers (e.g., Billet and Xue, 2007), I identify and exclude seven firms that have been listed as takeover targets on the SDC's Mergers

and Acquisitions database anytime between twelve months before and after the ASR date. Dropping these firms from the sample again does not materially alter the findings.

Specifically, the median discretionary accruals for the restricted sample, which does not include firms with assets sales and firms listed as takeover targets, is 0.39% of total assets ($p <$ 0.10). The upward earnings management in the ASR quarter again increases with the percentage of equity repurchased (coef. = 0.119, $p < 0.10$), initiation of the ASR earlier in the quarter (coef. = 0.010, $p < .05$), and CEO's bonus compensation (coef. = 0.030, $p < 0.05$). Additionally, the negative relation between the ASR announcement returns and positive discretionary accruals continues to hold (-0.282, $p < 0.05$). There is also no evidence of positive abnormal stock return or operating performance during the post-ASR period.

1.7 CONCLUSION

Accelerated share repurchases (ASRs) represent an important innovation in repurchase methods, yet little is known about the managerial motives behind ASRs. One way to gain insight into managerial motives for share repurchases is to examine managers' financial reporting behavior around repurchases. The analysis of discretionary accruals reported by ASR firms reveals that they inflate reported earnings around the repurchase announcement. However, there is a negative relation between the ASR announcement returns and the positive discretionary accruals reported prior to the ASR, suggesting that investors consider ASR firms' discretionary reporting behavior opportunistic rather than optimistic. This result is consistent with the conjecture that managers initiating ASRs are more likely to be concerned with enhancing EPS performance than signaling their favorable private information about firms' prospects.

Furthermore, I document that there is a positive relation between the percentage of outstanding equity repurchased through the ASR transaction and discretionary accruals reported in the quarter of the announcement. That is, ASR firms' tendency to increase the numerator of EPS through discretionary accruals is positively associated with the magnitude of repurchase-driven reduction in the denominator of EPS. Moreover, the upward earnings management in the announcement quarter is more pronounced among firms which initiate the repurchase earlier rather than later in the quarter and where bonus payments account for a greater portion of the CEO's annual pay.

The results also reveal that while ASR firms consistently beat the consensus analyst estimate (four months prior to the earnings announcement) during the pre-repurchase quarters, they either miss or just meet the consensus forecast during the post-repurchase period. In addition, I document that although ASR firms usually perform better than their industry peers, they do not experience a significant improvement in their operating performance during the post-repurchase period. Consistent with the lack of improvement in the post-ASR operating performance, I find no evidence of long-run positive abnormal stock performance of ASR firms. Overall, the results suggest that managers use ASRs along with positive discretionary accruals to sustain recent performance.

2.0 CHAPTER 2: HOW DO FINANCIAL CONSTRAINTS RELATE TO FINANCIAL REPORTING QUALITY? EVIDENCE FROM SEASONED EQUITY OFFERINGS

2.1 INTRODUCTION

A significant body of research has examined the relation between financial constraints and firms' real decisions, particularly investment policy (e.g., Fazzari, Hubbard, and Petersen 1988; Kaplan and Zingales 1997; Denis and Sibilkov 2010) and R&D expenditures (e.g., Campello, Graham, and Campbell 2010). However, the link between financial constraints and firms' non-operational decisions, namely corporate financial reporting, has not been previously explored. This study attempts to fill this gap.

Previous studies examining managers' financial reporting behavior hypothesize that the trade-off between the costs and benefits of manipulating earnings changes during periods when a firm raises capital (for a review, see Dechow, Ge, and Schrand 2010). In particular, higher utility associated with the availability or pricing of external capital may increase the benefits of opportunistic reporting. This effect may be more pronounced for financially constrained firms, which incur higher transaction and agency costs when they attempt to raise external capital. Accordingly, I compare the earnings management strategies of financially constrained and unconstrained firms around seasoned equity offerings (SEOs) to test the connection between financial constraints and financial reporting.[18] Specifically, I propose and test a rational

[18] SEO firms are not shut out of the financial markets because they have access to equity markets. Following Korajczyk and Levy (2003), I use the terms "constrained" and "unconstrained" to denote a relative relation. However, it is worth noting that most issuers operate under tight financial conditions prior to the SEO (DeAngelo,

expectations hypothesis which posits that constrained firms report higher income-increasing accruals around SEOs than unconstrained firms and that the aggressive earnings management by constrained firms is a rational response to anticipated market behavior at offering announcements (i.e., higher discounting of their stock price by investors) rather than simply being the result of managerial opportunism.

A number of studies have documented that SEO firms, on average, report higher earnings by altering discretionary accruals around the offering (e.g., Rangan 1998; Teoh, Welch, and Wong 1998a; Shivakumar 2000; Cohen and Zarowin 2010). However, as Dechow et al. (2010, p. 384) point out: "while the studies provide fairly consistent evidence of accruals management when firms raise capital, they do not expand the analysis to examine cross-sectional variation in accruals management." Notably, why do some issuers manage their earnings aggressively, rendering themselves vulnerable to litigation (DuCharme, Malatesta, and Sefcik 2004), whereas others choose to manage their earnings more conservatively?

I propose that issuers' financial constraints— frictions preventing firms from funding all desired investments[19]— play an important role in shaping their financial reporting behavior around SEOs. Previous research theoretically defines financially constrained firms as those that do not have enough cash to undertake investment opportunities and that face severe agency and transaction costs when accessing capital markets (e.g., Korajczyk and Levy 2003). Constrained (C) firms are therefore expected to have greater incentive than unconstrained (UC) firms to use earnings management in an attempt to boost their stock price and raise external capital at a favorable price. Hence, SEOs provide an interesting setting in which to examine the interplay

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DeAngelo, and Stulz 2010). In fact, DeAngelo et al. (2010, p. 276) point out: "most issuers would have run out of cash by the year after the SEO had they not received the offer proceeds."

[19] Lamont, Polk, and Saa-Requejo (2001, p. 529) note: "This inability to fund investments might be due to credit constraints, or inability to borrow, inability to issue equity, dependence on bank loans, or illiquidity of assets". Consistent with previous research, I do not use "financial constraints" to mean financial distress.

between firms' financing constraints and financial reporting behavior. The central thesis of this paper is that C firms use income-increasing accruals more aggressively than UC firms around equity offerings. The logic underlying this argument is based on Stein's (1989) rational expectations model. Investors are rational and anticipate that issuers facing a high level of financial constraints have a greater tendency to manage earnings upward. So, they correctly conjecture that there will be higher earnings inflation by C issuers and adjust their valuation accordingly at offering announcements. Thus, C issuers rationally report higher income-increasing accruals than UC issuers. In general, the earnings management game between issuers and the stock market participants is analogous to the prisoner's dilemma. The cooperative equilibrium would involve no earnings inflation on the part of managers and no discounting of inflated earnings by the stock market. However, this is not sustainable as a Nash equilibrium. If the stock market participants do not conjecture earnings inflation, managers will have an incentive to fool them by boosting earnings. More important, the higher the issuer's financial constraints, the worse the problem becomes.

Consistent with my prediction, by using different measures of financial constraints (i.e., firm size, payout ratio, the Whited and Wu (2006) index, and the Size-Age index of Hadlock and Pierce (2010)), I find that the difference in median performance-adjusted discretionary current accruals (as a percentage of total assets) between the constrained and unconstrained groups is significantly positive in the SEO year (e.g., 4.51 percent versus 0.53 percent under the size classification). This result is robust to controlling for several variables that may affect the level of discretionary current accruals such as growth opportunities, operational volatility, analyst following, auditor type, and CEO equity holdings, as well as using the instrumental variable approach. Furthermore, I document that C firms, but not UC firms, consistently manage their

earnings upward during the three-year period prior to the offering. However, the difference in discretionary current accruals between the two groups dissipates after the first year following the offering.

It is worth noting that as opposed to the short-term benefits of earnings management, there are certain costs associated with managing earnings aggressively such as higher likelihood of being subject to investigations of the Securities and Exchange Commission (SEC) and deterioration in future operating performance (e.g., DuCharme et al. 2004; Desai, Hogan, and Wilkins 2006; Karpoff, Lee, and Martin 2008). One might argue that such reputational concerns may prevent issuers from using discretionary accruals aggressively. I find, however, that C issuers report higher income-increasing accruals than UC issuers after controlling for litigation risk, issuance of a subsequent SEO, and CEO age. This result is in line with previous research on earnings misstatement suggesting that the benefit of earnings misstatement seems to exceed the expected cost of misstatement for the firms seeking to secure external financing, leading these firms to manipulate their earnings but in turn, face enforcement actions by the SEC (e.g., Dechow, Sloan, and Sweeney 1996; Dechow et al. 2011).

Further, the results reveal that investors take pre-SEO earnings inflation into account when pricing issuers' stocks at offering announcements. Specifically, as predicted, I find that SEO announcement returns for firms engaging in aggressive earnings management are significantly more negative than those undertaking conservative earnings management (i.e., the difference in average five-day CAR between the two groups is 1.12 percentage points). Also, consistent with the argument that C issuers cannot credibly signal the absence of aggressive earnings management, I document that reporting lower discretionary accruals is associated with higher announcement returns for UC issuers but not C issuers.

The present research extends our current understanding of earnings management around corporate events in two important ways. First, as pointed out by Dechow et al. (2010), previous research has paid scant attention to the determinants of cross-sectional variation in discretionary accruals reported by firms issuing SEOs. I document that issuers' pre-offering financial constraints are an important factor in explaining the level of discretionary current accruals reported in the year of the SEO. Second, this study contributes to the nascent empirical literature that proposes rational explanations for the observed changes in managers' reporting behavior around corporate events (Erickson and Wang 1999; Shivakumar 2000). Given that the extant empirical literature on earnings management is dominated by studies suggesting that the use of discretionary accruals around corporate events is the result of opportunistic behavior of managers[20], who are assumed to use their financial reporting discretion to mislead market participants, this research can be seen as a part of a challenging task aimed at reconciling the evidences of earnings management with the theory of efficient capital markets. In particular, I document evidence consistent with Stein's (1989) argument that capital market pressure results in managerial myopia and lower earnings quality, even when the stock market participants are rational.

Furthermore, this paper contributes to the literature by demonstrating an alternative avenue, i.e., earnings quality, through which financial constraints may be linked to firm value and thus, complements and extends previous research documenting the valuation impact of financial constraints by examining firms' real decisions (e.g., Denis and Sibilkov 2010). A

[20] There is also a stream of literature suggesting that managers report positive discretionary accruals to signal their private information to the market participants (e.g., Subramanyam 1996; Louis and Robinson 2005; Louis and White 2007). For instance, Louis and Robinson (2005) argue that managers report income-increasing accruals prior to stock splits to communicate their favorable beliefs to the market. They document a positive relation between the income-increasing accruals and stock split announcement returns, implying that investors do perceive positive discretionary accruals reported prior to stock splits as the result of managerial optimism (rather than managerial opportunism).

contemporaneous working paper by Linck, Netter, and Shu (2011) also investigates whether earnings management is related to financial constraints. They find that financially constrained firms inflate their earnings more as compared to unconstrained firms during the quarters prior to investment and attribute this finding to managerial optimism such that constrained firms use positive discretionary accruals to signal their prospects and enhance their financing capacity. My results do not support this signaling hypothesis as I find that SEO announcement returns are lower for issuers reporting higher discretionary accruals. Also, I find that the positive relation between financial constraints and earnings management is robust to controlling for growth opportunities (i.e., market-to-book ratio). The discrepancy between the two papers regarding the proposed motivation for constrained firms' greater use of income-increasing accruals might arise because of differences in the study contexts. Specifically, while Linck et al. focus on earnings management activity of all public firms prior to investment quarters, I examine the discretionary accruals reported only by those firms issuing SEOs.

The rest of the paper is organized as follows. Section II reviews the related literature and presents my hypotheses. Section III discusses the measures of earnings management and financial constraints. Section IV describes the sample selection and database. Section V presents the empirical models used to test the hypotheses and the results of the tests. Section VI provides the summary and conclusions.

2.2 RELATED LITERATURE AND HYPOTHESES

Previous research suggests that incentives to influence equity market valuation affect firms' financial reporting behavior. In particular, several studies have documented that firms report

income-increasing accruals around initial public offerings (IPOs) (e.g., Friedlan 1994; Teoh, Welch, and Wong 1998b; Morsfield and Tan 2006; Fan 2007), seasoned equity offerings (SEOs) (e.g., Rangan 1998; Teoh et al. 1998a; Shivakumar 2000; Cohen and Zarowin 2010), and stock-for-stock acquisitions (e.g., Erickson and Wang 1999; Louis 2004).

Teoh et al. (1998b) maintain that upward earnings management enables IPO firms to raise higher capital as buyers, who are guided by earnings but are unaware of earnings inflation, pay higher prices for the equity offered than the level justified by unmanaged earnings. The authors write (p. 1941): "Our hypothesis is that the marginal investor does not rationally discount for earnings management in forming expectations about future cash flows." In parallel, Rangan (1998) and Teoh et al. (1998a) argue that firms issuing SEOs use income-increasing accruals to temporarily manipulate their stock prices and that investors overvalue issuers at the time of the offering and are subsequently disappointed by declines in the post-SEO earnings performance stemming from the reversal of discretionary accruals. In other words, the motivation of managers reporting positive discretionary accruals prior to SEOs is to mislead investors who naïvely extrapolate increases in pre-SEO earnings. In contrast, Shivakumar (2000) asserts that pre-SEO earnings management cannot be designed to mislead investors. Alternatively, he proposes the "managerial response hypothesis" which suggests that investors anticipate earnings management before the offering and discount issuers' stock prices at the announcement and that earnings management is the rational response of issuers to anticipated market behavior at offering announcements. Although Shivakumar's framework explains the presence of earnings management around SEOs, it is silent about what determines the magnitude of earnings management undertaken by issuers.

Erickson and Wang (1999) propose a similar explanation for the reporting behavior of

managers of acquiring firms around stock-for-stock mergers. They argue that the target firm would rationally anticipate that the acquirer would try to boost its pre-merger stock price by reporting income-increasing accruals. Accordingly, the target discounts the value of the acquirer's stock. Thus, if the acquirer did not manage its earnings upward as expected by the target, it would end up offering higher number of shares for the target, increasing the cost of acquisition. As a result, it is only rational for the acquirers to overstate earnings prior to stock-for-stock acquisitions. Modeling earnings management prior to equity offerings as the outcome of rational expectations model is consistent with Stein's (1989) and Narayanan's (1985) models of myopic corporate behavior. In these models, managers attempt to boost short-term performance (by making decisions that provide immediate cash flows but hurt long-term performance) even though they do not gain anything in the equilibrium as rational investors anticipate their actions and discount reported performance. Despite the fact that managers do not gain from their myopic behaviors, they cannot afford to deviate from non-cooperative equilibrium, since it would only make them worse off. As Stein (1989, p.668) succinctly puts it, "The Nash approach clearly exposes the fallacy inherent in a statement such as 'since managers can't systematically fool the market, they won't bother trying'." Anecdotal evidence provides support for the Stein's theory. A Forbes article by David Raymond (2000) using a pseudonym for the executive referred in the article reveals: "A lot of these [high-tech] companies are playing the game […] The game Monty is talking about is that of earnings management and dubious dealings among companies. No doubt, Monty plays the game to some extent. He'd be a fool not to."

Stein further argues that the extent to which managers attempt to manipulate earnings depends on the level of "capital market pressure" they face to participate in the earnings

management game and that this pressure can stem from different sources including funding requirements. He points out that while financially sound firms can insulate themselves from constant scrutiny by the capital market participants, those facing tighter financial conditions are subject to higher effective capital market pressure. Thus, I propose that the amount of earnings management in equity issuing firms increases with their financial constraints. Specifically, there are three main reasons why constrained issuers are expected to report greater income-increasing accruals during SEOs. First, the need to raise external financing at favorable prices is an important reason why managers window-dress the financial reports (e.g., Dechow et al. 1996; Firth, Rui, and Wu 2011). Given that the value of an additional dollar raised through the offering is higher for constrained firms than unconstrained firms (Faulkender and Wang 2006), the utility associated with aggressive earnings management is greater for constrained issuers. Second, higher offering price ensures that the issuing firm raises a targeted amount of capital by selling fewer shares, preventing the issuer from diluting higher level of ownership to outside investors (Kim and Park 2005). As the amount of capital raised through the SEO increases, the marginal benefit of managing earnings upward (i.e., additional decrease in dilution of ownership due to increased stock price) increases. Since, everything else equal, constrained issuers tend to raise a larger amount of capital than unconstrained issuers, the marginal benefit of earnings management is higher for constrained issuers. Third, constrained firms are subject to higher information asymmetry (Almeida and Campello 2010), decreasing the credibility of their financial statements. This discussion leads to the following hypotheses:

H1: Financially constrained firms manage their earnings upward more aggressively around SEOs than financially unconstrained firms.

H2: Aggressive earnings management around SEOs is associated with lower SEO announcement

returns.

2.2.1 Alternative hypothesis

In the Myers-Majluf (1984) model, managers, who are better informed than investors about the value of the firm's assets-in-place (as well as its growth opportunities), prefer to issue equity when their private valuation is lower than that of the market participants. However, investors, who rationally infer this managerial preference, reduce the value of offering firms at the announcement. Accordingly, the Myers-Majluf model predicts that firms with ample financial slack and debt capacity choose to finance their projects first with internal funds, then with debt, and finally with equity. Investors therefore would perceive equity offered by unconstrained versus constrained firms as more overvalued and adjust their valuation accordingly at the time of the offering. So, the alternative hypothesis posits that unconstrained rather than constrained firms report higher income-increasing accruals prior to the offering as a response to anticipated investor behavior (i.e., higher discounting of the stock price) at offering announcements.

2.3 VARIABLE MEASUREMENT

2.3.1 Financial constraints criteria

A number of alternative measures of financial constraints have been proposed in the literature. However, there is no agreement on which measure is the best proxy for financial constraints. Previous studies therefore use several alternative measures instead of a single measure to avoid potential problems stemming from the misclassification of firms. Accordingly, I use four alternative approaches to sort firms into the financially constrained and unconstrained groups:

1. *Firm size*: Following previous research (e.g., Almeida, Campello, and Weisbach 2004; Denis and Sibilkov 2010), I rank the sample firms based on their inflation-adjusted book value of assets at the end of the year preceding the offering year and assign those firms in the bottom (top) tercile of the distribution to the financially constrained (unconstrained) group.[21] The reasoning that lies behind this approach is that small firms are younger and less well-known and thus, more vulnerable to capital market imperfections stemming from information asymmetries and collateral constraints. Archer and Faerber (1966) is one of the earliest studies documenting the negative relation between firm size and the cost of raising equity capital. More recently, Hennessy and Whited (2007) estimate that financing costs are almost twice as large for small firms as for large firms.
2. *Payout Ratio*: Following prior studies suggesting that unconstrained firms are more likely to have higher payout ratios (e.g., Fazzari et al. 1988; Almeida and Campello 2010; Louis, Sun, and Urcan 2012), I rank the sample firms based on their payout ratio at the end of the year preceding the offering year and assign those firms in the bottom (top) tercile of the distribution to the financially constrained (unconstrained) group. Payout ratio is defined as the ratio of dividends (Compustat item DVC plus Compustat item DVP) and share repurchases (Compustat item PRSTKC) to operating income (Compustat item OIBDP). Payout ratio is set equal to 1 if a firm has negative operating income and positive payout (e.g., Hadlock and Pierce 2010).
3. *The Whited and Wu (WW) index*: Employing a structural investment model, Whited and Wu (2006) develop a structural index of firms' external finance constraints by using all

[21] I do not discard those observations in the middle tercile (according to a financial constraints criterion) and keep such "opaque" issuers in the sample to be used in the regression analysis. Thus, I create a dummy variable (labeled "Medium-FC") that is equal to 1 if an issuer is in the middle tercile and 0 otherwise. Although I expect that these firms also manage their earnings more aggressively as compared to financially unconstrained firms, the significance of the difference in discretionary current accruals between the two groups is ultimately an empirical question.

Compustat firms for the period of 1975-2001. The index is a combination of six factors: cash flow, dividend dummy, leverage, firm size, industry sales growth, and firm sales growth. The index increases with the firm's financial constraints and is calculated as follows:

$$WW_{it} = -0.091*CF_{it} - 0.062*DIVPOS_{it} + 0.021*TLTD_{it} - 0.044*LNTA_{it} + 0.102*ISG_{it} - 0.035*SG_{it} \quad (1)$$

where, *CF* is cash flow (Compustat item IB plus Compustat item DP) divided by lagged total assets; *DIVPOS* is a dummy variable equal to 1 if the firm pays dividends and 0 otherwise; *TLTD* is long-term debt (Compustat item DLTT) divided by total assets; *LNTA* is the natural log of inflation-adjusted total assets; *ISG* is the firm's three-digit SIC industry annual sales growth; *SG* is the firm's annual sales growth. I rank the sample firms based on their WW index at the end of the year preceding the offering year and assign those firms in the top (bottom) tercile of the distribution to the financially constrained (unconstrained) group. This approach is similar to those employed in Fahlenbrach and Stulz (2009) and Duchin (2010).

4. *The Size-Age (SA) Index*: Recently, Hadlock and Pierce (2010) develop a financial constraints index using two factors: firm size and age. They obtain the index loadings via order logit regression where the dependent variable ranges from 1 (least constrained) to 5 (most constrained) and is coded based on a firm's level of constraints identified through manual inspection of the firm's annual reports and 10-K filings. The index is calculated as follows:

$$SA_{it} = -0.737*SIZE_{it} + 0.043*(SIZE_{it})^2 - 0.040*AGE_{it} \quad (2)$$

where, *SIZE* is the natural log of inflation-adjusted total assets and *AGE* is the number of years the firm is listed with a non-missing stock price on Compustat. As suggested by the authors, in calculating the index, *SIZE* is winsorized at the natural log of $4.5 billion and *AGE* is winsorized

at thirty seven years. Since the SA index is higher for financially constrained firms, I assign those firms in the top (bottom) tercile of the distribution of the index value at the end of the year preceding the offering year to the financially constrained (unconstrained) group.

It is important to note that sorting sample firms on each measure into three groups and using the resulting ranks in the analysis reduce noise and facilitate comparability across measures. As expected, there is a significant positive correlation among the four different measures of financial constraints with the correlation coefficients ranging from 0.28 to 0.77 (p's < 0.01).

2.3.2 Earnings management

Following Teoh et al. (1998a, 1998b) and Louis (2004), I employ discretionary current accruals as a measure of earnings management and use the cross-sectional adoption of the modified-Jones model (Dechow, Sloan, and Sweeney 1995) to obtain the discretionary current accruals for a given year. Specifically, for each industry (two-digit SIC code) and each year, I estimated equation (3) using all firms that have necessary accounting data on Compustat and with assets greater than $1M.

$$CA_{it} = \beta_0 + \beta_1 (1 / ASSET_{it-1}) + \beta_2 \Delta SALE_{it} + \varepsilon_i \qquad (3)$$

where, *CA* is current accruals divided by total assets at the end of year t-1; *ASSET* is total assets (Compustat item AT); Δ*SALE* is the change in sales (Compustat item SALE) from the prior year divided by total assets at the end of year t-1; ε is the regression residual.[22] Following previous studies (e.g., Teoh et al. 1998a; Fischer and Louis 2008; Hovakimian and Hutton 2010), current accruals is defined as change in non-cash current assets (Compustat item ACT minus Compustat

[22] To mitigate the influence of outliers, I winsorize *CA*, 1/ *ASSET* and Δ*SALE* at the 1% and 99% levels. I also require there be at least 20 observations in each industry and year to accurately estimate the regression coefficients.

item CHE) minus change in current liabilities (Compustat item LCT) plus change in the current portion of long-term debt (Compustat item DD1).

Equation (4) estimates expected current accruals using the coefficient estimates obtained from equation (3) with an adjustment for the change in accounts receivables:

$$ECA_{it} = \hat{\beta}_0 + \hat{\beta}_1 (1 / ASSET_{it-1}) + \hat{\beta}_2(\Delta SALE_{it} - \Delta AR_{it}) \quad (4)$$

where, $\hat{\beta}_0$, $\hat{\beta}_1$, and $\hat{\beta}_2$ are estimated coefficients from equation (3); *ECA* is the expected current accruals; ΔAR is the change in accounts receivable (Compustat item RECT) from the prior year divided by total assets at the end of year t-1. Discretionary current accruals (DCA) is the difference between current accruals and expected current accruals.

Finally, I adjust DCA obtained from the modified-Jones model for performance since Kothari, Leone, and Wasley (2005) show that performance-adjusted accruals are well-specified and yield powerful tests. Specifically, following previous studies (e.g., Louis 2004; Louis and Robinson 2005; Gong, Louis, and Sun 2008), for each year and each industry, I build five portfolios by sorting the data into quintiles based on return-on-assets (i.e., income before extraordinary items (Compustat item IB) divided by lagged total assets) from year -2 relative to the issuance year.[23] The performance-adjusted DCA for a sample firm is calculated as the DCA of the firm minus the median DCA for its respective industry-performance-matched portfolio. As suggested by Gong et al. (2008), the portfolio benchmarking approach allows researchers to control not only for performance but also for random effects stemming from other events which may impact accruals or other managerial incentives to engage in earnings management.

[23] Teoh et al. (1998a) document that issuing firms report positive discretionary current accruals in year -1. Therefore, performance-matching based on the ROA reported in year -1 could lead to biased results. However, I reran all the analyses by creating matching portfolios based on the ROA reported in year -1, as well as year 0 and obtained similar results.

2.4 SAMPLE FORMATION AND DESCRIPTIVE STATISTICS

The initial sample of SEOs is obtained from the Security Data Corporation's (SDC) New Issues Database for the period from 1983 to 2006. Following previous studies (e.g., Lee and Masulis 2009; Cohen and Zarowin 2010), I exclude the following: (1) SEOs lacking Compustat annual financial statement data for the four years prior to the SEO filing date[24], (2) close-end funds, unit investment trusts, REITs, and limited partnerships, (3) spin-offs, (4) reverse LBOs, (5) rights issues, (6) pure secondary offerings, (7) simultaneous or combined offers of several classes of securities such as unit offers and warrants, (8) non-domestic and simultaneous domestic-international offers, (9) offering of securities with CRSP share codes other than 10 or 11, (10) SEOs with offer prices less than $5. Furthermore, financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample due to the greater regulation for these firms, limiting their ability to engage in earnings management. The final sample includes 1,645 SEOs for which the accruals data are available in the year of the offering.

Summary statistics are reported in Table 2.1. Panel A reports the size characteristics as of the end of year -1 (where year 0 is the offering year). Panel B and C present the year and industry distribution, respectively. The results suggest that the sample is not dominated by a particular year, though 1983 stands out as a very active year for SEOs as it contains 10.88 percent of the sample. Furthermore, examination of the industry distribution reveals that the two largest industry groups in the sample are computer equipment/services firms and electronic equipment firms, which constitute 15.02 percent and 11.19 percent of the sample, respectively. Panel D reports the number of issuers classified as constrained and unconstrained according to

[24] This restriction is likely to induce survivorship bias, resulting in the inclusion of larger and more successful firms. However, I expect that this will reduce the variation in the earnings management and financial constraint measures and thus, result in a more conservative test of my hypotheses.

each of the four measures of financial constraints. It also shows the extent to which different classifications are correlated. For example, out of the 548 issuers considered constrained according to the WW index, 420 are also considered constrained according to the payout ratio classification, while only 93 issuers are considered unconstrained. The remaining issuers are the WW-constrained firms that are neither constrained nor unconstrained under the payout ratio classification.

Table 2.2 presents the median firm characteristics (as of the end of year -1) by financial constraints categories under each classification. The cross-sample differences between constrained and unconstrained issuers are in line with expectations and with prior studies in the literature. The results consistently suggest that financially constrained firms tend to have lower market value, higher market-to-book ratio and experience higher volatility of cash flows, revenue, and sales growth. In addition, regardless of the classification method, the median financially constrained firm does not pay any dividends or repurchase any shares in the pre-SEO year and is followed by only one analyst (two analysts under the payout ratio classification). On the other hand, the median unconstrained firm has positive payout activity in the year prior to the offering and is followed by higher number of analysts.

Supporting the notion that constrained firms engage in precautionary savings (e.g., Han and Qui 2007; Duchin 2010), cash-to-assets ratio is higher for constrained versus unconstrained issuers. Moreover, consistent with Whited and Wu (2006), debt-to-assets ratio decreases with financial constraints as constrained firms often lack resources that can be used as collateral for their debt. The results also reveal that Altman's (1968) Z-score, which is a measure of the probability of bankruptcy (i.e., lower the Z-score, higher the probability of bankruptcy), is higher

for the constrained group.[25] This is in line with DeAngelo et al. (2010) who document that mature and dividend paying issuers have lower Z-scores than young and non-dividend paying issuers. Although this finding may seem counterintuitive, it is reassuring in that the proposed link between financial constraints and upward earnings management around equity offerings is unlikely to be an artifact of the constraint firms' desire to avoid a potential bankruptcy.

Further, the size and SA index measures suggest that unconstrained firms report lower industry-adjusted ROA as compared to constrained firms, while the payout ratio measure does not reveal any significant difference in ROA between the two groups. However, according to the WW index classification, the unconstrained group reports higher industry-adjusted ROA than the constrained group. Finally, the results indicate that the offer size (i.e., offer amount scaled by pre-SEO market value) is significantly larger for the constrained group versus unconstrained group under all classifications.

2.5 EMPIRICAL ANALYSES AND RESULTS

2.5.1 Univariate analysis of earnings management around SEOs

Table 2.3 (and Figure 2.1) presents time-series of performance-adjusted discretionary current accruals (ADJDCA), in percent, for financially constrained and unconstrained firms under different classifications from year -3 to +3 relative to the offering (year 0). Following previous studies (e.g., Rangan 1998; Shivakumar 2000; Cohen and Zarowin 2010), I focus on medians as they are less likely than averages to be influenced by extreme observations. However, I also

[25] I calculate Altman's Z-score as follows: 1.2 * Working Capital (Compustat item ACT minus LCT) / Total Assets + 1.4 * Retained Earnings (Compustat item RE) / Total Assets + 3.3 * EBIT (Compustat item PI plus XINT) / Total Assets + 0.6 * Market Value / Total Liabilities (Compustat item LT) + 0.999 * Sales (Compustat item SALE) / Total Assets.

report means along with standard deviations to provide a more complete picture of the statistical distribution of discretionary accruals.

The results show that under all financial constraint classifications, the median ADJDCA reported by the constrained group in the year of the offering is significantly higher than that of the unconstrained group. For instance, under the firm size classification, the median ADJDCA of the constrained group is 4.51 percent of total assets, whereas it is 0.53 percent of total assets for the unconstrained group and the difference between the two groups is statistically significant at the 1% level. The median ADJDCA of constrained (unconstrained) firms under the payout ratio, WW index and SA index classifications is 2.96 percent (1.15 percent), 3.90 percent (0.85 percent), and 4.12 percent (0.85 percent), respectively, and all the differences are significant at the 1% level. These results suggest that constrained issuers manage their earnings more aggressively than unconstrained issuers during the year of the SEO, providing initial support for H1.

Furthermore, the comparison of the two groups' earnings management activity in the years prior to the offering reveals that constrained, but not unconstrained, issuers manage their earnings upward in the pre-SEO period as well, albeit the magnitude of income-increasing accruals is smaller as compared to those in the offering year. For instance, under the size classification, the median ADJDCA for the constrained group is 0.96 percent ($p < 0.01$) in the year preceding the announcement, whereas it is only 0.29 percent ($p > 0.10$) for the unconstrained group.

Finally, the examination of the post-offering discretionary accruals indicates that there is no significant difference in the financial reporting behavior of the two groups beyond the first year following the offering. That is, although constrained issuers continue to manage their

earnings in the period immediately following the offering, the difference in median ADJDCA between the two groups dissipates in years +2 and +3. Specifically, both groups report negative but insignificant ADJDCA in year +3. This finding implies that the documented divergence in the earnings management strategies of constrained and unconstrained firms does not manifest itself during the post-offering period.

2.5.2 Multivariate analysis of earnings management in the SEO year

To perform a test of H1 in a multivariate setting, I estimate the following model (separately for each financial constraint criterion) using median regression with bootstrapped standard errors (with 200 replications). Since previous studies (Rangan 1998; Teoh et al. 1998a) document that earnings management activity is at its peak during the offering year, I use ADJDCA calculated for the year of the offering as a measure of earnings management undertaken by the issuers around the SEO. The model includes several control variables suggested in the literature (e.g., Hribar and Nichols 2007; Cohen and Zarowin 2010).

$$\begin{aligned} ADJDCA = {} & \alpha_0 + \alpha_1 HIGH\text{-}FC + \alpha_2 MEDIUM\text{-}FC + \alpha_3 MB + \alpha_4 CFVOL + \alpha_5 REVVOL \\ & + \alpha_6 SGVOL + \alpha_7 ROA + \alpha_8 LEV + \alpha_9 LITIGATION + \alpha_{10} SEO2 \\ & + Year\ fixed\ effects + v \end{aligned} \quad (5)$$

where, *ADJDCA* is the performance-adjusted discretionary current accruals (as a percentage of total assets) in the year of the offering; *HIGH-FC* is a dummy variable equal to 1 if a firm is categorized as financially constrained under a sorting criterion and 0 otherwise; *MEDIUM-FC* is a dummy variable equal to 1 if a firm is ranked in the middle tercile according to a financial constraint sorting criterion and 0 otherwise; *MB* is the natural log of the market-to-book ratio in the year prior to the SEO year; *CFVOL* is the standard deviation of cash flow deflated by total

assets over the five year period (with a minimum of three years) prior to the SEO year; *REVVOL* is the standard deviation of sales deflated by total assets over the five year period (with a minimum of three years) prior to the SEO year; *SGVOL* is the standard deviation of annual sales growth over the five year period (with a minimum of three years) prior to the SEO year; *ROA* is the industry-median adjusted return-on-assets in the year prior to the SEO year; *LEV* is the debt-to-assets ratio in the year prior to the SEO year[26]; *LITIGATION* is a dummy variable equal to 1 if a firm's SIC code is 2833-2836, 8731-8734, 7371-7379, 3570-3577, 3600-3674 and 0 otherwise (Barton and Simko 2002). The high litigation risk industries include pharmaceuticals/biotechnology and computers/electronics; *SEO2* is a dummy variable equal to 1 if a firm issues another SEO during the two-year period following an offering and 0 otherwise.[27]

The model includes market-to-book ratio and industry-adjusted ROA to control for variations in issuers' growth opportunities and profitability, respectively. I conjecture that issuers with higher growth opportunities and recent profitability tend to use greater income-increasing accruals as such firms experience severe investor reaction when they exhibit poor earnings performance (Skinner and Sloan 2002). In addition, I control for cash flow volatility, revenue volatility and sales growth volatility to ensure that the results are not driven by the more volatile operating environments of financially constrained firms. I also control for debt-to-assets ratio because previous research documents that firms use income-increasing accruals to avoid violating debt covenants (e.g., DeFond and Jiambalvo 1994). Further, since firms operating in high litigation risk industries use discretionary accruals less aggressively (Cohen and Zarowin

[26] I do not control for debt-to-assets ratio when I use the WW index as the measure of financial constraints since the index already consists of an item measuring the firm leverage.

[27] Although it is not stated in equation (5), the natural log of the pre-offer market value is added to the model as an additional control variable when the payout ratio measure is used to determine the financial constraint groups. The reason why I do not control for the market value when other financial constraint measures are employed is that the market value is a proxy for the firm size, which is already captured in the other constraint measures. The Spearman rank (Pearson) correlation of the natural log of the market value with assets, payout ratio, the WW index, and the SA index is, respectively, 0.776 (0.800), 0.185 (0.090), -0.664 (-0.693), and -0.634 (-0.651).

2010), the model includes an industry-based litigation dummy variable. Finally, I control for whether a firm issues a subsequent SEO in the two-year period following an offering. Previous research (e.g., Shivakumar 2000) suggests that frequent issuers may report earnings conservatively due to reputational concerns.

Table 2.4 (columns 1, 3, 5, and 7) presents the results of the median regressions. The results for the firm size measure are reported under column 1. As predicted, the coefficient on financially constrained dummy is positive (4.682) and significant at the 1% level, indicating that constrained issuers report higher ADJDCA in the year of SEO than unconstrained issuers. Similar results are obtained under other sorting criteria. Specifically, using the payout ratio, WW index, and SA index, respectively, reveals 1.156 ($p < 0.05$), 3.711 ($p < 0.01$), and 3.538 ($p < 0.01$) percentage point difference in median ADJDCA between the constrained and unconstrained groups, after controlling for other factors. Overall, the results obtained using four different measures support the prediction that constrained issuers manage their earnings more aggressively than unconstrained issuers around the offering.[28] Furthermore, the estimated coefficients on the control variables imply that firms with higher market-to-book ratio and industry-adjusted ROA in the pre-SEO year tend to report larger income-increasing accruals in the year of the offering. However, operating in a high litigation risk industry is negatively associated with upward earnings management.

As an additional test, I augment the regression equation (5) with the following variables: the natural log of the number of analysts following the company, big-N auditor dummy, low/high governance index dummies. However, the data availability limits the sample to 1,220 firms for the period 1990 and 2006. Analyst data is obtained from the First Call database and calculated as

[28] Estimating equation (5) with OLS and clustering standard errors at the firm level lead to qualitatively similar results.

the maximum number of analysts following the firm in the year prior to the offering. Since previous research (e.g., Yu 2008) documents that firms followed by more analysts manage their earnings less, I anticipate a negative relation between the number of analysts and income-increasing accruals. Further, Big-N auditor dummy equals 1 if a firm's financial statements for the SEO year were audited by one of the Big-8, Big-6, Big-5 or Big-4 auditors (depending on the sample period) and 0 otherwise.[29] I expect that the issuers whose financial statements are audited by Big-N companies report less income-increasing accruals (Becker et al. 1998). Finally, G-index (Gompers et al. 2003) is obtained from the RiskMetrics database. Low (High) governance index dummy equals 1 if a firm's G-index is less than (greater than or equal to) nine, which is the sample median, and 0 otherwise. The base category for governance dummy variables includes the firms with missing value for the G-index (as in Bergstresser and Philippon (2006)).[30] Previous research suggests that the use of discretionary accruals is less pronounced among firms with lower G-index.

The results of the updated median regression model are presented in columns 2, 4, 6, and 8 of Table 2.4. The estimated coefficient on the financially constrained firm dummy is still positive and statistically significant under all sorting criteria. The difference in median ADJDCA between the two groups is 2.947 ($p < 0.01$), 1.148 ($p < 0.05$), 2.466 ($p < 0.05$), and 1.844 ($p < 0.10$) percentage points under the size, payout ratio, WW index, and SA index, respectively. Furthermore, the results suggest that offering firms with higher analyst following report less income-increasing accruals in the SEO year. Although the estimated coefficient on the Big-N auditor dummy is negative, it is not statistically significant. Also, neither low nor high governance index dummy is significantly associated with discretionary current accruals

[29] 92 percent of the sample had their financial statements audited by Big-N auditors.
[30] G-index is available for only 23.4 percent of the firms included in the sample.

2.5.3 Additional multivariate analysis: controlling for CEO equity compensation

Previous research documents that financially constrained (versus unconstrained) firms tend to compensate their CEOs more with options and stocks rather than cash payments (e.g., Yermack 1995; Core and Guay 1999). Given that the use of discretionary accruals to manipulate earnings is more pronounced at firms where the CEO's potential total compensation is more closely tied to the value of option and stock holdings (Cheng and Warfield 2005; Bergstresser and Philippon 2006), my results can be confounded by the difference in the compensation structure of the two groups. To test the validity of this argument, I hand-collect the data on CEO's option and stock holdings from the issuer's last proxy statements filed prior to the offering date. I limit the sample period to 1997-2006 for this analysis. The reason why I hand-collect this data rather than use the data on Execucomp is that the sample size drops significantly when I merge the SEO and Execucomp datasets (small issuers are not covered by Execucomp). The final sample with CEO option and ownership data consists of 660 SEOs. Since the composition of the sample is different than that of the initial sample, I re-categorize firms into the financial constraint groups based on the updated terciles of each measure.

Consistent with prior studies, I find that constrained firms compensate their managers with more options. The median number of CEO's exercisable (unexercisable) options as a percentage of shares outstanding prior to the offering is 1.019 percent (0.810 percent) for the constrained group, as compared to 0.653 percent (0.442 percent) for the unconstrained group according to the firm size criterion.[31] The difference between the two groups is statistically significant at the 5% (1%) level. The results also indicate that the median CEO stock ownership in constrained firms, 2.474 percent, is significantly larger as compared to that in unconstrained

[31] The results are similar under other financial constraints criteria, though the differences between the two groups do not reach statistical significance when the payout ratio measure is used.

firms, 0.735 percent ($p < 0.01$).[32] This finding is consistent with Fahlenbrach and Stulz (2009) who document that managerial ownership increases when a firm becomes financially constrained, since managers become more willing to accept shares instead of cash to prevent the firm becoming more constrained. Finally, constrained firms have younger CEOs as compared to unconstrained firms, though the difference in median age between the groups is only 2 years ($p < 0.01$), 1 year ($p > 0.40$), 2.5 years ($p < 0.01$), and 4 years ($p < 0.01$) under the size, payout ratio, WW index, and SA index criteria, respectively.

To examine whether the positive relation between financial constraints and earnings management still holds after controlling for CEO option holdings and ownership, I augment the regression model (equation (5)) with the following variables: number of exercisable options (as a percentage of the number of shares outstanding), number of unexercisable options (as a percentage of the number of shares outstanding), number of shares held by the CEO (as a percentage of the number of shares outstanding). I also control for the CEO's age and duality measured by the CEO/Chairman dummy that is equal to 1 if the CEO is also the chairman of the company and 0 otherwise. The results are presented in Table 2.5.

The results of the median regressions suggest that after controlling for CEO option and stock holdings, there is still a positive relation between issuers' financial constraint status and earnings management in the year of the offering. Specifically, the difference in median ADJDCA between the constrained and unconstrained groups is 3.115 ($p < 0.01$), 1.302 ($p < 0.05$), 2.584 ($p < 0.01$), and 2.475 ($p < 0.05$) percentage points under the size, payout ratio, WW index and SA index criteria, respectively. Although the coefficients on exercisable and unexercisable options are not significant in any of the models, the results reveal a positive and significant association

[32] The WW index and SA index produce qualitatively similar results. However, the payout ratio measure suggests that there is no difference in the CEO ownership between the constrained and unconstrained groups.

between CEO ownership and earnings management. More important, these results indicate that the link between financial constraints and aggressive earnings management around SEOs is not confounded by the CEO's equity related incentives.

Overall, these findings lend support for the hypothesis that the upward earnings management around SEOs increases in the level of issuers' financial constraints. By using different financial constraint measures and regression specifications, I document that the median constrained issuer reports discretionary current accruals that are 1.15–4.68 percent of total assets higher than those reported by the median unconstrained issuer. This is inconsistent with the alternative hypothesis that unconstrained rather than constrained firms report more income-increasing accruals during SEOs in anticipation of higher discounting of their stock price by investors.

2.5.4 Univariate analysis of SEO announcement returns

As an initial test of whether the stock market participants take the documented earnings inflation into account when valuing issuers' equity, I first compare the mean announcement return of issuers reporting high versus low discretionary current accruals. Specifically, I sort sample firms into terciles based their pre-offering ADJDCA and assign those firms in the highest (lowest) tercile to the aggressive (conservative) earnings management category.[33]

[33] I measure discretionary current accruals at the time of the offering as the sum of discretionary current accruals over the eight quarters prior to the SEO. This is consistent with previous research (e.g., Denis and Sarin 2001). I calculate quarterly ADJDCA as in Gong et al. (2008). That is, using all firms with available accounting data on Compustat and assets greater than $1M, for each industry (two-digit SIC code) and each calendar quarter, I estimate the following model: $CA_i = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{j,i} + \beta_5(\Delta SALE_i - \Delta AR_i) + \beta_6 LCA_i + \varepsilon_i$, where *CA* is current accruals (calculated, in Compustat item names, as ΔACTQ – ΔCHEQ – ΔLCTQ + ΔDLCQ), Q_j is a binary variable equal to 1 in fiscal quarter *j* and 0 otherwise, *ΔSALE* is the quarterly change in sales, *ΔAR* is the quarterly change in accounts receivable, *LCA* is the lag of CA, and ε is the regression residual. All the variables are scaled by total assets at the beginning of the quarter. Finally, I adjust DCA obtained from the model for performance (benchmark portfolios are created based on return-on-assets from four quarters prior to the SEO quarter). The final sample contains 1,119 firms with non-missing data on ADJDCA for the eight quarters preceding the SEO announcement.

Table 2.6 reports the mean cumulative abnormal returns (CAR) around initial announcements of SEOs. I use the SEO filing date reported on the SDC database as the announcement date. I calculate five-day CAR (i.e., [-2, +2]) using the market-model in which the CRSP value-weighted index is the measure of the market return. The estimation period starts at 180 trading days before the announcement date and ends at 6 trading days prior to the announcement date (event day 0).

Consistent with previous studies, the average CARs shown in Table 2.6 indicate a negative investor reaction to offering announcements. More important, the results reveal that investors discount the stock prices of aggressive issuers at a higher rate as compared to conservative issuers, supporting H2. Specifically, the average announcement return for aggressive issuers is -3.70 percent, whereas conservative issuers experience an average return of -2.58 percent (the difference between the two groups is significant at the 5% level). In addition, consistent with the argument that constrained issuers cannot credibly signal the absence of aggressive earnings management, reporting lower discretionary accruals is associated with higher announcement returns for unconstrained but not constrained firms. For instance, under the size classification, constrained issuers engaging in conservative versus aggressive earnings management experience an average announcement return of -4.14 percent and -4.40 percent, respectively (the difference between the two groups is not statistically significant). On the other hand, unconstrained issuers engaging in conservative earnings management realize significantly higher announcement returns than those engaging in aggressive earnings management (-0.79 percent versus -3.45 percent, $p < 0.05$). The results are similar under other financial constraints criteria.

2.5.5 Multivariate analysis of SEO announcement returns

Further, I estimate the following model using OLS to test H2 in a multivariate setting:

$$CAR = \lambda_0 + \lambda_1 CONSERVATIVE\text{-}EM + \lambda_2 MODERATE\text{-}EM + \lambda_3 MB + \lambda_4 MVALUE + \lambda_5 RUNUP + \lambda_6 VOLATILITY + \lambda_7 OFFERSIZE + \lambda_8 LITIGATION + Year\ fixed\ effects + \eta \quad (6)$$

where, CAR is the five-day cumulative abnormal returns around the SEO announcement date; *CONSERVATIVE-EM* is a dummy variable equal to 1 if a firm is categorized into the lowest tercile of issuers based on pre-offering ADJDCA and 0 otherwise; *MODERATE-EM* is a dummy variable equal to 1 if the firm is categorized into the middle tercile of issuers based on pre-offering ADJDCA and 0 otherwise; *MB* is the natural log of the market-to-book ratio in the year prior to the SEO year; *MVALUE* is the natural log of the market value in the year prior to the SEO year; *RUNUP* is the cumulative abnormal returns over the period from 44 trading days before through 4 trading days before the offering announcement; *VOLATILITY* is the standard deviation of the market-model residuals; *OFFERSIZE* is the offer amount scaled by the market value of the firm in the year prior to the SEO year; *LITIGATION* is a dummy variable equal to 1 if an issuer operates in a high litigation risk industry (as defined previously) and 0 otherwise. To mitigate the impact of outliers, all the continuous variables are winsorized at the 1% and 99% levels. Finally, the standard errors are clustered at the issuer level. The results are reported in Table 2.7.

The multivariate analysis also reveals a significant difference in SEO announcement returns between the conservative and aggressive issuers. Specifically, the estimated coefficient on the conservative dummy in the second column is 0.010 (or 1.00 percent), $p < 0.10$, signifying

that aggressive rather than conservative use of discretionary current accruals is associated with a greater decline in stock price at offering announcements. As for the control variables, there is a negative relation between announcement returns and volatility, indicating that firms with more volatile pre-SEO stock returns experience more negative abnormal returns when they announce an equity issuance. Also, the positive coefficient on market value implies that announcement returns increase with pre-SEO market value.

I also estimate the multivariate regression model separately for constrained and unconstrained issuers. The results again indicate that managing earnings conservatively versus aggressively results in higher announcement returns for unconstrained but not constrained issuers. In particular, for the unconstrained group, the estimated coefficient on the conservative dummy is 0.027 ($p < 0.01$), 0.015 ($p < 0.10$), 0.022 ($p < 0.05$), and 0.027 ($p < 0.05$) under the size, payout ratio, WW index, and SA index classifications, respectively. On the other hand, for the constrained group, the conservative dummy is insignificant and has an estimated coefficient ranging between 0.001 and 0.006 under the same classifications.

Overall, the analysis of SEO announcement returns suggests that the market participants adjust their valuation of issuers to reflect the stock price impact of pre-offering earnings management. While aggressive use of discretionary accruals in general is associated with more negative announcement returns, financially constrained issuers experience large negative announcement returns regardless of the level of earnings inflation. That is, the market participants conjecture greater earnings inflation by constrained issuers and adjust their valuation accordingly and thereby, it is only rational for constrained issuers to engage in aggressive earnings management.

2.5.6 Robustness tests

2.5.6.1 Endogeneity Although I find that financial constraints are positively related to earnings management around SEOs, the specified regression models may not fully account for potential endogeneity in the sample. Particularly, modeling the relation between financial constraints and discretionary current accruals may be problematic due to either an endogenous feedback from earnings quality to financial constraints or an omitted variable driving both financial constraints and discretionary current accruals. Although the reverse causality is a relevant concern when the financial constraint categories are created based on payout ratio and the WW index—endogenous measures of financial constraints— it is not a very valid concern when one uses firm size and the SA index, which are fairly exogenous measures of financial constraints. Nevertheless, I employ the instrumental variable (IV) approach to bolster the integrity of the analysis, as well as to address the omitted variable criticism. Specifically, I use market share (based on two-digit SIC codes) and unexpected change in the number of employees of issuers in the year prior to the offering as instruments for their financial constraints and re-estimate equation (5) with 2SLS using continuous versions of each financial constraint measure (e.g., ln(Assets)) instead of the tercile dummy variables used in the previous analyses.[34] First, the rationale for "market share" is that constrained versus unconstrained firms lack financial resources required to establish and maintain a high market share (Fresard 2010). Second, the rationale for "change in employment" is that constrained firms tend to experience more negative shocks (or less positive shocks) in employment relative to unconstrained firms (Campello et al. 2010).

I calculate unexpected change in employment as in Ramanna and Roychowdhury (2010).

[34] To mitigate the impact of outliers, all the continuous variables used in 2SLS regressions are winsorized at the 1% and 99% levels.

Specifically, for each industry (two-digit SIC code) and each year, I estimate equation (7) using all firms that have necessary accounting data on Compustat and with assets greater than $1M.

$$\Delta EMP_{it} = \gamma_0 (1 / ASSET_{it-1}) + \gamma_1 \Delta SALE_{it} + \zeta_{it} \quad (7)$$

where, ΔEMP is the change in number of employees (Compustat item EMP) from the prior year divided by lagged total assets; *ASSET* is total assets; $\Delta SALE$ is the change in sales from the prior year divided by lagged total assets. The residual ζ_{it} represents the unexpected change in firm i's employment in year t.

Unreported correlation results reveal that, while significantly related to the financial constraint measures, both market share and unexpected change in employment are not significantly related to discretionary current accruals. The IV diagnostics also indicate that the results do not significantly suffer from the weak instrument problem. The F-statistic of the first-stage IVs of ln(Assets), payout ratio, the WW index, and the SA index is 20.15, 9.73, 19.44, and 16.19 respectively (p's < 0.01). In addition, the p-values of the Hansen-J statistic for ln(Assets), payout ratio, the WW index, and the SA index is 0.876, 0.202, 0.886, and 0.678, respectively. This suggests that the over-identification restriction of both IVs hold under each measure of financial constraints.

The 2SLS regression results confirm the previous results. The estimated coefficient on ln(Assets) is -1.700 ($p < 0.01$), implying that one standard deviation increase in ln(Assets) results in a 2.668 percentage point decrease in ADJDCA reported in the SEO year. Similarly, the estimated coefficients on the other measures of financial constraints are statistically significant with expected signs: payout ratio (-34.471, $p < 0.05$), the WW index (33.941, $p < 0.01$), and the SA index (5.686, $p < 0.01$). Overall, these results cast doubt on the reverse causality and omitted

variable criticisms and boost confidence in the mechanism proposed by the rational expectations hypothesis.

2.5.6.2 Sample selection bias Following prior studies on earnings management around equity offerings, my sample includes only completed offerings. However, excluding firms with unsuccessful attempts to issue equity and focusing on those successfully raised equity may not provide a complete picture of the relation between corporate financial reporting and financial constraints imposed on firms trying to access the equity markets. Therefore, I obtain data on withdrawn offerings from the SDC database and perform further robustness checks using a combined sample of completed and canceled SEOs. The cancelled offering sample includes 144 firms (8 percent of the combined sample[35]) with available discretionary accruals data. Consistent with Clarke et al. (2001), firms canceling SEOs are smaller than successful issuers (median assets: \$146 M vs. \$175 M, $p < 0.05$) and experience a more negative return at offering announcements (median CAR[-2, +2]: -6.13 percent versus -3.09 percent, $p < 0.01$). In addition, they have slightly higher WW index (i.e., face greater financial constraints) as compared to successful issuers (median WW index: -0.23 versus -0.25, $p < 0.01$), albeit the results reveal no difference in the payout ratio and SA index between the two groups.

I assign unsuccessful (i.e., canceling) issuers into financial constraint categories using the terciles cutoffs of each measure obtained from the successful issuer sample. The results suggest that earnings management among unsuccessful issuers also increases in the level of financial constrains but the difference between the constrained and unconstrained groups is less pronounced and does not often reach statistical significance (which may partly stem from low

[35] This figure is comparable to 5.3 percent reported in Clarke, Dunbar, and Kahle (2001), who examine SEOs for the period from 1984 to 1996, and 10.4 percent in Altinkilic and Hansen (2003) whose sample includes SEOs issued between 1990 and 1997.

power in tests associated with the small sample size). For instance, under the size classification, the median ADJDCA for the constrained and unconstrained group is 2.85 percent and -0.92 percent, respectively (p-value of the test for the difference is 0.07). Under the payout ratio, WW index and SA index classifications, the median issuer in the constrained (unconstrained) group report ADJDCA of 0.66 percent (-0.09 percent), 2.47 percent (0.38 percent), and 2.85 percent (0.23 percent), respectively, with p-values for the difference test greater than 0.42.

Further, I employ Heckman's (1979) two-stage estimation procedure to formally test whether my tests suffer significantly from a sample selection bias. Specifically, the first stage, which uses the combined sample of successful and unsuccessful issuers, estimates a probit model to determine the probability that a firm will successfully issue a previously announced SEO. The second stage, which uses the sample of successful issuers, then estimates an OLS model of equation (5) augmented with the inverse mill's ratio (or Heckman's Lambda). The inverse mill's ratio is calculated for each issuer based on the first-stage estimated values and helps control for the potential impact of firms' nonrandom decision to complete an offering. The independent variables in the first-stage include all the variables listed in equation (5) along with two-month pre-SEO stock return in excess of market (i.e., value-weighted CRSP index) as an exclusion restriction.[36] Consistent with prior studies (e.g., Clarke et al. 2001), the first-stage regression results reveal that the probability of completing an SEO increases with pre-SEO price runup.

The results of the second stage regressions are consistent with previous results. The estimated coefficient on constrained firm dummy (i.e., the mean difference in ADJDCA between the constrained and unconstrained groups) is 5.514 ($p < 0.01$), 1.755 ($p < 0.05$), 4.184 ($p < 0.01$), 4.944 ($p < 0.01$) under the size, payout ratio, WW index, and SA index classifications,

[36] As Lennox, Francis, and Wang (2012) point out, using an exclusion restriction (i.e., including *RUNUP* in the first stage but not in the second stage) mitigate the concern of multicollinearity between the inverse mill's ratio and second stage variables.

respectively. Further, the estimated coefficient on the inverse mill's ratio is insignificant under each classification with p-values greater than 0.70, suggesting that sample selection bias does not have a significant effect on my tests.

2.5.6.3 Serial issuers Next, I turn to the question whether the documented relation between financial constraints and earnings management around SEOs differs between non-serial and serial issuers (i.e., firms that issue another SEO within the next two years of an offering). One might argue that reputational concerns may curb earnings management and thereby, dampen the difference in discretionary accruals between the constrained and unconstrained groups. To address this question I first estimate an updated version of equation (5) where I interact the *SEO2* dummy with *High-FC* and *Medium-FC* dummies. The results reveal no significant interaction between the variables under any of the constraint classifications, suggesting that the upward earnings management increases with financial constraints among both serial and non-serial issuers. Specifically, constrained (unconstrained) serial issuers report a median ADJDCA of 4.74 percent (0.26 percent), 1.77 percent (0.72 percent), 2.72 percent (0.05 percent), 4.37 percent (0.60 percent) in the year of the SEO under the size, payout ratio, WW index, and SA index classifications, respectively. And, all the reported differences in median ADJDCA between the two groups are significant at least at the 10% level except under the payout ratio classification. These results also suggest that unconstrained serial issuers do not engage in significant earnings management during SEOs as none of the reported medians for this group is significant at the 10% level (p's > 0.20). However, one needs to be careful while interpreting these findings because the size of the serial issuers sample is relatively small (i.e., n = 167). Finally, it is worth noting that excluding the serial issuers from the sample does not qualitatively change the reported results in the paper.

2.5.6.4 Using the cash flow approach to measure current accruals Using the balance sheet approach to calculate accruals may induce measurement error in accrual estimates (Hribar and Collins 2002). Measuring accruals directly from the statement of cash flows can correct for potential estimation errors but the cash flow statement data are not widely available before 1988. Thus, using the balance sheet approach helps preserve a larger sample covering a longer period. Nonetheless, I repeat all the tests with current accruals data obtained from the statement of cash flows. Following previous research (e.g., Beatty, Liao, and Weber 2010), I define current accruals as total accruals (i.e., Compustat item IBC minus OANCF) plus depreciation (Compustat item DP). Although using this approach reduces the sample size to 1,300, it does not alter any of my conclusions. In particular, re-estimations of the regression models in columns 1, 3, 5, and 7 of Table 2.4 reveal that the difference in median ADJDCA between the constrained and unconstrained groups is 4.450 ($p < 0.01$), 1.203 ($p < 0.10$), 3.462 ($p < 0.01$), 2.608 ($p < 0.05$) percentage points under the size, payout ratio, WW index, and SA index classifications, respectively.

2.6 SUMMARY AND CONCLUSION

This paper examines the link between firms' financial constraints and their financial reporting behavior when accessing the equity markets. Specifically, I develop and test a rational expectations hypothesis which posits that firms facing higher financing constraints engage in greater earnings management when issuing equity as a response to anticipated severe discounting by investors at offering announcements. By using different measures of financial constraints (i.e., firm size, payout ratio, the Whited and Wu (2006) index, the Size-Age index of Hadlock and

Pierce (2010)), I find that constrained issuers report higher income-increasing accruals around the offering than unconstrained issuers. The difference in performance-adjusted discretionary current accruals between the two groups is most pronounced at the year of the offering and then dissipates after the first year following the offering.

The results also reveal that the stock market participants correctly conjecture this earnings inflation and adjust issuers' stock prices accordingly. I document that SEO announcement returns are significantly more negative for those issuers engaging in aggressive versus conservative earnings management. Further, reporting lower discretionary accruals is associated with higher announcement returns only for unconstrained issuers. Overall, the evidence suggests that the aggressive earnings management by constrained issuers is not simply the result of opportunistic behavior of managers but rather a preemptive strategy aimed at mitigating the impact of large negative announcement returns by boosting stock price via inflated earnings performance.

This study makes significant contributions to both the finance and accounting literatures by providing evidence that constraints on firms' financing capacity interfere with their accounting decisions. In particular, firms raising outside equity alter their reporting behavior according to the expectations of capital market participants such that the extent to which they manage reported earnings upward increases in the degree of financial constraints. One immediate implication of this result is that building financial slack and maintaining enough borrowing capacity can help increase financial reporting quality. Of course, from an agency theory perspective, greater resources available to managers might represent reduced operational efficiency. But, given that less constrained firms devote fewer resources to such practices as

earnings management, higher financial slack and borrowing capacity can allow managers to operate their firms more efficiently.

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Table 1.1
Hypotheses and empirical predictions

	Earnings Management Hypotheses (EMH)	Signaling Undervaluation Hypotheses (SUH)
Discretionary accruals (DA) in the ASR quarter	Positive	Positive
Corr (DA, Repurchase size)	Positive	Positive
Corr (DA, ASR announcement CARs)	Negative	Positive
Corr (DA, ASR earlier in the quarter)	Positive	?
Corr (DA, Market-to-book ratio)	?	Negative
Post-ASR positive abnormal stock return and operating performance	No	Yes
Post-ASR improvement in EPS performance	No	Yes

Table 1.2
Summary statistics

The initial sample includes 217 accelerated share repurchase (ASR) transactions announced between 2004 and 2007. The final sample consists of 178 observations with available accruals data in the announcement quarter. Information about the ASR transactions is gathered from the SEC filings and news stories that are identified through Factiva, ABI/INFORM, and other internet sources. Panel A reports the year and fiscal quarter (FQ) distribution of ASR announcements, as well as the median number of days between the ASR date and the end of the fiscal quarter. Panel B summarizes several characteristics of ASR firms including total assets (*ATQ*), market value of equity (*PRCCQ* x *CSHOQ*), market-to-book ratio ((*PRCCQ* x *CSHOQ*)/*CEQQ*), leverage ratio ((*DLCQ*+*DLTTQ*)/*ATQ*) and cash-to-asset ratio (*CHEQ*/*ATQ*) as of the end of the quarter -1 (where quarter 0 is the ASR quarter). Panel C presents descriptive statistics related to ASR transaction characteristics.

Panel A: Time distribution

Year	N	%	FQ_1	FQ_2	FQ_3	FQ_4	% of $FQ_{1,2,3}$	Median # of days
2004	17	9.55%	4	2	2	9	47.06%	41.0
2005	30	16.85%	7	4	10	9	70.00%	49.0
2006	50	28.09%	15	9	10	16	68.00%	38.5
2007	81	45.51%	24	22	19	16	80.25%	41.0
Total	178		50	37	41	50	71.91%	42.0

Panel B: Firm Characteristics

	Mean	Median	Q1	Q3
Assets (in million $)	23,575.92	7,816.35	2,602.49	29,550.00
Market Value (in million $)	13,456.22	6,225.07	3,079.25	16,741.25
Market-to-Book	3.584	2.337	1.683	3.833
Leverage Ratio	0.218	0.203	0.100	0.302
Cash-to-Assets Ratio	0.119	0.063	0.025	0.159

Panel C: Transaction Characteristics

	Mean	Median	Min	Max
Amount (in million $)	608.48	250.00	18.80	12,500.00
Percentage of Equity	5.38%	3.71%	0.16%	31.88%
Contracts with collars	0.26	0.00	0.00	1.00
Contracts with caps	0.12	0.00	0.00	1.00
Contracts with floors	0.03	0.00	0.00	1.00

Table 1.3
Median performance-adjusted discretionary accruals

This table reports time-series of performance-adjusted discretionary accruals around the ASR announcement quarter (i.e., quarter 0). Section 3 describes the details of the estimation of discretionary accruals. Discretionary accruals are reported as percentage of lagged total assets. Thus, for instance, an accrual of 0.123 means 0.123% of total assets. The sample includes ASR transactions announced between 2004 and 2007, excluding firms with missing accounting data used to calculate discretionary accruals. Significance of tests that median performance-adjusted discretionary accruals are different from zero is assessed using Wilcoxon signed rank test. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

Quarter	N	Median (p-value)
-6	167	-0.162
		(0.353)
-5	168	**-0.301**[c]
		(0.090)
-4	174	0.202
		(0.311)
-3	173	-0.020
		(0.577)
-2	174	-0.013
		(0.836)
-1	175	0.035
		(0.359)
0	178	**0.442**[b]
		(0.023)
1	176	-0.146
		(0.609)
2	173	**0.303**[b]
		(0.031)
3	175	**-0.208**[c]
		(0.075)
4	176	-0.118
		(0.768)
5	173	-0.096
		(0.887)
6	168	0.170
		(0.259)

Table 1.4

OLS and 2SLS regressions of performance-adjusted discretionary accruals in the quarter of the ASR announcement

The dependent variable in each column is the performance-adjusted discretionary accruals (as a fraction of total assets) in the quarter of the ASR announcement. Percentage of equity is the percentage of outstanding equity repurchased through the ASR transaction and instrumented in the 2SLS using "cash-to-asset ratio" and "the imputed interest rate on borrowing the firm's shares" (calculated as in Diether and Werner (2008)). ASR early in the quarter is a dummy variable equal to 1 if ASR is initiated earlier rather than later in the quarter (i.e., the number of days between the ASR date and the end of the fiscal quarter is greater than the sample median of 42 days) and 0 otherwise. Bonus is the ratio of the CEO's bonus compensation to his/her total compensation for the year prior to the ASR announcement. Collared/capped contract is a dummy variable equal to 1 if the ASR contract includes a provision specifying the maximum post-repurchase price adjustment and 0 otherwise. Exercisable (Unexercisable) is the ratio of exercisable (unexercisable) options held by the CEO to the total number of shares outstanding prior to the announcement. Ownership is the percentage equity ownership of the CEO before the announcement. The data on CEO compensation, option holdings and ownership are hand-collected from the last proxy statement filed prior to the ASR announcement. Analyst is the number of analysts following the firm during the quarter of the ASR announcement. Industry-adjusted leverage is the firm's leverage ratio minus the median industry leverage calculated at the two-digit SIC level. Litigation is a dummy variable equal to 1 if a firm's SIC code is 2833-2836, 3570-3577, 3600-3674, 7371-7379, 8731-8734 and 0 otherwise. Market value, market-to-book ratio, leverage ratio, and cash-to-asset ratio are as defined in Table 1.2. Independent variables are winsorized at the 1% and 99% levels. p-values are reported in parentheses and based on White standard errors clustered by firm. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

	OLS (1)	OLS (2)	OLS (3)	OLS (4)	2SLS (5)
	Performance-Adjusted DA_0	Performance-Adjusted DA_0	Performance-Adjusted DA_0	Performance-Adjusted DA_0	Performance-Adjusted DA_0
Percentage of equity^{+}	0.142^{b}			0.125^{b}	0.460^{a}
(+ *instrumented in 2SLS*)	(0.048)			(0.042)	(0.003)
ASR early in the quarter		0.010^{b}		0.010^{b}	0.010^{c}
		(0.049)		(0.044)	(0.060)
Ln(Market-to-book)			-0.002	-0.004	0.000
			(0.748)	(0.400)	(0.985)
Bonus / Total compensation				0.035^{a}	0.027^{b}
				(0.008)	(0.047)

Collared/capped contract				0.010[c]	0.007
				(0.089)	(0.235)
Exercisable options				0.697	0.334
				(0.294)	(0.594)
Unexercisable options				-0.843	-1.184
				(0.453)	(0.368)
Ownership				0.070	0.025
				(0.695)	(0.874)
Ln(Market value)				0.004	0.008[b]
				(0.138)	(0.018)
Analyst				-0.002[a]	-0.002[a]
				(0.002)	(0.001)
Industry-adjusted leverage				0.039[c]	0.023
				(0.062)	(0.332)
Litigation				-0.013	-0.020[a]
				(0.109)	(0.007)
Constant	-0.004	0.001	0.008	-0.031	-0.076[b]
	(0.492)	(0.843)	(0.187)	(0.197)	(0.016)
Year dummies?	No	No	No	Yes	Yes
Observations	178	178	173	170	165
Adjusted R-squared	2.49%	1.40%	-0.47%	15.41%	1.62%
Over-identification test (H_0: Not over-identified)					p = 0.691
F-statistic for the first stage IVs					9.92

Table 1.5
Abnormal returns around the ASR announcement

This table reports cumulative abnormal returns (in percentages) around the ASR announcement. Abnormal returns are calculated using the market model, in which the CRSP value-weighted index is the measure of market return. The market model parameters are estimated using a stock's daily returns over trading days -300 to -49 prior to its ASR announcement date. Tests on means (medians) are based on t-test (Wilcoxon signed rank test). p-values are reported in parentheses. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

	N	Mean (p-value)	Median (p-value)
CAR [-150, -45]	178	-0.957	-0.484
		(0.200)	(0.270)
CAR [-44, -4]	178	-0.941	-0.256
		(0.198)	(0.458)
CAR [-1, +1]	178	1.368[a]	0.942[a]
		(0.000)	(0.000)
CAR [+4, +44]	178	-0.364	-0.179
		(0.496)	(0.540)

Table 1.6
OLS regression of ASR announcement returns

This table presents the regression of three-day cumulative abnormal return around the ASR announcement on pre-repurchase discretionary accruals and control variables. Discretionary accruals (DA) are calculated for the quarterly earnings announcement that immediately precedes the ASR announcement. Positive discretionary accruals (PDA) is equal to DA if DA is greater than zero, otherwise PDA is zero. Negative discretionary accruals (NDA) is equal to DA if DA is less than zero, otherwise NDA is zero. Standard deviation of returns is calculated over trading days -300 to -49 prior to the ASR announcement. Prior stock return is the cumulative abnormal return over trading days -44 and -4 prior to the ASR announcement. Illiquidity is the Amihud (2002) measure of illiquidity, which is calculated as the absolute price change per dollar of trading volume over the period starting 300 trading days prior to the ASR announcement and ending 49 trading days prior to the ASR announcement. Other variables are as defined in Tables 1.2 and 1.4. Independent variables are winsorized at the 1% and 99% levels. p-values are reported in parentheses and based on White standard errors clustered by firm. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

Dependent Variable = CAR[-1, +1]			
	(1)	(2)	(3)
Positive discretionary accruals in Q_{-1}	-0.318[b]	-0.292[b]	-0.247[b]
	(0.026)	(0.047)	(0.026)
Negative discretionary accruals in Q_{-1}	0.421	0.393	0.406[c]
	(0.112)	(0.130)	(0.074)
Dummy (DA in $Q_{-1} > 0$)	0.006	0.008	0.006
	(0.350)	(0.248)	(0.373)
Standard deviation of returns	2.444[a]	1.308	1.085
	(0.001)	(0.202)	(0.231)
Percentage of equity			0.323[a]
			(0.001)
Prior stock return		-0.005	-0.005
		(0.877)	(0.869)
Ln(Market-to-book)		0.001	0.003
		(0.733)	(0.411)
Ln(Market value)		-0.016[b]	-0.001
		(0.020)	(0.901)
Ln(Illiquidity)		-0.009	0.003
		(0.122)	(0.671)
Cash-to-asset ratio		0.008	0.008
		(0.841)	(0.825)
Constant	-0.023[c]	0.052[c]	0.002
	(0.068)	(0.084)	(0.943)
Year dummies?	Yes	Yes	Yes
Observations	175	170	170
Adjusted R-squared	9.50%	11.41%	20.86%

Table 1.7
Post-ASR long-run stock performance

Panel A: 12-month period after the month of the ASR announcement

	Equally-Weighted			Value-Weighted		
	Full Sample	High DA	Low DA	Full Sample	High DA	Low DA
Alpha	-0.005	-0.072	0.066	-0.133	-0.215	-0.085
	(0.980)	(0.699)	(0.849)	(0.556)	(0.537)	(0.780)
$R_m - R_f$	0.987[a]	1.020[a]	0.965[a]	0.806[a]	0.777[a]	0.926[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SMB	0.373[a]	0.266[b]	0.448[c]	0.041	-0.056	-0.026
	(0.009)	(0.017)	(0.082)	(0.745)	(0.717)	(0.898)
HML	0.412[a]	0.561[a]	0.366[b]	0.138	0.393[c]	0.231
	(0.000)	(0.001)	(0.046)	(0.390)	(0.087)	(0.295)
UMD	-0.265[a]	-0.269[a]	-0.254[a]	-0.158[b]	-0.222[b]	-0.112
	(0.000)	(0.000)	(0.005)	(0.030)	(0.025)	(0.206)
Adj-R^2	90.17%	89.85%	74.64%	70.69%	65.69%	64.17%
N	55	50	47	55	50	47

Panel B: 24-month period after the month of the ASR announcement

	Equally-Weighted			Value-Weighted		
	Full Sample	High DA	Low DA	Full Sample	High DA	Low DA
Alpha	-0.057	-0.118	-0.027	-0.316	-0.594[b]	-0.085
	(0.754)	(0.595)	(0.909)	(0.113)	(0.037)	(0.749)
$R_m - R_f$	0.854[a]	0.881[a]	0.818[a]	0.767[a]	0.754[a]	0.769[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SMB	0.413[a]	0.497[a]	0.315[b]	0.131	0.090	0.092
	(0.002)	(0.002)	(0.048)	(0.323)	(0.627)	(0.606)
HML	0.160[b]	0.197[b]	0.137[c]	0.156[b]	0.255[b]	0.112
	(0.025)	(0.034)	(0.078)	(0.029)	(0.011)	(0.250)
UMD	-0.248[a]	-0.270[a]	-0.219[b]	-0.160[a]	-0.241[a]	-0.092
	(0.000)	(0.000)	(0.010)	(0.005)	(0.000)	(0.294)
Adj-R^2	94.06%	93.21%	89.29%	88.06%	84.81%	82.43%
N	67	62	59	67	62	59

Table 1.7 (cont'd)
Post-ASR long-run stock performance

This table presents the results of the Carhart (1997) four-factor calendar-time portfolio regressions. The dependent variable is the ASR firm portfolio returns in excess of risk-free rate. The intercept ("alpha") measures the average monthly abnormal portfolio return during the 12-month (Panel A) and 24-month (Panel B) period after the month of the ASR announcement. Firms with ASR quarter discretionary accruals (DA) above the sample median are classified in the high DA group; otherwise they are included in the low DA group. The models are estimated with weighted-least square regression, where the weighting vector is the number of firms in the relevant calendar month. p-values are reported in parentheses and based on White standard errors. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

Table 1.8
Earnings per share (EPS) performance around the ASR announcement

Panel A reports the quarterly EPS surprise around the ASR quarter (i.e., quarter 0). EPS surprise is defined as the difference between the actual EPS and the median consensus analyst estimate *four months* prior to the earnings announcement. Both actual and estimated values are obtained from the First Call database. Earnings surprises are measured in cents per share and winsorized at the 1% and 99% levels. Panels B and C report the median consensus analyst estimate around the ASR announcement date. Tests on means (medians) are based on t-test (Wilcoxon signed rank test). a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

Panel A: Quarterly EPS surprise (cents per share) around the ASR announcement quarter

Quarter	N	Mean	Median	Positive	Negative	Zero
-4	170	1.200	1.000[c]	51.18%	38.23%	10.59%
-3	167	1.737[b]	1.000[a]	55.09%	35.93%	8.98%
-2	169	2.083[b]	1.000[b]	53.85%	37.87%	8.28%
-1	170	-0.212	0.000	45.88%	42.35%	11.77%
0	175	-0.509	0.000	45.14%	44.57%	10.29%
1	174	-2.190[c]	0.000	43.68%	47.13%	9.19%
2	171	-2.725[c]	0.000	46.78%	43.28%	9.94%
3	171	-6.959[a]	-1.000[a]	37.43%	54.97%	7.60%
4	176	-7.989[a]	-1.000[b]	39.77%	51.14%	9.09%

Panel B: Consensus EPS estimate (cents per share) for the ASR quarter (i.e., quarter 0) by analysts who constantly follow the ASR firms beginning at least 120 days before the ASR

Last Consensus Analyst Estimate ... Days Before/After the ASR Announcement	N	Mean	Median	Total # of Analysts per Firm (Median)
120 days before the ASR	165	65.697	57.000	7
90 days before the ASR	165	65.606	56.000	7
60 days before the ASR	165	65.145	57.000	7
30 days before the ASR	165	63.667	55.000	7
10 days before the ASR	165	63.339	54.000	7
1 day before the ASR	165	63.048	54.000	7
10 days after the ASR	165	62.818	54.000	7
30 days after the ASR	165	62.879	54.000	7
Last consensus EPS estimate before the earnings announcement (Q_0)	165	62.030	54.000	7

Table 1.8 (cont'd)
Earnings per share (EPS) performance around the ASR announcement

Panel C: Consensus EPS estimate (cents per share) for the ASR quarter (i.e., quarter 0) – no restriction on the analyst following period

Last Consensus Analyst Estimate ... Days Before/After the ASR Announcement	N	Mean	Median	Total # of Analysts per Firm (Median)
120 days before the ASR	174	64.069	57.500	9
90 days before the ASR	175	64.034	57.000	9
60 days before the ASR	175	63.646	56.000	10
30 days before the ASR	175	62.103	54.000	11
10 days before the ASR	176	61.716	53.500	11
1 day before the ASR	177	61.367	53.000	11
10 days after the ASR	177	61.446	54.000	12
30 days after the ASR	177	61.356	53.000	12
Last consensus EPS estimate before the earnings announcement (Q_0)	177	60.610	53.000	12

Table 1.9

Quarterly median operating performance around the ASR announcement

Operating performance is measured by operating income scaled by the average of cash-adjusted total assets (i.e., total assets minus cash and cash equivalents) at the beginning and end of the quarter. Panel A reports unadjusted, industry-adjusted (i.e., firm's operating performance minus the median industry performance), and performance-adjusted operating performance (calculated using Lie's (2005) matching procedure). Panel B reports changes in unadjusted, industry-adjusted, and performance-adjusted operating performance. All numbers are in percentages. Significance of tests that levels of and changes in median operating performance are different from zero is assessed using Wilcoxon signed rank test. a, b, and c denote statistical significance at 0.01, 0.05, and 0.10 level, respectively.

Panel A: Levels of median operating performance (%)

Quarter	N	Unadjusted	Industry-Adjusted	Performance-Adjusted
-4	174	3.675[a]	0.675[a]	0.080[a]
-3	173	3.294[a]	0.623[a]	-0.003
-2	173	3.360[a]	0.467[a]	-0.016
-1	173	3.324[a]	0.596[a]	-0.031
0	174	3.476[a]	0.675[a]	-0.006
1	170	3.236[a]	0.609[a]	-0.022
2	167	3.292[a]	0.625[a]	-0.006
3	169	3.245[a]	0.796[a]	0.059
4	170	3.520[a]	0.794[a]	0.025

Panel B: Median changes in operating performance (%)

Quarter	N	Unadjusted	Industry-Adjusted	Performance-Adjusted
0 to +1	170	-0.010	0.004	0.026
0 to +2	166	-0.002	0.040	-0.010
0 to +3	167	0.011	0.019	0.069
0 to +4	168	-0.016	0.042	0.072

Table 2.1
Summary statistics

The sample includes 1,645 seasoned equity offerings (SEOs) over the period 1983 to 2006. Panel A reports pre-SEO size characteristics. All monetary variables are adjusted for inflation and represent millions of 2006 constant dollars. Total assets are end of period book assets in the year prior to the SEO. Market value is calculated as the closing price at the fiscal year-end (Compustat item PRCC_F) times the number of shares outstanding (Compustat item CSHO) in the year prior to the SEO. Market-to-book ratio is calculated as the market value of equity divided by the book value of common equity (Compustat item CEQ). Offer amount is the dollar amount of the SEO filed by the issuer. Panel B reports the yearly distribution. Panel C presents the industry distribution. Panel D displays the cross-classifications of financial constraint types.

Panel A: Size characteristics

	Total assets ($M)	Market value ($M)	M/B ratio	Offer amount ($M)
Median	175.86	221.87	2.499	66.86
Std. dev.	2,003.97	1,359.31	3.763	141.11

Panel B: Time distribution

Year	Freq	%	Cum Freq	%
1983	179	10.88	179	10.88
1984	27	1.64	206	12.52
1985	53	3.23	259	15.74
1986	63	3.83	322	19.57
1987	52	3.16	374	22.74
1988	18	1.09	392	23.83
1989	33	2.01	425	25.84
1990	35	2.13	460	27.96
1991	111	6.75	571	34.71
1992	75	4.56	646	39.27
1993	76	4.62	722	43.89
1994	50	3.04	772	46.93
1995	96	5.84	868	52.77
1996	115	6.99	983	59.76
1997	98	5.96	1,081	65.71
1998	47	2.86	1,128	68.57
1999	60	3.65	1,188	72.22
2000	69	4.19	1,257	76.41
2001	43	2.61	1,300	79.03
2002	59	3.59	1,359	82.61
2003	87	5.29	1,446	87.90
2004	79	4.80	1,525	92.71
2005	57	3.47	1,582	96.17
2006	63	3.83	1,645	100.00

Table 2.1 (cont'd)
Summary statistics

Panel C: Industry (two-digit SIC code) distribution

Industry	Codes	Freq	%
Mining, oil, and gas	10, 13	127	7.72%
Food products	20	25	1.52%
Paper and paper products	24, 25, 26, 27	50	3.04%
Chemical products	28	179	10.88%
Manufacturing	30, 31, 32, 33, 34	83	5.05%
Computer equipment and services	35, 73	247	15.02%
Electronic equipment	36	184	11.19%
Transportation	37, 39, 40, 42, 44, 45	123	7.48%
Scientific instruments	38	161	9.79%
Communications	48	39	2.37%
Durable goods	50	78	4.74%
Retail	53, 54, 56, 57, 59	96	5.84%
Eating and drinking establishments	58	36	2.19%
Entertainment services	70, 78, 79	37	2.25%
Health	80	53	3.22%
All others	16, 22, 23, 29, 47, 51, 52, 55, 82, 87, 99	127	7.72%

Panel D: Cross-classification of financial constraint types

	Firm Size		Payout Ratio		The WW Index		The SA Index	
	C	UC	C	UC	C	UC	C	UC
Firm Size								
Constrained (C)	548							
Unconstrained (UC)		548						
Payout Ratio								
Constrained (C)	360	174	826					
Unconstrained (UC)	118	266		548				
The WW Index								
Constrained (C)	424	4	420	82	548			
Unconstrained (UC)	9	434	94	332		548		
The SA Index								
Constrained (C)	449	0	382	101	417	11	548	
Unconstrained (UC)	10	404	146	288	26	409		548

Table 2.2
Summary statistics (medians) for the sample firms partitioned by their financial constraint status

	Size			Payout Ratio			The Whited-Wu Index			The Size-Age Index		
	C	Mid	UC	C	Mid	UC	C	Mid	UC	C	Mid	UC
Firm Characteristics												
Assets ($M)	44.84	175.86	958.39[a]	109.29	221.21	327.61[a]	50.59	175.96	921.16[a]	47.37	207.18	798.13[a]
Market value ($M)	80.33	210.15	801.19[a]	180.15	247.70	287.93[a]	94.47	201.68	700.68[a]	94.47	240.22	602.46[a]
Market-to-book ratio	3.336	2.520	1.877[a]	3.020	2.274	1.941[a]	3.341	2.466	1.880[a]	3.551	2.374	1.860[a]
Cash-to-assets ratio	0.157	0.071	0.036[a]	0.118	0.041	0.049[a]	0.163	0.072	0.036[a]	0.175	0.069	0.036[a]
Debt-to-assets ratio	0.112	0.227	0.336[a]	0.194	0.295	0.267[a]	0.110	0.248	0.314[a]	0.108	0.246	0.320[a]
Z-score	5.254	3.906	2.540[a]	4.208	3.614	3.209[a]	4.974	3.843	2.738[a]	5.431	3.753	2.683[a]
Cash flow volatility	0.072	0.043	0.028[a]	0.058	0.033	0.032[a]	0.083	0.039	0.026[a]	0.078	0.037	0.028[a]
Revenue volatility	0.213	0.165	0.127[a]	0.190	0.156	0.146[a]	0.206	0.165	0.128[a]	0.219	0.165	0.126[a]
Sales growth volatility	0.272	0.209	0.177[a]	0.267	0.180	0.173[a]	0.275	0.208	0.168[a]	0.294	0.220	0.157[a]
Industry-adjusted ROA (%)	3.439	2.474	1.585[a]	1.966	4.011	1.869	1.475	3.230	2.008[a]	3.299	2.648	1.574[c]
Payout ratio	0.000	0.000	0.051[a]	0.000	0.025	0.184[a]	0.000	0.000	0.087[a]	0.000	0.000	0.068[a]
Number of analysts	1.000	3.000	5.000[a]	2.000	3.000	3.000[a]	1.000	2.000	4.000[a]	1.000	3.000	4.000[a]
Offering Characteristics												
Offer amount ($M)	23.65	45.60	97.65[a]	45.50	43.10	54.70[a]	29.55	46.90	80.35[a]	27.90	49.50	76.30[a]
Offer amount / Market value	0.422	0.304	0.174[a]	0.316	0.270	0.244[a]	0.410	0.304	0.178[a]	0.406	0.280	0.191[a]
SEO within 2 years (mean %)	9.12	12.02	9.31	8.58	12.92	10.29	9.12	9.47	11.86	8.94	10.93	10.58
CEO Characteristics												
Stock ownership (%)	2.474	2.043	0.735[a]	1.320	1.749	1.782	1.637	2.457	1.113	2.469	2.446	0.781[a]
Exercisable options (%)	1.019	0.819	0.653[b]	0.965	0.749	0.672	1.102	0.711	0.552[a]	1.000	0.581	0.824
Unexercisable options (%)	0.810	0.576	0.442[a]	0.621	0.418	0.485	0.876	0.584	0.400[a]	0.794	0.576	0.448[a]
Age	52.00	53.00	54.00[a]	52.00	53.50	53.00	51.00	54.00	53.50[a]	51.00	53.00	55.00[a]

†a, b, and c denote the statistical significance of the difference in median firm, offering, and CEO characteristics between unconstrained (UC) and constrained (C) firms.

Table 2.2 (cont'd)
Summary statistics (medians) for the sample firms partitioned by their financial constraint status

This table reports the median firm characteristics (in the year prior to the offering) by financial constraint categories. Financial constraint status is determined based on four different measures: (1) firm size measured by total assets, (2) payout ratio, (3) the Whited and Wu (2006) index, (4) the Size-Age index of Hadlock and Pierce (2010). The procedure of categorizing firms into the financial constraint groups is described in section 3.1. The columns labeled as C, Mid, and UC represent the categories of financially constrained, moderately financially constrained, and financially unconstrained firms, respectively. Assets, market value, and M/B ratio are as defined in Table 2.1. Cash-to-assets ratio is cash (Compustat item CASH) divided by total assets in the year preceding the SEO. Debt-to-assets ratio is total debt (Compustat item DLC plus DLLT) divided by total assets in the year preceding the SEO. Altman's (1968) Z-score is a measure of probability of bankruptcy and calculated as follows: 1.2 * Working Capital (Compustat item ACT minus LCT) / Total Assets + 1.4 * Retained Earnings (Compustat item RE) / Total Assets + 3.3 * EBIT (Compustat item PI plus XINT) / Total Assets + 0.6 * Market Value / Total Liabilities (Compustat item LT) + 0.999 * Sales (Compustat item SALE) / Total Assets. Cash flow volatility is the standard deviation of cash flow (Compustat item IB plus Compustat item DP) deflated by total assets over the five year period (with a minimum of three years) prior to the SEO year. Revenue volatility is the standard deviation of sales deflated by total assets over the five year period (with a minimum of three years) prior to the SEO year. Sales growth volatility is the standard deviation of annual sales growth over the five year period (with a minimum of three years) prior to the SEO year. ROA is the income before extra ordinary items (Compustat item IB) as a percentage of lagged total assets. Industry-adjusted ROA is the firm's ROA minus the industry-median ROA. Payout ratio is defined as the ratio of dividends (Compustat item DVC plus Compustat item DVP) plus share repurchases (Compustat item PRSTKC) to operating income (Compustat item OIBDP). Payout ratio is set equal to 1 if a firm has negative operating income and positive payout. Number of analysts is the maximum number of analysts following the firm in the year prior to the offering and obtained from the First Call database for the period over 1990-2006. SEO2 ("SEO within 2 years) is a dummy variable equal to 1 if a firm issues another SEO during the two-year period following an offering and 0 otherwise. The data on CEO's option holdings and stock ownership are hand-collected from the last proxy statement filed by the issuers prior to the offering. This sample consists of 660 offerings (over the period 1997 to 2006) with available proxy statements on the SEC's website. Ownership is calculated as the number of shares held by the CEO divided by the number of shares outstanding prior to the offering. Exercisable (unexercisable) represents the number of exercisable (unexercisable) options held by the CEO divided by the number of shares outstanding prior to offering. Age is the CEO's age. The differences in firm characteristics between the constrained and unconstrained groups are tested using Wilcoxon signed rank test. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 2.3
Performance-adjusted discretionary current accruals around SEOs by financial constraint status

This table reports time-series of median and mean performance-adjusted discretionary current accruals (ADJDCA), as a percentage of total assets, from year -3 to year +3 relative to the seasoned equity offering (i.e., year 0). Financial constraint status is determined based on four different measures (i.e., firm size, payout ratio, the Whited-Wu index, and the Size-Age index) in the year prior to the offering. See section 3.1 for details of the procedure used to categorize firms into the financial constraint groups. Significance of tests that median (mean) DCA are different from zero is assessed using Wilcoxon signed rank test (t-test). Reported means and standard deviations are based on values winsorized at the 1% and 99% levels. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Year	-3	-2	-1	0	+1	+2	+3
		Performance-adjusted discretionary current accruals						
Panel A: Firm size								
Constrained (C)	Median	**0.88**[a]	**1.03**[a]	**0.96**[a]	**4.51**[a]	**1.94**[a]	**0.73**[b]	-0.22
	Mean	2.10[a]	2.35[a]	2.48[a]	6.28[a]	2.07[a]	0.77[c]	-0.21
	Std Dev	14.82	13.82	13.78	15.55	11.03	10.32	9.53
	N	545	545	545	548	523	494	456
Unconstrained (UC)	Median	0.07	-0.49	0.29	**0.53**[a]	**0.52**[b]	0.10	**-0.43**[b]
	Mean	0.32	0.01	0.59	1.31[a]	0.52[c]	0.03	-0.83[a]
	Std Dev	9.02	7.90	8.93	8.25	7.04	6.66	6.28
	N	539	543	546	548	522	496	468
	p-value (C ≠ UC)	0.0592	0.0029	0.0186	<0.0001	0.0030	0.0515	0.3051
Panel B: Payout ratio								
Constrained (C)	Median	**0.60**[b]	**0.95**[a]	**0.62**[a]	**2.96**[a]	**1.25**[a]	**0.49**[c]	-0.02
	Mean	1.42[a]	1.82[a]	1.51[a]	4.41	1.58[a]	0.50	-0.28
	Std Dev	13.56	12.34	12.27	13.28	9.45	9.01	8.35
	N	816	820	824	826	787	734	674
Unconstrained (UC)	Median	**0.36**[c]	-0.60	0.41	**1.15**[a]	0.25	-0.02	-0.18
	Mean	1.38[a]	0.19	0.99[b]	2.50	0.43	0.21	-0.34
	Std Dev	10.32	9.82	10.12	10.94	8.15	7.74	7.57
	N	540	540	544	548	525	496	460
	p-value (C ≠ UC)	0.7398	0.0013	0.1944	0.0015	0.0122	0.3711	0.5541
Panel C: The Whited and Wu index								
Constrained (C)	Median	**0.88**[a]	**1.39**[a]	**0.61**[a]	**3.90**[a]	**1.32**[a]	0.31	-0.26
	Mean	1.99[a]	2.53[a]	1.39[b]	5.52[a]	1.81[a]	0.27	-0.25
	Std Dev	14.51	13.17	12.90	15.35	10.83	10.24	9.37
	N	544	546	546	548	520	493	452

Table 2.3 (cont'd)
Performance-adjusted discretionary current accruals around SEOs by financial constraint status

Unconstrained (UC)	Median	-0.08	-0.50	0.38	**0.85**[a]	**0.42**[b]	-0.06	-0.16
	Mean	0.62	0.12	0.98[b]	1.92[a]	0.59[c]	0.04	-0.18
	Std Dev	8.99	8.57	9.77	8.74	7.14	6.90	6.48
	N	537	540	546	548	527	497	469
	p-value (C ≠ UC)	0.0653	0.0003	0.4803	<0.0001	0.0317	0.4684	0.7793
Panel D: The Size-Age index								
Constrained (C)	Median	**0.91**[a]	**1.02**[a]	**0.82**[a]	**4.12**[a]	**1.29**[a]	**0.78**[c]	-0.13
	Mean	3.01[a]	2.67[a]	2.37[a]	6.07[a]	1.60[a]	0.66	-0.23
	Std Dev	15.67	14.59	13.56	15.25	10.98	10.46	9.38
	N	544	544	545	548	516	487	444
Unconstrained (UC)	Median	0.22	-0.55	**0.64**[a]	**0.85**[a]	**0.47**[b]	-0.01	-0.26
	Mean	0.56	0.09	1.15[a]	1.98[a]	0.59[c]	0.08	-0.35
	Std Dev	8.03	7.50	8.43	9.25	7.34	6.34	6.45
	N	542	545	547	548	528	503	473
	p-value (C ≠ UC)	0.0169	0.0037	0.2368	<0.0001	0.0547	0.1135	0.6908

Table 2.4

Median regression of performance-adjusted discretionary current accruals in the year of the offering

This table presents the results of the median regression of performance-adjusted discretionary current accruals (ADJDCA), as a percentage of total assets, in the SEO year. The sample includes 1,645 offerings over the period 1983 to 2006. Each column is labeled with the financial constraint measure (i.e., firm size, payout ratio, the Whited-Wu (WW) index, and the Size-Age (SA) index) used to categorize the sample firms as constrained and unconstrained in the year prior to the offering (year -1). High-FC is a dummy variable equal to 1 if a firm is categorized as financially constrained under a sorting criterion and 0 otherwise. Medium-FC is a dummy variable equal to 1 if a firm is ranked in the middle tercile according to a financial constraint criterion and 0 otherwise. Litigation is a dummy variable equal to 1 if a firm is in one of the following industries: pharmaceutical/biotech (SIC codes: 2833-2836, 8731-8734), computer (3570-3577, 7371-7379), or electronics (3600-3674) and 0 otherwise. Big-N auditor is a dummy variable equal to 1 if the firm's annual report is audited by one of the Big-8, Big-6, Big-5 or Big-4 auditors depending on the year of the observation and 0 otherwise. Low (High) Governance Index is a dummy variable equal to 1 if the firm's G-index is less than (greater than or equal to) nine and 0 otherwise. Firms with missing G-index constitute the base category for the G-index dummy variables. Other variables are as defined in Tables 2.1 and 2.2. p-values are reported in parentheses and based on bootstrapped standard errors with 200 replications. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Size	Size	Payout	Payout	WW index	WW index	SA index	SA index
Sample Period	83-06	90-06	83-06	90-06	83-06	90-06	83-06	90-06
High-FC	4.682[a]	2.947[a]	1.156[b]	1.148[b]	3.711[a]	2.466[b]	3.538[a]	1.844[c]
	(0.000)	(0.006)	(0.023)	(0.037)	(0.000)	(0.011)	(0.000)	(0.051)
Medium-FC	1.488[b]	0.712	-0.498	-0.368	0.887[c]	0.781	0.877	0.729
	(0.031)	(0.376)	(0.428)	(0.657)	(0.080)	(0.274)	(0.127)	(0.212)
Ln(Market-to-book)	0.495	1.116[b]	1.465[a]	1.740[a]	0.675[c]	1.104[b]	0.427	1.008[b]
	(0.233)	(0.022)	(0.000)	(0.000)	(0.062)	(0.010)	(0.331)	(0.039)
Cash flow volatility	-0.569	1.505	0.429	2.079	1.380	1.901	-0.409	2.104
	(0.889)	(0.715)	(0.905)	(0.579)	(0.691)	(0.615)	(0.921)	(0.600)
Revenue volatility	-0.087	-0.866	-0.439	-1.848	0.332	-0.841	0.343	-1.186
	(0.959)	(0.659)	(0.777)	(0.337)	(0.836)	(0.655)	(0.839)	(0.533)
Sales growth volatility	-0.930	-1.329[b]	-0.903[c]	-0.935[c]	-0.642	-1.168[b]	-0.858	-1.438[b]
	(0.113)	(0.010)	(0.079)	(0.068)	(0.227)	(0.018)	(0.123)	(0.011)
Industry-adjusted ROA	0.063[a]	0.063[a]	0.073[a]	0.072[a]	0.080[a]	0.074[a]	0.070[a]	0.063[a]
	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)

Litigation	-1.398[c]	-1.516[c]	-1.596[b]	-1.903[b]	-1.436[b]	-1.806[b]	-1.136	-1.228
	(0.071)	(0.052)	(0.024)	(0.015)	(0.044)	(0.030)	(0.101)	(0.120)
SEO in 2 years	-0.222	-0.150	0.172	0.031	0.037	0.188	-0.056	0.014
	(0.756)	(0.839)	(0.815)	(0.967)	(0.955)	(0.807)	(0.942)	(0.986)
Debt-to-assets ratio	1.099	1.413	-0.807	0.155			-1.151	0.980
	(0.553)	(0.427)	(0.571)	(0.917)			(0.487)	(0.518)
Ln(Market Value)			-1.128[a]	-1.009[a]				
			(0.000)	(0.004)				
Ln(1 + Analyst)		-0.988[b]		-0.903[c]		-1.153[a]		-1.495[a]
		(0.014)		(0.078)		(0.004)		(0.001)
Big-N auditor		-1.687		-1.454		-1.413		-1.643
		(0.149)		(0.203)		(0.321)		(0.189)
Low governance index		0.614		0.839		0.446		0.544
		(0.462)		(0.312)		(0.594)		(0.542)
High governance index		-0.652		0.431		-0.642		-0.743
		(0.382)		(0.621)		(0.381)		(0.340)
Constant	-0.195	6.038[b]	8.369[a]	10.598[a]	0.875	6.663[b]	1.487	6.227[b]
	(0.868)	(0.050)	(0.000)	(0.003)	(0.334)	(0.026)	(0.149)	(0.048)
Year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,645	1,220	1,645	1,220	1,645	1,220	1,645	1,220
Pseudo R-squared	0.037	0.044	0.041	0.046	0.033	0.043	0.032	0.040

Table 2.5
Median regression of performance-adjusted discretionary current accruals in the year of the offering (controlling for CEO equity incentives)

	(1)	(2)	(3)	(4)
	Size	Payout	WW index	SA index
High-FC	3.115[a]	1.302[b]	2.584[a]	2.475[b]
	(0.003)	(0.034)	(0.004)	(0.031)
Medium-FC	1.061	0.028	0.254	0.931
	(0.149)	(0.974)	(0.715)	(0.205)
Ownership	0.069[b]	0.054[b]	0.069[a]	0.059[b]
	(0.015)	(0.044)	(0.007)	(0.022)
Exercisable	0.120	0.199	0.211	0.146
	(0.530)	(0.332)	(0.299)	(0.485)
Unexercisable	0.197	0.199	0.191	0.331
	(0.636)	(0.650)	(0.622)	(0.419)
CEO/Chairman	-0.288	0.215	-0.169	-0.100
	(0.621)	(0.714)	(0.764)	(0.866)
Ln(Age)	3.286	1.635	2.344	3.321
	(0.183)	(0.448)	(0.300)	(0.151)
Ln(Market-to-book)	1.052[b]	1.633[a]	1.001[b]	0.833[c]
	(0.030)	(0.001)	(0.033)	(0.073)
Cash flow volatility	0.338	1.382	1.362	1.055
	(0.939)	(0.749)	(0.739)	(0.830)
Revenue volatility	0.294	0.437	1.193	0.661
	(0.861)	(0.795)	(0.456)	(0.737)
Sales growth volatility	-1.126	-1.048	-0.707	-0.956
	(0.152)	(0.146)	(0.279)	(0.248)
Industry-adjusted ROA	0.055[b]	0.062[b]	0.061[a]	0.055[b]
	(0.024)	(0.012)	(0.006)	(0.030)
Litigation	-2.063[b]	-2.062[b]	-2.114[b]	-2.248[b]
	(0.022)	(0.014)	(0.012)	(0.014)
SEO in 2 years	-0.003	0.007	-0.021	0.214
	(0.998)	(0.994)	(0.983)	(0.819)
Debt-to-assets ratio	0.572	-0.630		-0.624
	(0.745)	(0.664)		(0.729)
Ln(Market value)		-0.752[b]		
		(0.028)		
Constant	-12.753	-2.746	-8.973	-12.576
	(0.191)	(0.747)	(0.303)	(0.172)
Year dummies?	Yes	Yes	Yes	Yes
Observations	660	660	660	660
Pseudo R-squared	0.049	0.054	0.047	0.045

Table 2.5 (cont'd)
Median regression of performance-adjusted discretionary current accruals in the year of the offering (controlling for CEO equity incentives).

This table presents the results of the median regression of performance-adjusted discretionary current accruals (ADJDCA), as a percentage of total assets, in the SEO year. The data on CEO's stock and option holdings are hand-collected from the last proxy statement filed by the issuers prior to the offering. The sample consists of 660 offerings (over the period 1997 to 2006) with available proxy statements on the SEC's website. CEO/Chairman is a dummy variable equal to 1 if the CEO is also the chairman of the company and 0 otherwise. Other variables are as defined in Tables 2.1, 2.2, and 2.4. p-values are reported in parentheses and based on bootstrapped standard errors with 200 replications. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 2.6
SEO announcement returns by earnings management strategy and financial constraint status

This table presents mean five-day cumulative abnormal returns (in percentages) centered around the SEO announcement date. Sample firms are independently sorted into terciles based on pre-SEO performance-adjusted discretionary current accruals (ADJDCA) and financial constraint measures. Firms in the lowest, middle, and highest discretionary accruals tercile are assigned to the conservative, moderate, and aggressive earnings management category, respectively. The procedure of categorizing firms into the financial constraint groups is described in section 3.1. Abnormal returns are calculated using the market model, in which the CRSP value-weighted index is the measure of market return. The market model parameters are estimated by OLS using a firm's daily returns over trading days -180 to -6 prior to its SEO announcement date. Significance of tests that the difference in mean cumulative abnormal returns between the conservative and aggressive groups is different from zero is assessed using t-test. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: *All firms*

	Earnings Management Strategy			
	Conservative	Moderate	Aggressive	Difference (C-A)
All firms	-2.584	-3.036	-3.702	1.118[b]

Panel B: *Size classification*

	Conservative	Moderate	Aggressive	Difference (C-A)
Unconstrained	-0.792	-1.922	-3.453	2.661[b]
Constrained	-4.140	-3.735	-4.399	0.259

Panel C: *Payout classification*

	Conservative	Moderate	Aggressive	Difference (C-A)
Unconstrained	-1.810	-2.071	-3.440	1.630[c]
Constrained	-3.371	-3.980	-4.022	0.651

Panel C: *The Whited-Wu index classification*

	Conservative	Moderate	Aggressive	Difference (C-A)
Unconstrained	-1.278	-1.588	-3.373	2.095[b]
Constrained	-3.604	-3.653	-4.358	0.754

Panel D: *The Size-Age index classification*

	Conservative	Moderate	Aggressive	Difference (C-A)
Unconstrained	-1.154	-2.025	-3.752	2.598[a]
Constrained	-4.403	-3.106	-4.176	-0.227

Table 2.7
OLS regression of SEO announcement returns

This table presents the results of OLS regression of five-day cumulative abnormal returns (CAR) around the SEO announcement date. Runup is the CAR over the period from 44 trading days before through 4 trading days before the SEO announcement. Volatility is the standard deviation of the market-model residuals. Other variables are as defined in Tables 2.4 and 2.6. To mitigate the impact of outliers, all the continuous variables are winsorized at the 1% and 99% levels. p-values are reported in parentheses and based on White standard errors clustered by firm. a, b, and c denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable = CAR[-2, +2]										
	All		Size		Payout		WW Index		SA Index	
			UC	C	UC	C	UC	C	UC	C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Conservative EM	0.011[b]	0.010[c]	0.027[a]	0.001	0.015[c]	0.004	0.022[b]	0.006	0.027[b]	0.004
	(0.036)	(0.080)	(0.002)	(0.913)	(0.100)	(0.592)	(0.015)	(0.575)	(0.015)	(0.725)
Moderate EM	0.005	0.006	0.013[c]	-0.006	-0.001	0.004	0.003	-0.001	0.010	-0.012
	(0.342)	(0.265)	(0.072)	(0.657)	(0.923)	(0.556)	(0.637)	(0.922)	(0.141)	(0.313)
Ln(Market-to-book)		0.000	0.003	0.000	-0.006	0.002	-0.001	-0.003	0.006	0.004
		(0.936)	(0.635)	(0.984)	(0.353)	(0.683)	(0.813)	(0.679)	(0.281)	(0.648)
Ln(Market value)		0.004[c]	0.000	0.010	-0.002	0.008	-0.001	0.013[c]	0.001	0.003
		(0.072)	(0.902)	(0.255)	(0.618)	(0.058)	(0.790)	(0.075)	(0.877)	(0.714)
Runup		-0.062	-0.041	-0.010	-0.050	-0.003	-0.021	-0.027	-0.024	0.007
		(0.277)	(0.207)	(0.653)	(0.133)	(0.858)	(0.457)	(0.239)	(0.417)	(0.750)
Volatility		-0.454[c]	-0.778[c]	0.081	-1.017[b]	0.271	-0.658[c]	0.292	-0.649	0.364
		(0.084)	(0.093)	(0.868)	(0.037)	(0.447)	(0.087)	(0.528)	(0.158)	(0.386)
Offer size		-0.001	-0.002	0.003	-0.018	0.002	-0.007	-0.002	-0.005	-0.008
		(0.916)	(0.928)	(0.889)	(0.286)	(0.879)	(0.691)	(0.929)	(0.751)	(0.626)
Litigation		-0.001	-0.004	0.003	0.001	-0.004	0.008	-0.001	0.001	-0.001
		(0.817)	(0.746)	(0.782)	(0.910)	(0.606)	(0.507)	(0.928)	(0.896)	(0.962)
Constant	-0.024	-0.036	0.002	-0.081	0.014	-0.064	-0.004	-0.105	-0.010	-0.070
	(0.000)	(0.054)	(0.956)	(0.071)	(0.627)	(0.050)	(0.878)	(0.009)	(0.719)	(0.081)
Year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,119	1,119	373	372	373	560	372	373	373	373
R-squared	0.024	0.043	0.131	0.071	0.147	0.050	0.139	0.089	0.142	0.093

Figure 2.1
Earnings management around SEOs by financial constraint status

This figure plots median performance-adjusted discretionary current accruals (ADJDCA), as a percentage of total assets, for constrained and unconstrained issuers from year -3 to year +3 relative to the seasoned equity offering (i.e., year 0).