News Management and Earnings Management around Accelerated Share Repurchases

by

Kai Chen

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Examining Committee Membership

The following served on the Examining Committee for this thesis. The decision of the Examining Committee is by majority vote.

External Examiner	NAME: Gordon Richardson Title: KPMG Professor of Accounting
Supervisor	NAME: Christine Wiedman Title: KPMG Professor of Accounting
Internal Member	NAME: Neil Brisley Title: Associate Professor of Finance
Internal Member	NAME: Changling Chen Title: Associate Professor of Accounting
Internal-external Member	NAME: Mikal Skuterud Title: Associate Professor of Economics

AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

There has been a growing trend in accelerated share repurchases (ASRs) in the last decade. ASRs are an alternative to commonly used open market repurchases (OMRs). In an ASR, a firm commits itself to repurchasing an announced number of shares through an investment bank at the average stock price during a pre-agreed period, with almost all shares immediately delivered at the inception of the ASR. I posit that firms have incentives to maximize the benefits of ASRs and offset the high opportunity costs associated with ASRs by deflating stock prices prior to ASRs. I find that firms alter news releases around the ASR initiation date and shift negative news from the post-initiation period to the pre-initiation period. Firms also report abnormally low accruals prior to ASRs to deflate reported earnings. Furthermore, I find that firms choose to use news management and earnings management in a manner that best aligns with and serves the ex ante motivations for ASRs. News management and earnings management appear to be successful in deflating stock prices prior to ASRs, and the market does not appear to see through both strategies at the ASR announcement date. However, as managed news releases and abnormal accruals reverse eventually following ASRs, I find that pre-ASR news management predicts short-term stock price performance, and that pre-ASR earnings management predicts long-term operating and stock price performance. Collectively, these findings suggest that firms strategically use their discretion in news releases and financial reporting around ASRs.

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Table of Contents

Examining Committee Membership ii
AUTHOR'S DECLARATION iii
Abstract iv
Acknowledgements v
Table of Contents vi
List of Figures ix
List of Tables x
Chapter 1 Introduction 1
Chapter 2 Background of ASR 7
2.1 ASRs and Share Repurchase Programs 7
2.2 Structure and Timeline of ASRs 9
2.3 Disclosure Requirements for ASRs 10
2.4 Difference between ASRs and OMR 12
Chapter 3 Literature Review 14
3.1 Introduction 14
3.2 Recent Literature on ASRs 14
3.3 Incentives for Managers to Affect Stock Prices 17
3.4 Motivations for Share Repurchase Programs 20
3.5 The Association between Pre-Event Earnings Management and Post-Event Operating Performance and Stock price performance 21
Chapter 4 News Management and Earnings Management Prior to ASRs 24
4.1 Hypothesis Development (Hypotheses 1–2) 24
4.1.1 Incentives for Managers to Deflate Stock Prices Prior to ASRs 24
4.1.2 Two Methods to Deflate Stock Prices Prior to ASRs 26
4.1.3 Hypotheses 28
4.2 Sample Selection and Research Design 28
4.2.1 ASR Sample 28
4.2.2 Firm-Generated News Sample 29
4.2.3 Measurement of News Management 32
4.2.4 Measurement of Earnings Management 33
4.2.5 Regression Models for Testing Hypotheses 1–2 35
4.3 Empirical Analysis 39
4.3.1 Descriptive Statistics of ASR Sample 39
4.3.2 Descriptive Statistics of Firm-Generated Press Releases 40
4.3.3 Estimation of Weekly Abnormal Negative News 43
4.3.4 Estimation of Quarterly Abnormal Accruals 46
4.3.5 Results of Testing Hypotheses 1–2 48
Chapter 5 The Association between ASR Motivations and Pre-ASR News/Earnings Management 51

5.1 Hypothesis Development (Hypotheses 3–4) 51
5.2 Research Design 52
5.2.1 Identification of Motivations for ASRs 52
5.2.1.1 Signal Undervaluation 52
5.2.1.2 Return Capital to Shareholders 54
5.2.1.3 Improve Capital Structure 54
5.2.1.4 Increase EPS 55
5.2.1.5 Defend Against Takeover Threats 55
5.2.2 Regression Models for Testing Hypotheses 3–4 56
5.3 Empirical Analysis 57
5.3.1 Descriptive Statistics and Correlations of Motivation Variables 57
5.3.2 Results of Testing Hypothesis 3–4 59

Chapter 6 The Association between Pre-ASR News/Earnings Management and Operating/Stock Price Performance 66
6.1 The Association between Pre-ASR News/Earnings Management and Pre-ASR Stock Price Performance 66
6.1.1 Hypothesis Development (Hypothesis 5) 66
6.1.2 Regression Models for Testing Hypothesis 5 67
6.1.3 Results of Testing Hypothesis 5 68
6.2 The Association between Pre-ASR News/Earnings Management and ASR Announcement Returns 71
6.2.1 Hypothesis Development (Hypothesis 6) 71
6.2.2 Regression Models for Testing Hypothesis 6 73
6.2.3 Results of Testing Hypothesis 6 74
6.3 The Association between Pre-ASR Earnings Management and Post-ASR Operating Performance 79
6.3.1 Hypothesis Development (Hypothesis 7) 79
6.3.2 Measurement of Post-ASR Operating Performance and Regression Model for Testing Hypothesis 7 80
6.3.3 Results of Testing Hypothesis 7 82
6.4 The Association between Pre-ASR News/Earnings Management and Post-ASR Stock Price Performance 84
6.4.1 Hypothesis Development (Hypothesis 8) 84
6.4.2 Measurement of Post-ASR Stock Price Performance and Research Design for Testing Hypothesis 8 85
6.4.2.1 Control-Firm Buy-and-Hold Abnormal Return Method 85
6.4.2.2 Calendar-Time Portfolio Method 87
6.4.3 Results of Testing Hypothesis 8 88
6.4.3.1 Results of the Control-Firm Buy-and-Hold Abnormal Return Method 88
6.4.3.2 Results of the Calendar-Time Portfolio Method 92
6.4.3.3 Further Discussion on the Association between Pre-ASR News Management and Post-ASR Stock Price Performance 94
6.4.3.4 Further Discussion on Pre-ASR News Management 97

Chapter 7 Additional Analyses 100
7.1 Real Earnings Management Prior to ASRs 100

7.2 Cross-Sectional Variation in News Management and Earnings Management Prior to ASRs 103
7.2.1 Sources of Cross-Sectional Variation in News Management and Earnings Management 104
7.2.1.1 ASR Size and Managers' Ownership 104
7.2.1.2 The Firm's Need to Meet Earnings Targets 104
7.2.2 Empirical Test Models and Predictions 105
7.2.3 Empirical Analysis 106
7.3 The Effect of Firm Size on the Measurement of News Management 110
7.4 The Robustness of the Choice of Pre-ASR Window for Testing News Management 111
7.5 Alternative Measures of Undervaluation 113
7.6 The Effect of the Fourth Fiscal Quarter on Pre-ASR Earnings Management 115
7.7 The Causality between ASRs and Pre-ASR News/Earnings Management 118
7.7.1 Previous Evidence in Favor of the Strategic Management Explanation 118
7.7.2 Additional Analyses in Favor of the Strategic Management Explanation 119
7.7.2.1 News/Earnings Management for 80 ASR Firms with Superior and Stable Pre-ASR Operating Performance 119
7.7.2.2 News/Earnings Management after Controlling for Operating Performance and Investment Opportunities 120
7.7.2.3 Bad News Management Earnings Forecasts Prior to ASRs 121
7.8 Heckman's Two-Stage Method 125
Chapter 8 Conclusion 133
References 135

List of Figures

Figure 1: The Dollar Value and the Number of ASRs from 2004 to 2013 8
Figure 2: The Structure and Timeline of an ASR 10
Figure 3: Weekly Abnormal Negative News around ASRs 45
Figure 4: Quarterly Abnormal Current Accruals around ASRs 48

List of Tables

Table 1: ASR Sample 40
Table 2: Firm-Generated Press Releases 42
Table 3: Estimation of Weekly Abnormal Negative News (Measure of News Management) 44
Table 4: Estimation of Quarterly Abnormal Current Accruals (Measure of Earnings Management) 47
Table 5: News Management Prior to ASRs 49
Table 6: Earnings Management Prior to ASRs 50
Table 7: Descriptive Statistics and Correlations of Motivation Variables 58
Table 8: News/Earnings Management Prior to ASRs under Various Motivations 61
Table 9: News Management Prior to ASRs under Various Motivations 63
Table 10: Earnings Management Prior to ASRs under Various Motivations 65
Table 11: Pre-ASR News/Earnings Management and Pre-ASR Stock Price Performance 70
Table 12: Pre-ASR News/Earnings Management and ASR Announcement Returns 75
Table 13: Earnings Response Coefficients around ASR Announcements 79
Table 14: Pre-ASR Earnings Management and Post-ASR Operating Performance 83
Table 15: Pre-ASR News/Earnings Management and Post-ASR Buy-and-Hold Abnormal Returns (BHAR) 89
Table 16: Pre-ASR News/Earnings Management and Post-ASR Calendar-Time Abnormal Returns (CTAR) 93
Table 17: Pre-ASR News Management and Post-ASR 5-Week Stock Price Performance 96
Table 18: Real Earnings Management Prior to ASRs 103
Table 19: Cross-Sectional Variation in News/Earnings Management Prior to ASRs 109
Table 20: News Management Prior to ASRs Using Various Pre-ASR Windows 113
Table 21: Regressions of Earnings Management for ASRs with the Fourth Fiscal Quarter Prior to ASRs and for ASRs with Non-Fourth Fiscal Quarter Prior to ASRs 117
Table 22: Additional Analysis on Causality between ASR and News/Earnings Management 123
Table 23: Heckman's Two-Stage Method for News Management and Earnings Management 129

Chapter 1

Introduction

The rapid growth in accelerated share repurchases (ASRs), an important innovation in share repurchases, has drawn considerable attention in business press and academic literature. In this research, I investigate whether firms strategically use discretion in news releases and financial reporting around ASRs to deflate stock prices.

ASRs started to gain momentum in 2004 and have since surpassed tender offers and privately negotiated repurchases, standing only second to open market repurchases (OMRs). From 2004 through 2013, $246 billions of stock was repurchased through ASRs. In 2013, ASR announcements (84) represented 14.3 percent of the total number of repurchase program announcements (587).[1] In a typical ASR, a firm commits itself to repurchasing an announced amount of shares through an investment bank. At the ASR commencement, the firm makes an upfront payment to the bank, and the bank borrows the firm's shares from existing shareholders and delivers these shares to the firm. The bank fulfills its obligation to return the borrowed shares by purchasing shares in the open market during a pre-agreed period. At the end of the period, the repurchase price is adjusted to the average stock price during that period, and the firm and the bank settle the price difference in shares or cash.

Two key features differentiate ASRs from OMRs. The first difference lies in the speed of share delivery. An ASR involves a substantial number of shares all being delivered at the ASR commencement. This is the "accelerated" part of the repurchase. In contrast, a firm usually

[1] The total number of repurchase program announcements is extracted from Capital IQ Buybacks Database and includes repurchase programs announced by firms listed on the New York Stock Exchange, the NASDAQ Stock Market, and the American Stock Exchange.

conducts OMRs in smaller increments and takes years to repurchase the same number of shares using OMRs. The second difference is the degree of credibility. An ASR obliges a firm by contract to repurchase its shares through an investment bank. In contrast, a firm has no legal obligation to repurchase any shares through OMRs. Thus, ASRs represent a more credible commitment to repurchase shares than OMRs. In sum, ASRs permit a firm to achieve its goals of share repurchases more quickly and credibly.

Most of the prior studies explore the immediacy and enhanced credibility of ASRs, and examine alternative motivations to explain why firms use ASRs instead of OMRs to implement a repurchase program (Marquardt, Tan, and Young 2009; Chemmanur, Cheng, and Zhang 2010; Bargeron, Kulchania, and Thomas 2011; Akyol, Kim, and Shekhar 2014; Kurt 2014). Unlike these studies, this research analyzes the stage where firms have decided to use ASRs and examine whether they deflate stock prices prior to ASRs to maximize the benefits of ASRs. Because the primary advantage of ASRs lies in the immediate and substantial retirement of shares at the inception of the program, firms may enhance the advantage by deflating stock prices prior to ASRs, thereby increasing the number of shares to be delivered at the front end. Furthermore, ASRs have higher opportunity costs than OMRs because firms effectively give up the flexibility to alter a repurchase program in response to subsequent changes in market conditions and cash availability, an option that has significant economic value (Dittmar and Field 2015). To the extent that the deflated stock prices may persist during the relatively short contract period, firms may partially offset the high opportunity costs of ASRs, since the ultimate repurchase price is determined by the average stock price during that period.

I focus on two tools available for firms to deflate stock prices prior to ASRs. The first is firm-generated *news management*. This means that firms may change the coverage and tone of

firm-generated press releases by releasing more negative press releases prior to ASRs. Ahern and Sosyura (2014) argue that firm-generated press releases are particularly suitable for news management because regulations for this type of news are much more lenient than those for financial statements, allowing for greater flexibility for firms to manage news flows. The second is downward accrual-based *earnings management*. This means that firms may deflate reported earnings prior to ASRs.

Using a sample of 365 ASRs announced by non-financial firms during the period 2004–2013 and a large-scale sample of firm-generated press releases retrieved from Factiva, I find abnormally high levels of negative press releases in a short window before the ASR commencement and abnormally low levels of negative press releases in a short window that follows, suggesting that firms shift negative press releases into the pre-commencement window and away from the post-commencement window. I also find that negative accruals are abnormally high in the quarter immediately before the ASR commencement. These findings suggest that firms use news management and earnings management to deflate stock prices prior to ASRs.

Next, I examine the effects on pre-ASR news management and earnings management of motivations for ASRs. If the deflation of stock prices prior to ASRs contradicts the motivations for ASRs in the first place, I expect that firms are less likely to use news management and earnings management. Consistent with my expectation, I find that firms are less likely to use news management and earnings management if ASRs are motivated by undervaluation and takeover concerns. I also find that firms use news management instead of earnings management if ASRs are motivated by increasing earnings per share (EPS), since downward earnings management will hurt EPS. These findings suggest that firms weigh available tools and select the one that serves their purpose best. A related finding is that firms just meeting the earnings target for the quarter

immediately before the ASR commencement are less likely to use earnings management, indicating that reducing repurchase prices is a secondary consideration to meeting earnings targets.

I then examine the association between pre-ASR news/earnings management and operating/stock price performance over specific periods. Specifically, I find that pre-ASR stock returns are negatively associated with pre-ASR news/earnings management, suggesting that news management and earnings management appear to be viable strategies. I also find that ASR announcement returns are not associated with pre-ASR news/earnings management. Thus, the market does not appear to see through news management and earnings management, and correct for them accordingly at the ASR announcement date. Further evidence shows that earnings response coefficients remain unchanged following ASR announcements, corroborating that ASR announcements will not alert investors to pre-ASR earnings management. However, if earnings deflation and resulting stock price deflation prior to ASRs result from opportunistic strategies rather than from changes in fundamentals, I expect to observe reversals of operating performance and stock price performance following ASRs eventually. Consistent with my expectation, I find a positive association between pre-ASR earnings management and operating/stock price performance for both one-year and two-year horizons following ASRs. In contrast, because firms simply shift negative news around ASR commencement in short windows, negative news is reversed quickly and I find a positive association between pre-ASR news management and stock price performance during a short window following ASRs.

The findings in this research provide evidence consistent with firms strategically managing news and earnings prior to ASRs. However, an alternative to the strategic management explanation is a timing one, where firms time ASRs to follow the periods of abnormally high negative news and accruals, and both pre-ASR negative returns and pre-ASR negative news/accruals simply

capture deteriorating prospects of ASR firms. Additional analyses appear to rule out the strategic timing explanation. First, the heightened scrutiny from auditors should reduce managers' discretion and make earnings management harder in audited quarters. Thus, the strategic management explanation predicts less earnings management if the pre-ASR quarter is an audited quarter, but the strategic timing explanation predicts no such difference as abnormal accruals are unrelated to earnings management in this explanation. The empirical results support the prediction of the strategic management explanation. Second, I examine a subset of ASR firms for which the strategic timing explanation should be less plausible. Specifically, I select 80 ASR firms who have superior and stable operating performance in the four consecutive quarters prior to ASRs. For this group of ASR firms, I still find evidence of pre-ASR news management and earnings management, which is consistent with the strategic management explanation.

This research is most related to prior studies that investigate financial reporting and voluntary disclosure practices prior to announcements of OMR programs (Brockman, Khurana, and Martin 2008; Gong, Louis, and Sun 2008; Rodríguez and Yue 2008). Because OMRs occur quietly in many small increments over years following announcements, it is hard to attribute pre-announcement practices to actual repurchase activities. In contrast, ASRs typically involve immediately repurchasing a large number of shares. Thus, ASRs provide a cleaner setting to investigate managers' strategic behaviors attributable to share repurchase decisions. In addition, Louis and White (2007) and Gong et al. (2008) find that firms exhibit different patterns of earnings management prior to tender offers than to OMRs, and ASRs can be seen as a hybrid combining some features of OMRs with others of tender offers. Thus, conclusions from prior OMR studies may not be generalized to ASRs.

This research also contributes to the literature in the following ways. First, the recent literature on ASRs primarily investigates why firms elect ASRs instead of OMRs, and this literature, collectively, does not provide consistent evidence (Marquardt et al. 2009; Chemmanur et al. 2010; Bargeron et al. 2011; Kurt 2014). To my knowledge, there is no research examining corporate news releases and financial reporting choices after firms have decided to conduct ASRs. This research fills the void and sheds light on financial and nonfinancial information conveyed by ASR firms. Second, most of the prior studies use management forecasts as a proxy for corporate voluntary disclosure. However, firm-generated press releases are much more extensive, from customer acquisition to product development. This research employs large-scale data of firm-generated press releases encompassing extensive types of contents across major media outlets, which allows me to study a richer set of voluntary disclosure. Third, it is unusual for firms to attempt to manage earnings downward and deflate stock prices. Prior literature identifies such attempts in limited settings, such as OMRs (Brockman et al. 2008; Gong et al. 2008; Rodríguez and Yue 2008), management buyouts (Perry and Williams 1994), and employee stock option reissues (Coles, Hertzel, and Kalpathy 2006). This research contributes to this line of research and analyzes a useful setting where firms' incentives may be opposite to the typical ones to manage earnings upward and inflate stock prices.

Chapter 2 introduces the background of ASRs. Chapter 3 discuss the related literature. Chapter 4 examines news management and earnings management prior to ASRs. Chapter 5 examines the association between pre-ASR news/earnings management and operating/stock performance over specific periods. Chapter 7 provides additional analyses and Chapter 8 concludes.

Chapter 2

Background of ASR

2.1 ASRs and Share Repurchase Programs

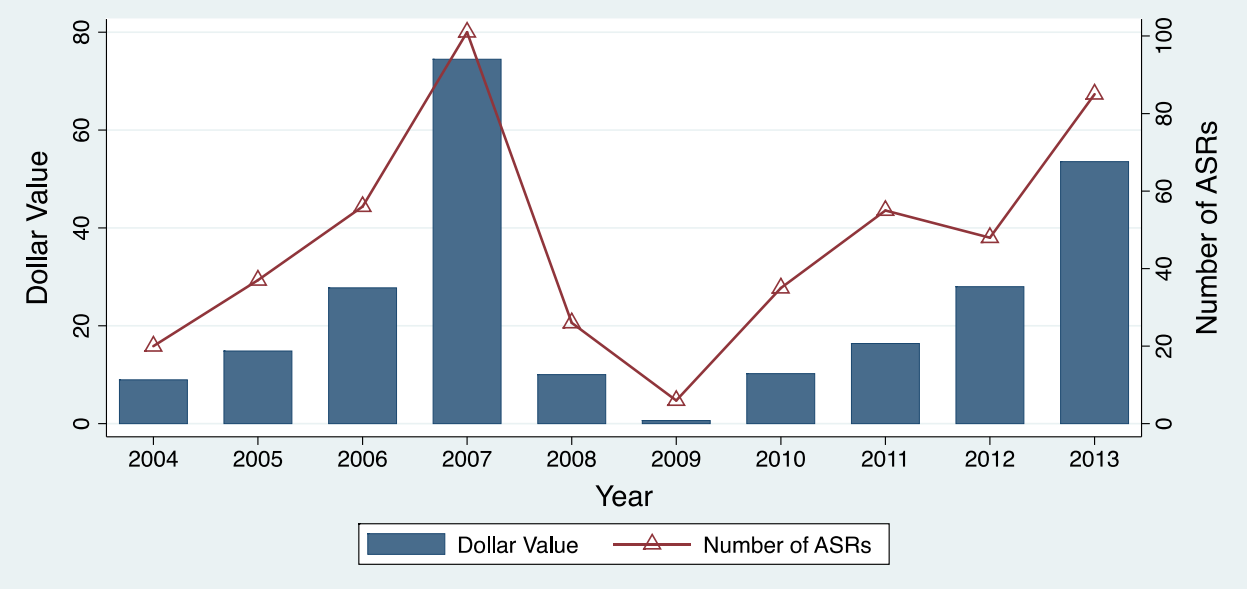
ASR is an innovative method that a firm can use to implement its share repurchase program. U.S. firms first started to adopt share repurchase programs in large numbers in the early 1980s. In 1998, U.S. firms distributed more cash to investors through share repurchases than through cash dividends for the first time in history (Grullon and Ikenberry 2000).

Before a firm repurchases its shares, the firm's Board of Directors must explicitly approve a share repurchase program with a specified amount of common stocks to be repurchased in an estimated period of time. Once approved, the firm usually implements the share repurchase program from time to time through one or a combination of four methods—OMRs, tender offers, privately negotiated repurchases and structural programs (typically ASRs)—although a share repurchase program does not oblige the firm to repurchase any particular amount of common stock, and the program may be suspended at any time at the firm's discretion. The following quote from Form 10-K of CVS Health Co. dated February 11, 2014 reveals the relation between an overall share repurchase program and its implementation methods:

> "On December 17, 2013, the Company's Board of Directors authorized a new share repurchase program for up to $6.0 billion of outstanding common stock (the "2013 Repurchase Program"). On September 19, 2012, the Company's Board of Directors authorized a share repurchase program for up to $6.0 billion of outstanding common stock (the "2012 Repurchase Program", and together with the 2013 Repurchase Program, "the Repurchase Programs") The Repurchase Programs, which were effective immediately, permit the Company to effect repurchases from time to time through a combination of open market repurchases, privately negotiated transactions, accelerated share repurchase transactions, and/or other derivative transactions. The Repurchase Programs may be modified or terminated by the Board of Directors at any time."

Of the four share repurchase methods, OMRs are the most commonly used and tender offers and privately negotiated repurchases remain relatively uncommon (Grullon and Michaely 2004; Gong et al. 2008). ASRs have gained popularity since 2004 and have been second only to OMRs thereafter (Bargeron et al. 2011). Figure 1 presents the dollar value and the number of ASRs from 2004 to 2013. Although they were rare before 2004, ASR announcements quickly increased to 12.8 percent of total share repurchase program announcements in 2007. ASRs lost momentum in 2008–2009 mainly because they are very costly when stock prices are highly volatile, which was the case during the financial crisis over that period (Bargeron et al. 2011). ASRs rebounded quickly following the financial crisis. In 2013, ASR announcements accounted for 14.3 percent of total repurchase program announcements.

Figure 1: The Dollar Value and the Number of ASRs from 2004 to 2013



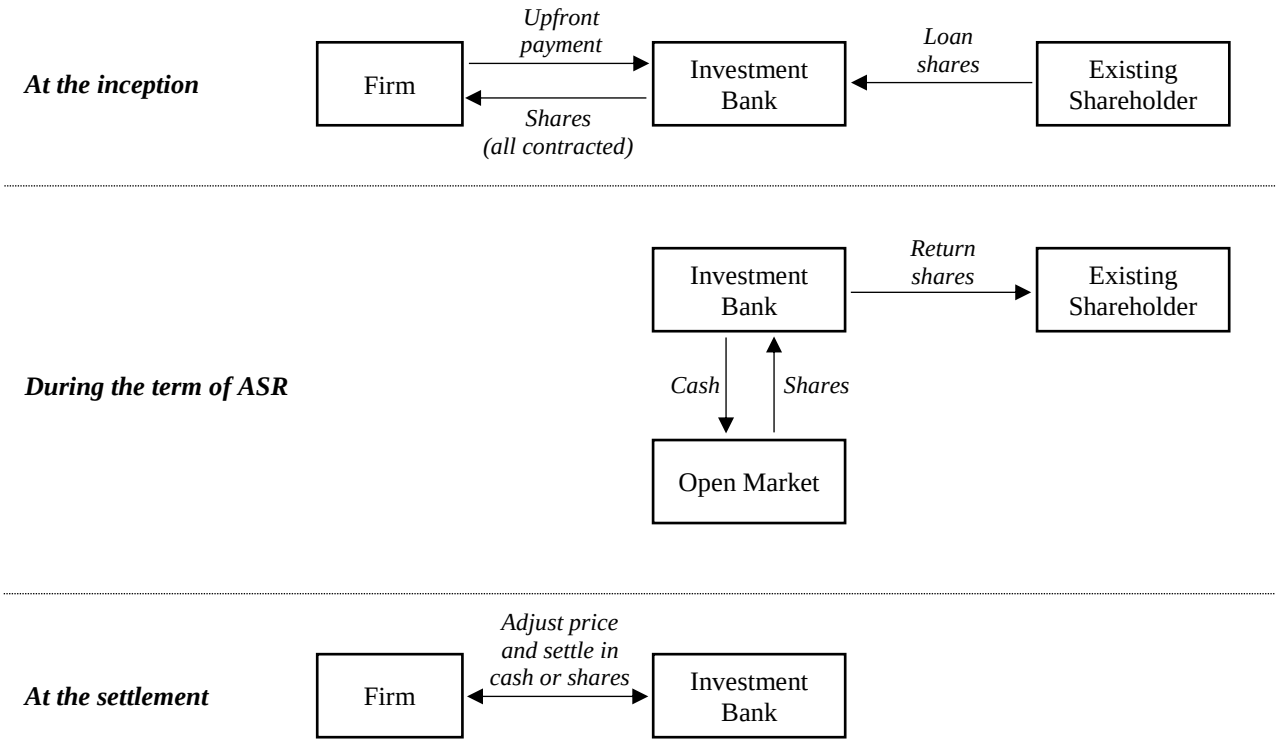
Note: Figure 1 presents the dollar value and the number of ASRs from 2004 to 2013 (including ASRs conducted by financial institutions).

2.2 Structure and Timeline of ASRs

Figure 2 depicts the structure and timeline of an ASR. In a typical ASR, a firm enters into a contract with an investment bank at the inception of the ASR. At that time, the firm makes an upfront payment to the bank, and the bank borrows the firm's shares in the market from existing shareholders and delivers those shares to the firm. The initial delivery is a substantial number of shares that the firm can repurchase with the upfront payment at a price that is equal to the closing price at the inception of the ASR. The bank fulfils its obligation to return the borrowed shares by purchasing shares in the open market during a pre-agreed period. Typically, the bank delivers additional shares to the firm at the end of that period, such that the total number of shares delivered by the bank throughout the ASR is equal to the upfront payment divided by the firm's average stock price during the ASR contract period minus a pre-agreed discount. Depending on the stock price performance and the initial delivery of shares, there may be uncommon situations where the total number of shares that should be delivered is less than the initial delivery. In such situations, the firm is obligated to return some of the shares to the bank, or pay cash instead. In other words, the ultimate repurchase price is adjusted to the average stock price during the ASR contract period minus a pre-agreed discount, although the repurchase price at the initial delivery is the closing price at the inception of the ASR. If the stock price rises during the ASR contract period, the firm will end up receiving fewer shares.

ASRs also can be tailored to incorporate additional features such as collars and caps. For example, the adjusted repurchase price in a collared ASR is subject to a price cap and floor, which further determine the minimum and maximum number of shares to be repurchased.

Figure 2: The Structure and Timeline of an ASR



Note: Figure 2 presents the structure and timeline of an ASR. In a typical ASR, a firm enters into a contract with an investment bank at the inception of the transaction. At that time, the firm makes an upfront payment to the bank, and the bank borrows the firm's shares in the market from existing shareholders and delivers those shares to the firm. The bank satisfies its obligation to return the borrowed shares by purchasing shares in the open market during a pre-agreed period of time. Typically, the firm receives additional shares at the end of that period although depending on the stock price performance and the initial delivery of shares, the firm may be obligated to return some of the shares to the bank, or pay cash instead.

2.3 Disclosure Requirements for ASRs

First of all, a firm must publicly disclose a share repurchase program prior to its implementation (the ex-ante disclosure). The disclosure may be made in Form 10-Q or 10-K, or by means of a press release or Form 8-K. A firm also must issue a public announcement disclosing any material modifications to a share repurchase program.

Beginning in January 2004, the SEC requires a firm to disclose its share repurchase activities for each month of the preceding fiscal quarter in Form 10-Q and 10-K (the ex-post

disclosure). The disclosure must include the number of shares purchased, the average price paid per share, the cumulative number of shares purchased as part of an announced share repurchase program and the maximum number of shares (or approximate dollar value) that may yet be repurchased under the program, regardless of the methods used to make those repurchases.

In addition to the ex-ante disclosure of its share repurchase program and the ex-post disclosure of its monthly share repurchase activities, a firm must satisfy varying disclosure requirements before implementing its share repurchase program each time, depending on the repurchase method to be used. OMRs usually entail no specific disclosure requirements before their commencement under current regulations. In other words, a firm can keep silent before repurchasing its shares in the open market. In contrast, ASRs entail much more disclosure requirements and thus are highly visible. Because an ASR agreement constitutes a material definitive agreement, a firm must disclose the details of an upcoming ASR transaction via Form 8-K or a press release within four business days after it enters into the agreement. Therefore, an ASR will be known to the market instantly and well before it is completed.[2] A firm usually repeats its ASR disclosure in Form 10-Qs and 10-Ks for consecutive accounting periods while the ASR lasts. The final delivery date is reported in a later Form 10-Q or 10-K when it is determined. A firm also may include the actual ASR agreement in Exhibit 10 to Form 8-K, 10-Q or 10-K. A firm usually discloses the name of the investment bank, the ASR initiation date, the ASR contract period, the dollar value of the ASR transaction, the number of shares delivered at the inception of the ASR transaction and the repurchase price adjustment method. A firm may also disclose the initial price it pays, which is usually the closing price on the ASR initiation date.

[2] The mean (median) days between the ASR announcement date and the ASR initiation date are 0.14 (0) days in my sample of 365 ASRs announced between 2004 and 2013.

2.4 Difference between ASRs and OMR

Because ASRs and OMRs are most commonly used to implement a share repurchase program and both involve repurchasing share in the open market, they are the main alternatives for repurchasing shares. Thus, I mainly compare ASRs and OMRs. ASRs differ from OMRs in two important ways. The first is the ability to take advantage of the flexibility inherent in a share repurchase program. Typically, a share repurchase program authorizes a firm to make repurchases from time to time over years using one or a combination of four available methods. However, the firm has no legal obligation to repurchase any shares under the authorization and can modify, suspend or discontinue the program for no reasons and without notice. Thus, a share repurchase program effectively contains a "flexibility option". A firm may announce a share repurchase program but not carry it out subsequently. Bonaimé (2015) indicates that firms complete only 77.9 percent of announced repurchase programs from 1998 to 2007 on average.[3] OMRs make the best use of such flexibility because OMRs permit a firm to quietly repurchase shares in small increments in the open market without any binding arrangement. A firm can determine the timing and size of any repurchase increment, subject to cash availability and market conditions. In contrast, a firm effectively gives up the flexibility option if using ASRs to implement its share repurchase program. This is because ASRs oblige a firm by contract to repurchase an announced number of shares in a pre-agreed period (four months on average) through an investment bank.[4] Thus, ASRs represent a more credible commitment to repurchase shares than OMRs.

[3] Bonaimé (2015) indicates that the completion rate is rising, possibly due to the 2003 modification to the SEC Rule 10b-18 that requires firms to disclose monthly share repurchase activities in Form 10-Qs and 10-Ks beginning in January 2004.

[4] Although an ASR agreement stipulates several default events (such as extraordinary dividend distribution and merger and acquisition) that may trigger early termination and cancellation, it is very rare that an ASR transaction ends up being cancelled. Only three out of 474 ASRs during 2004–2013 were cancelled because repurchasing firms were acquired.

The second difference lies in the speed of stock delivery. Although an ASR transaction takes four months to complete on average, it usually involves a large number of shares to be repurchased, almost all of which are delivered immediately on the first day of the transaction. This is the "accelerated" part of an ASR transaction. In contrast, a firm may otherwise take a number of quarters to repurchase the same amount of common stock through a series of smaller OMRs. This is because a firm usually conducts OMRs in a manner that avails itself of the Rule 10b-18's safe harbor protection (Atkins 2013). This rule sets forth conditions for the manner, timing, price and volume of repurchases. Specifically, the volume condition requires that aggregate repurchases on any given day not exceed 25 percent of the average daily trading volume during the preceding four weeks. Based on the World Bank's data, this daily limit is translated to 0.12 percent of outstanding shares on average while an average ASR repurchases 5.2 percent of outstanding shares instantly on the initiation date of the ASR.[5] Therefore, ASRs accelerate stock deliveries compared to OMRs.

[5] The World Bank reports that the annual stock trading turnover ratio in the United States is 124.6 percent for the period from 2011 to 2015 (see http://data.worldbank.org/indicator/CM.MKT.TRNR). Therefore, the daily trading volume cap is estimated at 124.6 percent / 252 trading days per year × 25 percent = 0.12 percent.

Chapter 3

Literature Review

3.1 Introduction

In this chapter, I review the extant research that is relevant to my dissertation. The first part of the review (Section 3.2) introduces the emerging literature on ASRs and its main research question. This section concludes with a discussion of the void in the extant research on ASRs. The second part of the review (Section 3.3) introduces a long line of literature in accounting and finance that studies corporate events in which managers have incentives to affect stock prices and the tools available to managers to do so. This section also discusses why ASRs provide a better setting to examine strategic behaviors of managers around share repurchases than OMRs. The third part of the review (Section 3.4) begins with a discussion of commonly cited motivations for share repurchase programs. Because ASR is an innovative way to implement a share repurchase program and my dissertation is intended to study managers' strategic choices in corporate press releases and financial reporting around ASRs, those initial motivations for share repurchase programs may play a role in shaping managers' behaviors around ASRs. The fourth and final part of the review (Section 3.5) introduces the literature on the association between pre-event earnings management and post-event operating performance and stock price performance.

This chapter is intended to provide a review of main themes my dissertation is related to. In subsequent chapters, I may introduce additional research that is related to specific details being discussed in those particular chapters.

3.2 Recent Literature on ASRs

Several research papers specifically study ASRs, most notably Bargeron et al. (2011). Given potential goals for a share repurchase program, Bargeron et al. (2011) argue that a firm uses

an ASR to implement a portion of its share repurchase program because the ASR portion enables the firm to more credibly and quickly achieve those goals, namely, the firm benefits from the enhanced credibility and immediacy. On the other hand, an ASR suggests less flexibility that the firm retains on whether and when to repurchases its shares in response to subsequent market conditions. If the benefits of enhanced credibility and immediacy outweigh the costs of less flexibility, the firm will include an ASR in its share repurchase program. They find evidence that the benefits of enhanced credibility and immediacy and the costs of lost flexibility are important determinants of ASR adoption.

Akyol et al. (2014) argue that the enhanced credibility and immediacy make ASRs a better device to defend against takeover threats than OMRs. They find that ASR firms are subject to significantly more takeover rumors than OMR firms. The takeover probability is significantly lower for both ASR and OMR firms when compared with the pre-announcement level, but the decrease for ASR firms is more pronounced.

Chemmanur et al. (2010) examine firms' rationale for using ASRs rather than OMRs to implementing share repurchase programs. They find that firms using ASRs have lower pre-announcement valuations, stronger positive announcement abnormal returns and better post-announcement operating and stock return performance than those using OMRs. They conclude that the intent to signal undervaluation drives firms to use ASRs instead of OMRs.

Marquardt et al. (2009) recognize that ASRs provide greater financial reporting advantages than OMRs. The number of outstanding shares for the calculation of EPS is reduced upon share deliveries in share repurchases. An ASR usually involves a large number of shares to be delivered instantly at the commencement of the ASR. As a result, for the same number of shares that would otherwise be repurchased using OMRs from time to time, ASRs can significantly accelerate the

EPS boosting effect. Marquardt et al. (2009) find that firms are more likely to use ASRs rather than OMRs when repurchases are accretive to EPS, when bonuses of chief executive officers (CEOs) are tied to EPS performance, when CEOs voluntarily leave the firm after the ASR and when CEOs are more entrenched. They conclude that short-term financial reporting benefits are a significant determinant in the decision to use ASRs.

The extant research provides mixed evidence on firms' rationale to use ASRs. For example, Bargeron et al. (2011) find that the average abnormal return prior to ASR announcements is indistinguishable from zero but is significant and negative for only-OMR announcements, an evidence that is inconsistent with ASRs being used to signal undervaluation as argued by Chemmanur et al. (2010). Michel, Oded, and Shaked (2010) also find that ASR firms exhibit poor stock price performance over the nine months following the repurchase, inconsistent with ASRs being more effective to signal undervaluation. Both Bargeron et al. (2011) and Chemmanur et al. (2010) challenge Marquardt et al. (2009) on the EPS-boosting motivation.[6] Kurt (2014) argue that these studies, collectively, do not provide consistent evidence on the rationale of ASRs. He finds that both the signaling undervaluation motivation and the EPS-boosting motivation explain the data.

Although the extant studies on ASRs noticeably differ, they generally share the main research question, that is, why firms use ASRs to implement its share repurchase program. However, another research question "what happens next" is largely ignored in the extant research on ASRs. My dissertation fills the void by examining how the ASR adoption decision subsequently affects corporate press releases and financial reporting choices around ASRs.

[6] As Bargeron et al. (2011) suggest, both Marquardt et al. (2009) and Chemmanur et al. (2010) classify firms as conducting an OMR-only repurchase program versus conducting an ASR-only repurchase program, which is inconsistent with the fact that both ASRs and OMRs can be used to complete a portion of a share repurchase program, and that it is not uncommon that firms choose to use them alternatively.

3.3 Incentives for Managers to Affect Stock Prices

There is a long line of literature in accounting and finance that examines various capital market settings where managers have incentives to affect stock prices strategically, including but not limited to OMRs (Brockman et al. 2008; Gong et al. 2008; Rodríguez and Yue 2008), Dutch-auction tender offers (Louis and White 2007), stock-for-stock mergers (Louis 2004; Ahern and Sosyura 2014), employee stock option awards and reissues (Aboody and Kasznik 2000; Coles et al. 2006), seasoned public offerings (Lang and Lundholm 2000; Shivakumar 2000; Cohen and Zarowin 2010), and insider trading (Cheng and Lo 2006).

The common theme of this literature is that managers intend to affect stock prices strategically. One tool that managers use to affect stock prices in the accounting literature is through voluntary disclosures. Brockman et al. (2008) examine management forecasts, a representative voluntary disclosure, around share repurchase programs (primarily through OMRs). They find that managers increase the frequency and magnitude of bad news forecast announcements during 30 days before the start of share repurchase programs, and that managers also, to a less extent, increase the frequency and magnitude of good news forecast announcements during 30 days after the completion of share repurchase program. They conclude that managers actively manipulate voluntary disclosures before share repurchases to secure lower repurchase prices. Other examples include: Cheng and Lo (2006) find managers increase the number of bad news forecasts to reduce the purchase price before they plan to purchase shares of their firms. Aboody and Kasznik (2000) show that CEOs change the timing of voluntary disclosures around stock option awards by delaying good news and expediting bad news to maximize their stock option compensation.

Unlike the accounting literature that largely examines voluntary disclosures in the form of management forecasts, the recent finance literature tends to examine a wider range of corporate disclosures including any firm-generated news appearing in public media, and to analyze qualitative characteristics of corporate disclosures such as linguistic tone (Solomon 2012; Ahern and Sosyura 2014; Edmans, Goncalves-Pinto, Wang, and Xu 2014; Huang, Teoh, and Zhang 2014). This growing literature suggests that firms can originate and disseminate corporate news to the public media to influence their stock prices prior to corporate events. For example, Ahern and Sosyura (2014) find that bidders in stock-for-stock mergers originate and disseminate corporate news strategically to increase their stock prices during the period when the stock exchange ratio is negotiated. The short-lived run-up of stock prices helps bidders to secure more favorable transaction terms. Edmans et al. (2014) show that CEOs strategically reallocate positive corporate news into months when their equity vests and away from prior and subsequent months. The altered news flow generates favorable media coverage and temporary run-up of stock prices and market liquidity, an effect that CEOs can take advantage of to cash out. Huang et al. (2014) find that managers manipulate the tone of earnings press releases to mislead investors about firm fundamentals prior to corporate events such as seasoned equity offerings, mergers and acquisitions and stock option grants. Solomon (2012) finds that firms influence their stock prices by engaging investor relations firms to increase the coverage of good news relative to bad news.

The other tool that managers use to affect stock prices in the accounting literature is through earnings management. Current accounting standards afford managers the flexibility and discretion in financial reporting. Prior studies find that firms manage reported earnings through discretionary accruals prior to corporate events. For example, Gong et al. (2008) find evidence of downward accrual-based earnings management prior to OMRs to reduce repurchase prices. Shivakumar

(2000) find evidence of accrual-based earnings management around seasoned equity offerings, but argue that this merely reflect firms' rational response to anticipated market reaction. Coles et al. (2006) find that firms report negative abnormal accruals during the period from the announcement of the cancellation of employee stock options through the time those options are reissued, but investors and analysts are not misled by such apparent manipulation. Cohen and Zarowin (2010) find that firms use real, as well as accrual-based, earnings management around seasoned equity offerings, and that firms trade off real versus accrual-based earnings management based on firm characteristics.

Of this literature, Brockman et al. (2008) and Gong et al. (2008) are most closely linked to my dissertation. However, a few concerns have been raised about the setting used by Brockman et al. (2008). Specifically, most share repurchase programs in their sample are implemented using OMRs. Those share repurchase programs spread over a period of several quarters or even years from the start to completion. In fact, the average repurchasing period of their sample is 510 days. But they only focus on a short period (i.e., 30 days) before the start of a share repurchase program. Nain and Vijh (2016) challenge whether a downward-biased management forecast (i.e., bad news) during 30 days before the start of a share repurchase program can suppress stock prices for long enough to allow for continuous share repurchases at reduced stock prices. This challenge can be alleviated in the setting of ASRs. An ASR can be considered as a sub-program of the parent share repurchase program. It involves repurchasing a large number of shares within a pre-agreed period, and almost all those shares are delivered instantly at the very beginning of the sub-program. The average contract period is four months, which enhances the likelihood that the deflated stock price immediately prior to the start of an ASR is sustained to reduce the final repurchase price (i.e., the average stock price during the contract period). Even if the deflated stock price before the start of

an ASR cannot be sustained during a large portion of the contract period, the ASR firm still may benefit because the lower price at initial delivery results in a higher number of shares being delivered up front, helping managers to achieve original goals of share repurchases more quickly (i.e., enhanced benefits of immediacy). Therefore, I argue that ASRs provide a cleaner setting to examine whether managers affect stock prices strategically than a setting mainly consisting of OMRs. My dissertation also differs from Brockman et al. (2008) and Gong et al. (2008) in that I examine a richer set of voluntary disclosures (i.e., firm-generated news through all media outlets) as well as earnings management prior to actual share repurchases. In contrast, Brockman et al. (2008) only examine management forecasts, and Gong et al. (2008) only focus on earnings management. However, as Ahern and Sosyura (2014) argue, the current regulatory environment affords managers great flexibility to use firm-generated news to influence stock prices.

3.4 Motivations for Share Repurchase Programs

Prior finance studies review commonly cited motivations for share repurchase programs in general. Many studies examine the popular notion that firms use share repurchase programs to convey their belief in undervaluation and signal better future prospects (e.g., Comment and Jarrell 1991). Grullon and Michaely (2004) investigate a second motivation, that is, firms use share repurchase programs to return capital to shareholders to mitigate the potential over-investment by management. Third, firms may use share repurchase programs to increase their leverage ratios and achieve the desired capital structure (Hovakimian, Opler, and Titman 2001). Fourth, because share repurchases reduce the number of shares used to calculate EPS, firms may use share repurchase programs to enhance EPS to meet or beat analysts' forecasts (Hribar, Jenkins, and Johnson 2006) or secure EPS-based bonus (Cheng, Harford, and Zhang 2015). Lastly, prior literature examines the motivation of share repurchase programs being used as a device to defend against takeover

threats (Billett and Xue 2007). Because managers' behavior may differ for alternative motives, I consider the effect of these alternative motives in my research design.

As ASR is just one method to implement a share repurchase program, the extant ASR literature explores the rationale for ASRs by examining those motivations generally cited for share repurchase programs. Because ASRs have a higher level of commitment and a faster share delivery, the extant ASR literature discussed in Section 3.2 concludes that ASRs can achieve those goals more credibly and quickly.

3.5 The Association between Pre-Event Earnings Management and Post-Event Operating Performance and Stock price performance

The extant literature on earnings management around specific corporate events studies the association between pre-event earnings management and post-event operating performance and stock price performance. This line of literature typically finds evidence of earnings management prior to specific corporate events and attributes pre-event earnings management to managerial opportunism. Furthermore, the extant literature typically finds reversals in operating performance (usually measured by return-on-assets) following those corporate events if managers use abnormal accruals to shift earnings between now and the future. However, the extant literature differs in whether there exists a negative association between pre-event earnings management and post-event stock price performance.

In the setting of seasoned equity offerings (SEOs), Rangan (1998) finds that SEO firms use positive abnormal accruals to manage earnings upward during the year of the SEO, and that these accruals predict both earnings reversals and poor market-adjusted stock returns in the following year. He interprets these findings as investors being misled by upward earnings management, overvaluing SEO firms temporarily and subsequently being disappointed by declines in earnings.

Teoh, Welch, and Wong (1998) find similar evidence and their interpretation is the same as the one offered by Rangan (1998). Shivakumar (2000) also examine earnings management around SEOs and, consistent with Rangan (1998) and Teoh et al. (1998), he finds that accruals are abnormally high before SEOs and that these accruals explain subsequent declines in net income. However, he does not find the negative relation between pre-SEO abnormal accruals and post-SEO stock price performance, as documented by Rangan (1998) and Teoh et al. (1998). Instead, he finds that pre-SEO abnormal accruals predict two-day negative price reaction to SEO announcements. He interprets these findings as investors being able to disentangle earlier earnings management and undo its effects at SEO announcements. He concludes that SEO firms' earnings management is not designed to mislead investors, but merely reflects SEO firms' rational response to anticipated stock market reaction at SEO announcements. He attributes the finding of negative relation between pre-SEO abnormal accruals and post-SEO stock price performance in Rangan (1998) and Teoh et al. (1998) to test misspecification.

In the setting of employee stock option reissuances, Coles et al. (2006) find evidence of downward accrual-based earnings management in the period following the announcement of the cancellation of employee stock options up to the time the options are reissued. However, because employee stock option reissuances involve a setting where incentives for mangers to manage earnings and stock prices are obvious ex-ante, analysts and investors are not misled by downward earnings management. Specifically, they find that pre-reissue abnormal accruals have little power in explaining pre- and post-reissue stock price performance and analysts' forecast errors.

In the context of OMR events, Lie (2005) documents improved operating performance following announcements of open market share repurchase programs over 1981–2000. Gong et al. (2008) and Rodríguez and Yue (2008) find evidence of downward accrual-based earnings

management prior to OMRs. Gong et al. (2008) find a significantly negative association between pre-OMR abnormal accruals and either post-OMR operating performance improvement or post-OMR long-term abnormal returns. They suggest that post-OMR superior stock price performance of OMR firms is driven by post-OMR realized earnings growth exceeding expectations formed based on pre-OMR managed earnings. Rodríguez and Yue (2008) find that investors do not unravel earlier earnings management when a repurchase program is announced.

In sum, the extant literature typically finds evidence of accrual-based earnings management around specific corporate events, and links pre-event earnings management to post-event operating performance and stock price performance. However, there is disagreement as to whether investors are misled by pre-event earnings management and whether they can correct for pre-event earnings management at event announcements. As the extant literature suggests, this may depend on whether incentives for managers to manage earnings are sufficiently transparent.

Chapter 4

News Management and Earnings Management Prior to ASRs

4.1 Hypothesis Development (Hypotheses 1–2)

In this section, I develop the first two hypotheses of my dissertation. I first discuss why managers have incentives to deflate stock prices prior to ASRs. Then I discuss the two available methods that managers can use to deflate stock prices. This section concludes with the formal expression of the first two hypotheses.

4.1.1 Incentives for Managers to Deflate Stock Prices Prior to ASRs

I posit that, in general, managers have incentives to deflate stock prices prior to the inception of an ASR. As discussed in Chapter 2, ASRs differ from OMRs in the level of commitment and the speed of share delivery. The advantages of ASRs over OMRs are the immediacy and the enhanced credibility of the share repurchase program. The greater the number of shares delivered upon entering into an ASR contract, the more salient the advantages are. In an ASR, the total dollar value of shares to be repurchased are determined at the signing of the contract, and the number of shares to be delivered upon entering into the contract is based on the stock price on the initiation date (the initial price). Therefore, deflating the initial price can accelerate the share delivery at the front end and help reap the full advantages of ASRs over OMRs.

Second, Chapter 3 discusses several common goals that may motivate a firm to pursue a share repurchase program. Although ASRs permit a firm to achieve those goals more rapidly and credibly, they entail a higher opportunity cost than OMRs otherwise do, and may incentivize the firm to minimize the opportunity cost by reducing the final repurchase price. Dittmar and Field (2015) and Ben-Rephael, Oded, and Wohl (2014) find that the flexibility option embedded in share repurchase programs, which OMRs can make better use of, allows firms to time the market and

repurchase shares at a significantly lower price than the average market price. Dittmar and Field (2015) report that the actual repurchase price paid by the median firm is 2.3 percent lower than the average closing price in the month of and six months following the repurchase, suggesting that the flexibility option has significant economic value. In contrast, ASRs forego the flexibility option and eliminate a firm's ability to actively time the market. The firm now passively pays the average stock price during the contract period, even if the stock price rises during that period. Although ASRs permit a firm to repurchase shares at a pre-agreed discount, the discount rate is almost half of what the firm otherwise would achieve through OMRs, as noted by Dittmar and Field (2015). Furthermore, firms have to retain investment banks and outside legal counsel in ASRs, which usually incur extra costs such as contract negotiation and legal fees compared to in-house OMRs.[7] Because the final repurchase price of an ASR is contingent on the average stock price during the contract period, to the extent that the deflated initial price can persist in the contract period, the attempt to deflate stock prices prior to an ASR will help reduce the final repurchase price and thereby the opportunity cost of the ASR.

Third, reducing the repurchase price effectively transfers wealth from leaving shareholders to remaining shareholders. The wealth transfer can benefit managers directly if managers have equity holdings in the firm, or indirectly by pleasing remaining shareholders who determine job security and compensation of mangers in the long run (Gong et al. 2008). To the extent that the deflated initial price can persist in the contract period, the attempt to deflate stock prices prior to an ASR will benefit managers through the wealth transfer effect.

[7] In ASRs in early years, a firm could pay a premium to the investment bank for acting as the firm's proxy to repurchase shares in the open market. The premium constitutes another extra cost. More recently, ASR firms no longer pay any premium to the bank. Instead, the bank offers a small discount to the firm. The bank makes profit by buying shares in the open market when the price is low and then selling the shares to the firm at a hopefully higher average stock price during the contract period (net of discount). In other words, the firm transfers the opportunity to time the market to the bank in ASRs.

The method for determining the final repurchase price (as the average price during the contract period) in ASRs also provides firms incentives to deflate stock prices during the contract period. However, the incentives to deflate stock prices during the ASR contract period may be weaker than prior to the ASR. First, the disclosure requirements for ASRs discussed in Chapter 2 suggest that the market will be aware of an ASR transaction as soon as a firm enters into the ASR contract and well before the completion of the ASR. Thus, the firm will be subject to heightened scrutiny during the contract period. In contrast, the firm has more latitude to affect stock prices quietly and strategically prior to the ASR announcement. Second, it takes 126 days on average for a firm to complete an ASR transaction. To reduce the average stock price during the contract period, a firm may have to suppress stock prices for a prolonged period, which may be perceived by the market as a negative signal about the firm. Third, certain embedded features such as collars or floors in ASRs may prevent firms from suppressing stock prices during the contract period. A collar or floor specifies the minimum repurchase price that a firm should pay, even if the stock price declines further. A review of ASR contracts reveals that the floor of allowable repurchase prices will easily be hit if the stock price drops by only 2.8 percent.[8] Therefore, a firm may not benefit significantly from stock price deflation if a collar or floor is present in an ASR.

4.1.2 Two Methods to Deflate Stock Prices Prior to ASRs

I start this chapter with a discussion that managers have incentives to deflate stock prices prior to an ASR. Now I discuss two methods managers can use to deflate stock prices prior to an

[8] The cap and floor are specified at a percentage of the average stock price within a sub-period of the ASR contract period (on average the first 20 days following the initiation date). Like the pre-agreed discount, the cap and floor percentages is usually redacted for confidentiality. Of 25 ASRs that explicitly disclose caps and floors, the median cap and floor are 110 and 96 percent of the average price during the specified period respectively, suggesting that the upper and lower bound of the final repurchase price are not symmetric around the reference price, and that the lower bound is tighter than the upper bound. Recall that the median discount rate is 1.2 percent, thus the upper and lower bound of the final repurchase price will be hit if the stock price goes up by 11.2 percent or goes down by 2.8 percent.

ASR. Following the extant literature discussed in Chapter 3, the first method I examine is through voluntary corporate disclosures. But I do not limit corporate disclosures only to management forecasts because corporate disclosures are very extensive by nature, from nonfinancial information such as customer acquisition and product development to financial information such as management forecasts. To examine a richer set of corporate disclosures, I follow the approach of the recent finance literature that examines a full spectrum of firm-generated news appearing in news outlets (Solomon 2012; Ahern and Sosyura 2014; Edmans et al. 2014; Huang et al. 2014). Generally, this literature examines two disclosure attributes that are largely ignored by using numerical information in financial statements and management forecasts. The first attribute is press coverage or press attention (e.g., Ahern and Sosyura 2014) and the second attribute is linguistic tone (e.g., Huang et al. 2014). My dissertation examines whether managers alter the timing, coverage and tone of firm-generated news prior to an ASR, which I refer to as firm-generated *news management*. Managers can deflate stock prices by increasing the coverage of firm-generated negative news in a targeted period of time. I focus on firm-generated news because news produced by outsiders (e.g., analysts and journalists) often contains analysis that firms cannot fully control. In contrast, firms retain substantial discretion on the timing, coverage and content of news generated by themselves. Ahern and Sosyura (2014) provide a complete analysis of the U.S. legal framework of corporate disclosures. They find that firm-generated news management is either permitted by current laws and regulations, or effectively not subject to legal control, making it a convenient and viable method for deflating stock prices prior to an ASR.

The other method for deflating stock prices is *earnings management* explored in the accounting literature. Although prior literature finds that firms alter real activities to manage earnings (Roychowdhury 2006; Zang 2012), I focus on accrual-based earnings management and

argue that managers may not resort to real earnings management to deflate stock prices prior to an ASR. First, real earnings management changes the timing and/or structuring of real transactions (e.g., increase research and development expenditures to deflate earnings), which may require valuable economic resources and have a lasting effect on future performance. Because ASRs are usually completed in a short period of time, managers presumably prefer a strategy that only has temporary effects. Second, managers do not have perfect control over the outcome of real earnings management because of uncertainty in altering real transactions (Zang 2012).[9]

4.1.3 Hypotheses

Based on my discussion, I express my predictions in the first two hypotheses:

H1: Managers use news management prior to an ASR to deflate stock prices. Specifically, managers increase the coverage of firm-generated negative news prior to an ASR.

H2: Managers use earnings management prior to an ASR to deflate stock prices. Specifically, managers use negative accounting accruals to deflate earnings prior to an ASR.

4.2 Sample Selection and Research Design

4.2.1 ASR Sample

Because ASRs were rare before 2004 (Bargeron et al. 2011), I hand-collect ASRs announced during 2004–2013. I first use Capital IQ's built-in function "Transaction Screen" and set the search criteria as "Buyback–Accelerated Share Repurchase". This produces a list of ASRs with a synopsis for each ASR. To verify and complement ASRs collected from Capital IQ, I use the full-text search provided by Morningstar Document Research database to search for ASRs in Form 8-K, 10-Q and 10-K and their exhibits during my sample period.[10] My search identifies a

[9] I perform a formal test for real earnings management in Section 7.1, and indeed find no evidence of real earnings management prior to ASRs.

[10] The keywords used in the full-text search are: (accelerated share repurchase) or (accelerated stock repurchase) or (accelerated share buyback) or (accelerated stock buyback) or (overnight share repurchase)

total of 474 ASRs. I drop three ASRs that were subsequently cancelled because the ASR firms were acquired before the pre-agreed completion date. I further drop 106 ASRs in the financial industry (Fama-French 44–47 or SIC 6000–6999) because the discretionary accruals model later used for measuring earnings management is not applicable to the financial industry that faces a different financial reporting and regulatory environment. For the final sample of 365 ASRs, I glean details of ASR transactions from Capital IQ synopses, SEC filings and actual ASR contracts, if available. I obtain financial data, stock prices and trading volume and analysts' forecasts of ASR firms from COMPUSTAT, CRSP and I/B/E/S, respectively.

4.2.2 Firm-Generated News Sample

I examine corporate press releases, the major source of firm-generated news for which firms have full control over the timing, coverage and content. Corporate press releases have a particular advantage of reaching the market rapidly and widely using the evolving information dissemination technology. The current regulatory environment for corporate press releases is very lenient, affording managers great flexibility in the content of corporate press releases and the way to "spin" them in terms of timing and coverage (Ahern and Sosyura 2014). All those factors make corporate press releases particularly suitable for active firm-generated news management.

Following several studies on press coverage (Bushee, Core, Guay, and Hamm 2010; Bushee and Miller 2012; Ahern and Sosyura 2014), I retrieve news articles from Factiva for each firm of the ASR sample. I utilize a firm's Intelligent Indexing Code assigned by Factiva to retrieve daily news articles related to the firm under the subject category "Press Releases" during the following four periods: (1) the benchmark period, defined as the 25 weeks that spans from week

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or (overnight stock repurchase) or (overnight share buyback) or (overnight stock buyback) or (forward repurchase transaction) or (discounted share repurchase) or (discounted share buyback) or (discounted stock repurchase) or (discounted stock buyback).

−35 week to −11 week prior to the ASR initiation date; (2) the pre-ASR period, defined as the 10 weeks immediately prior to the ASR initiation date; (3) the ASR contract period, from the ASR initiation date through the ASR completion date; and (4) the post-ASR period, defined as the 10 weeks following the ASR completion date. I designate press releases coming from newswire services as firm-generated press releases, since newswire services usually transmit corporate press releases without additional edits. The list of sources that I designate as newswires includes: PR Newswire (U.S.), Business Wire, M2 Presswire, ENP Newswire, Dow Jones Institutional News, GlobeNewswire, Dow Jones Newswires, Canada NewsWire, PR Newswire Europe, Regulatory News Service, PrimeNewswire, Thomson Reuters ONE, Business Wire Regulatory Disclosure, AAP MediaNet Press Releases, PrimeZone Media Network, Hugin Press Release, PR Newswire Asia, PR Newswire European TODWire, PR.com (press releases) and PR Newswire UK Disclosure. To make sure that news articles from those sources are indeed generated by the ASR firm, I remove (1) press releases that cover more than five firms and/or do not list the ASR firm as the first two covered firms;[11] (2) press releases that are tagged by Factiva as recurring pricing and market data; and (3) press releases with a title suggesting that they are not firm-generated press releases (e.g., analysts' notes). I include duplicates, reprints or highly similar articles from alternative news outlets, which means that my count of press releases measures the breadth of news coverage across multiple news outlets rather than unique news articles. This is a crucial design for my research because I consider news coverage as an important dimension of firm-generate news management, and including duplicates, reprints or highly similar articles from multiple news outlets permits me to measure how widely press releases are circulated, a dimension

[11] Factiva provides a list of covered firms for each news article. I randomly select 100 news articles to check if they are firm-generated press releases. I find that if a news article covers more than five firms, it is typically a note or alert issued by analysts or credit rating agencies. Also, if an ASR firm is not the first two covered firms, the news article is probably a press release generate by another firm.

that a count of unique press releases cannot measure. This approach is also used by Ahern and Sosyura (2014) who study corporate press releases during merger negotiations and Soltes (2009) who studies the impact of news dissemination on market trading activities. When a firm wants to distribute a document as a press release to the market, the firm can select one or more newswires services and send the document to them for distribution. Thus, managers have discretions on the number of news outlets that will carry the press release (i.e., the news coverage).

I use the negative words as a percentage of total non-numerical words as the measure of the tone of each firm-generated press release. This tone measure is used in Liu and McConnell (2013) and implicitly assumes that non-negative words are uninformative. As noted by Liu and McConnell (2013), this assumption is supported by a large body of literature in psychology which argues that negative information is more thoroughly processed than non-negative information. To classify negative words, I use the negative word list developed by Loughran and McDonald (2011) because the word list is comprehensive and specifically built for financial text. Kearney and Liu (2014) note in their survey paper that the Loughran and McDonald's word lists have become predominant in recent studies (page 175). Examples of negative words include: adverse, breach, detrimental, erode, penalties, terminate, threaten, unexpected and unsuccessful. I delete from each firm-generated press release boilerplate paragraphs that are less informative and usually ignored by investors (Li 2010). The two most common examples of boilerplate paragraphs are forward-looking statement disclaimer and generic company business description at the end of a firm-generated press release.[12] Some firms include those boilerplate paragraphs and others do not. The

[12] The boilerplate paragraphs contain certain textual patterns. The forward-looking statement disclaimer usually starts with a heading of "Forward-Looking Statements" and/or the leading paragraph usually starts with "This release contains 'forward-looking statements' within the meaning of Section 27A of Securities Act of 1933." The generic company description usually starts with a heading of "About <company name>". I write a Python script to search for these textual patterns using Python's regular expression capability. I random select 100 press releases and confirm that my text searching algorithm works very well.

removal of boilerplate paragraphs ensures that the tone measure will not be biased by the inclusion of boilerplate paragraphs, a practice that varies among firms.

I construct a measure, *NEGNEWS*, to capture both coverage and negative tone of firm-generated press releases. *NEGNEWS* is the sum of the negative tone of each firm-generated press release in a particular week:

$$NEGNEWS_{it} = \sum_{j=1}^{N} Percentage\ of\ Negtive\ Words_{jit} \quad (1)$$

where *i* is the ASR firm index and *t* is the week index. *N* is the count of firm-generated press releases in week *t*, and *j* refers to the *j*-th press release in that week. For example, if there are two firm-generated press releases in a week, and one contains 0.5 percent negative words and the other contains 0.2 percent negative words, then *NEGNEWS* for that week is 0.7 percent. Therefore, *NEGNEWS* is a composite measure of the coverage and negative tone of firm-generated press releases. It measures the total coverage of negative news. By definition, it increases with more press releases and/or proportionally more negative press releases.[13]

4.2.3 Measurement of News Management

In spirit of Lang and Lundholm (2000), Ahern and Sosyura (2014), and Huang et al. (2014), I decompose *NEGNEWS* into a normal component, which is justified by newsworthy events and firms' operating performance, and an abnormal component, which is a proxy for discretionary news management. To estimate the normal component in *NEGNEWS*, I use an event study approach that uses a firm as its own control. Specifically, for each ASR, I use the data from the

[13] Larger firms usually have more press releases than smaller firms. Thus, there may be a concern that larger firms may have a higher *NEGNEWS* anyway. I discuss this concern in more detail in Section 7.3. In short, although there is a strong positive correlation between the firm size and *NEGNEWS*, the measure of news management in this research is not weighted more heavily towards larger firms. Furthermore, the regression results in Table 5 and Table 9 remain quite similar after controlling for the firm size.

benchmark period (25 weeks) and regress *NEGNEWS* on several determinants identified in prior studies:

$$NEGNEWS_t = \beta_0 + \beta_1 EA_t + \beta_2 AGM_t + \beta_3 \Delta AF_t + \beta_4 VOL_t + \varepsilon_t \quad (2)$$

where *t* is the week index. *NEGNEWS* is the sum of negative tone of each firm-generated press release in week *t*. *EA* (*AGM*) is a dummy variable that equals one if there is an earnings announcement (annual general meeting) in week *t*, and zero otherwise. *ΔAF* is the change in analysts' consensus forecast of annual EPS from week *t*-1 to week *t*, scaled by the end-of-week stock price, and is used to control for the change in a firm's operating performance.[14] *VOL* is the trading volume in week *t* divided by the end-of-week number of outstanding shares, and is used to control for other events that may affect *NEGNEWS* (Ahern and Sosyura 2014).[15] Using the estimated coefficients, I predict *NEGNEWS* for each week in the pre-ASR period, the ASR contract period, and the post-ASR period. Both the pre-ASR period and the post-ASR period include 10 weeks, while the contract period of the ASR sample varies from two to 62 weeks. The difference between the actual *NEGNEWS* and its predicted value is the abnormal *NEGNEWS* for a particular week, which I use as the measure of firm-generated news management and denote as *NM*. By definition, *NM* becomes more positive with the increase in firm-generated news management.

4.2.4 Measurement of Earnings Management

I use quarterly abnormal accruals as the proxy for earnings management. Following Louis (2004), I use the discretionary current accruals model to estimate quarterly abnormal accruals because manipulation of long-term accruals such as depreciation has long-term consequences

[14] I use analysts' consensus forecast of annual EPS rather than reported earnings to control for firms' operating performance because reported earnings (annual or quarterly) have less variations in firm-specific ordinary least squares regressions based on weekly data.

[15] ASR announcements may result in higher trading volume thereafter. However, this possibility would bias against finding evidence of news management.

while ASR firms only need to deflate stock prices temporarily. Furthermore, investors traditionally rely more on earnings before interest, taxes, depreciation and amortization to value a firm. For each calendar quarter and Fama-French 48 industry, I estimate the following model using all non-financial firms (Fama-French 44–47 or SIC 6000–6999) in COMPUSTAT:

$$CA_i = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{ji} + \beta_5(\Delta SALE_i - \Delta AR_i) + \varepsilon_i \quad (3)$$

where *i* is the firm index. *CA* is current accruals (the difference between quarterly income before extraordinary items and quarterly operating cash flows less depreciation and amortization expense). Q_j is a dummy variable that equals one for fiscal quarter *j*, and zero otherwise. *ΔSALE* is the quarterly change in sales. *ΔAR* is the quarterly change in accounts receivable. All variables, including the fiscal quarter dummy variables, are scaled by the beginning-of-quarter total assets. I require at least 20 observations for each regression. The residuals from each regression represent quarterly abnormal current accruals.

Kothari, Leone, and Wasley (2005) suggest that performance-matched abnormal accruals enhance the reliability of the earnings management test. Their detailed simulation evidence indicates that performance-matched abnormal accruals are well specified and powerful under most circumstances. By controlling for similar performance characteristics, researchers are able to attribute the differences between the abnormal accruals of event firms and those of control firms to the treatment event of interest with more confidence. Therefore, I adjust the estimated abnormal accruals for performance. Following Louis and White (2007), Gong et al. (2008), Louis, Robinson, and Sbaraglia (2008), for each calendar quarter and Fama-French 48 industry, I create five portfolios by sorting COMPUSTAT firms into quintiles based on return-on-assets from the same quarter in the previous year. I also require at least five firms for each portfolio. The performance-

matched abnormal accruals for a given firm are the abnormal accruals for that firm minus the median abnormal accruals for the portfolio to which that firm belongs. Gong et al. (2008) suggest that the portfolio matching approach controls for performance as well as random effects resulting from other events that could influence accruals, such as executive compensation and insider trading. I use performance-matched abnormal accruals for a particular quarter as the measure of earnings management and denote it as *EM*. By definition, *EM* becomes more negative with the increase in downward earnings management. To be consistent with *NM* and for expositional convenience, I multiply *EM* by −1 so that hereafter both *NM* and *EM* become more positive with the increase in news management and earnings management activities.

4.2.5 Regression Models for Testing Hypotheses 1–2

Using an event study approach described in Section 4.2.3, I estimate the abnormal level of negative news coverage for each week during the period from week −10 before the ASR initiation date through week +10 after the ASR completion date. I subsequently split the entire period into five sub-periods: (1) week −10 to week −6 before the ASR initiation date, I denote this sub-period as *NMPRE2*; (2) week −5 to week −1 before the ASR initiation date, which I denote as *NMPRE1*; (3) the first five weeks of the ASR contract period, which I denote as *NMDUR1*; (4) the sixth week to the last week of the ASR contract period, which I denote as *NMDUR2*; and (5) week +1 to week +10 after the ASR completion date, which I denote as *NMPOST*. The third (*NMDUR1*) and the fourth (*NMDUR2*) sub-periods constitute the ASR contract period. Because the contract period of the ASR sample varies from two to 62 weeks, the fourth (*NMDUR2*) sub-period may include up to 57 weeks for an ASR. There are several reasons that I split the entire period in this manner. First, news management, if perfectly employed, should be used to deflate stock prices within a short-time window before the ASR initiation date. Therefore, I expect that managers will not increase

negative news coverage until that short time window starts, and am particularly interested in the five weeks immediately before the ASR initiation date. Second and more importantly, my dissertation is intended to shed light on how and when managers use news management versus earnings management. On average, the preceding earnings announcement leads the ASR initiation date by 33 days. Thus, I use five weeks in an attempt to examine the period in which ASR firms decide to use either earnings management or firm-generated news management, or both.[16] Third, I am also interested in the first five weeks of the ASR contract period in an attempt to examine whether there is a negative news shifting from the five weeks after the ASR initiation date to the five weeks before. Lastly, because I have no predictions for the post-ASR period, I treat the 10 weeks after the ASR completion date homogeneously and do not split those 10 weeks any further.

To test Hypothesis 1, I use the following regression model:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} + \varepsilon_{it} \qquad (4)$$

where *i* is the ASR firm index and *t* is the week index. *NM* is the abnormal negative news in week *t*. Higher values of *NM* represent more price-deflating news management. *NMPRE1* is a dummy variable that equals one if the week falls in the period from week −5 to week −1 before the ASR initiation date, and zero otherwise.[17] *NMDUR1* is a dummy variable that equals one if the week falls in the first five weeks of the ASR contract period, and zero otherwise. *NMDUR2* is a dummy variable that equals one if the week falls in the period from the sixth week to the last week of the ASR contract period, and zero otherwise.[18] *NMPOST* is a dummy variable that equals one if the

[16] As a robustness test for this design choice, I use other pre-ASR news management windows from one week up to 10 weeks prior to ASRs. In short, the results are robust to the design choice. See more details in Section 7.4.

[17] I define week −1 as the seven-day period immediately before the ASR initiation date. All other weeks are defined relative to week −1.

[18] Because of the varying duration of contract period, the number of observations with *NMDUR2* = 1 varies across ASRs. To mitigate the concern about the effect of the varying duration of contract period on the regression results, I rerun the regressions using the fixed duration of contract period. Specifically, I first

week falls in the period from week +1 to week +10 after the ASR completion date, and zero otherwise. The regression model enables me to use all available weeks so as to increase the statistical power of the test. I include firm fixed effects that capture any time-invariant characteristic of the firm, which can alleviate the concern that omitted firm characteristics may explain a firm's abnormal level of negative news coverage. I also include year fixed effects to account for the possible correlation within the firm cluster (Petersen 2009).[19] α_0 is interpreted as the average of weekly abnormal negative news during the period from week −10 to week −6 before the ASR initiation date. If managers use news management to deflate stock prices prior to an ASR as I predict in Hypothesis 1, I should expect $\alpha_1 > 0$ in Equation (4).

To test Hypothesis 2, I first use the approach described in Section 4.2.4 to estimate the performance-matched abnormal accruals for each quarter during the period from quarter −3 before the ASR initiation date through quarter +3 after the ASR completion date.[20] Using a similar approach in the test of Hypothesis 1, I subsequently split the entire period into five sub-periods: (1) quarter −3 to quarter −2 before the ASR initiation date, which I denote as *EMPRE2*; (2) quarter −1 before the ASR initiation date, which I denote as *EMPRE1*; (3) the first quarter of the ASR

remove the ASRs whose contract period is less than 10 weeks. Next, for each ASR included in the regressions, I remove the weeks which start after the 10th week of the contract period. As a result, each ASR included in the regressions has 10 weeks observations for the contract period (i.e., five observations with *NMDUR1* = 1 and the other five observations with *NMDUR2* = 1). The results remain qualitatively unchanged for the regressions in Table 5 and Table 9.

[19] The *EM* and *NM* in Equation (4) and Equation (5) are generated variables in that they are constructed based on estimates obtained from other regressions in Equations (2) and Equation (3). Thus, they carry with them sampling variability not accounted for when they are used as dependent variables in other regressions. This may cause them to generate heteroskedasticity in the estimated regressions. In addition, the residuals of a given firm may be correlated across periods for a given firm. I thank Tony Wirjanto and Mikal Skuterud from the University of Waterloo for pointing this out and suggesting that I correct the standard errors for heteroskedasticity and within-cluster dependence.

[20] I define quarter −1 as the fiscal quarter for which the earnings were last announced before the ASR initiation date. All other quarters are defined relative to quarter −1.

contract period, which I denote as *EMDUR1*; (4) the second quarter to the last quarter of the ASR contract period, which I denote as *EMDUR2*; and (5) quarter +1 to quarter +3 after the ASR completion date, which I denote as *EMPOST*. Because the contract period of the ASR sample varies from zero to three quarters, the fourth (*EMDUR2*) sub-period may include up to two quarters for an ASR.[21] I am particularly interested in the fiscal quarter before the ASR initiation date and the quarter after. The regression model used to test Hypothesis 2 is:

$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it} \qquad (5)$$

where *i* is the ASR firm index and *t* is the quarter index. *EM* is the abnormal current accruals in a particular quarter, multiplied by −1. That way, higher values of *EM* represent more price-deflating earnings management, consistent with *NM*. *EMPRE1* is a dummy variable that equals one if the quarter is quarter −1 before the ASR initiation date, and zero otherwise. *EMDUR1* is a dummy variable that equals one if the quarter is the first quarter during the ASR contract period, and zero otherwise. *EMDUR2* is a dummy variable that equals one if the quarter is any other quarter than the first one during the ASR contract period, and zero otherwise. *EMPOST* is a dummy variable that equals one if the quarter is quarter +1, +2, or +3 after the ASR completion date, and zero otherwise. I include firm and year fixed effects and control for heteroskedasticity. If managers use earnings management to deflate stock prices prior to an ASR as I predict in Hypothesis 2, I should expect $\beta_1 > 0$ in Equation (5).

[21] Because of the varying duration of contract period, the number of observations with *EMDUR2* = 1 varies across ASRs. To mitigate the concern about the effect of the varying duration of contract period on the regression results, I rerun the regressions using the fixed duration of contract period. Specifically, I first remove the ASRs whose contract period is less than 2 quarters. Next, for each ASR included in the regressions, I remove the quarters which start after the second quarter of the contract period. As a result, each ASR included in the regressions has two quarters observations for the contract period (i.e., one observations with *EMDUR1* = 1 and the other observations with *EMDUR2* = 1). The results remain qualitatively unchanged for the regressions in Table 6 and Table 10.

4.3 Empirical Analysis

4.3.1 Descriptive Statistics of ASR Sample

Table 1 Panel A reports the frequency of ASRs by year. The number of ASRs increases steadily each year since 2004 and reaches a peak of 69 in 2007. ASR transactions dropped sharply during 2008–2009, which Bargeron et al. (2011) attribute to the increased variability of stock prices during the financial crisis over that period. The value of the flexibility option, which ASRs forgo, is increasing in the volatility of ASR firms' stock prices. Therefore, greater stock market volatility makes ASRs less attractive over that period. ASR transactions starts to rebound strongly in 2010. Table 1 Panel B reports the frequency of ASRs by industry. I identify at least six ASRs in each industry of the Fama-French 12 industry classification. Business equipment, wholesale and retail and healthcare are top three frequently represented industries. Table 1 Panel C reports the characteristics of ASR structure and timeline. The average size of ASRs is $575 million, or 5.2 percent of the total outstanding equity. For those firms that select ASRs to implement their share repurchase programs, 43.2 percent of a share repurchase program is completed through ASRs on average, suggesting that ASRs are clearly significant share repurchase events. The average contract period is 126 days. 26 percent of ASRs incorporate additional features such as collars, caps, or floors. ASR firms usually redact the discount rate applied to the repurchase price if they disclose the actual ASR contracts. The average discount rate is 1.3 percent based on 24 ASRs that disclosed their discount rates. A review of actual ASR contracts reveals that the vast majority of ASRs do not involve ASR firms paying commissions to investment banks.

Table 1: ASR Sample

Panel A: ASR by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
ASRs	14	27	31	69	19	5	29	54	42	75	365

Panel B: ASR by Industry

	Number of ASRs	Percentage
Business equipment	85	23.3
Wholesale, retail, and some services	63	17.3
Healthcare, medical equipment, and drug	48	13.2
Manufacturing	41	11.2
Utilities	32	8.8
Consumer non-durables	19	5.2
Telephone and television transmission	18	4.9
Chemicals and allied products	12	3.3
Consumer durables	7	1.9
Oil, gas, and coal extraction and products	6	1.6
Other	34	9.3
	365	100

Panel C: ASR Characteristics

	N	Mean	Median	Min	Max
Amount ($ million)	365	575	250	1.7	12,852
Percentage of equity	365	5.2%	4.0%	0.3%	31.2%
Percentage of announced program	365	43.2%	36.8%	0.6%	100%
Days of contract period	365	126	106	15	437
ASR with collar, cap, or floor	365	0.26	0	0	1
Discount rate	24	1.3%	1.2%	0.2%	3.8%

Note: Table 1 includes 365 ASRs announced by non-financial firms from 2004 through 2013. Panel A reports the frequency of announced ASRs by year. Panel B reports the frequency of announced ASRs by industry. Panel C reports the ASR size in million dollars, the percentage of outstanding shares repurchased in the ASR, the percentage of prevailing repurchase program implemented through the ASR, the days of contract period, the frequency of ASRs with features such as a collar, cap, and/or floor, and the discount rate to repurchase price.

4.3.2 Descriptive Statistics of Firm-Generated Press Releases

I search in Factiva press releases generated by ASR firms from week −35 before the ASR initiation date through week +10 after the ASR completion date and end up with a large-scale dataset of 37,265 press releases. Table 2 Panel A presents the number of press releases by media outlets. The two dominant outlets are PR Newswire (U.S.) and Business Wire, through which 33.8 percent and 26.0 percent of those press releases are disseminated. They are followed by ENP

Newswire (10.9 percent) and M2 Presswire (10.6 percent). Table 2 Panel B indicates that the average non-numeric word count of those press releases is 517, and the average percentage of negative words is 0.73 percent.[22] I compare the percentage of negative words across the benchmark period (week −35 to week −11 before the ASR initiation date), the pre-ASR period (week −10 to week −1 before the ASR initiation date), the ASR contract period (varying number of weeks) and the post-ASR period (week +1 to week +10 after the ASR completion date). Table 2 Panel C indicates that press releases in the earlier five weeks of the pre-ASR period (week −10 to week −6) contain a very similar percentage of negative words to the benchmark period. However, the later five weeks of the pre-ASR period (week −5 to week −1) contains a significantly higher percentage of negative words than the benchmark period (or 8.8 percent higher than the benchmark period). Going forward, there is a drop in the percentage of negative words during the first five weeks of the ASR contract period (or 10.5 percent lower than the benchmark period). The subsequent periods, including the sixth week up to the last week of the contract period and the post-ASR period (week +1 to week +5 and week +6 to week +10 separately), again contain a very similar percentage of negative words to the benchmark period. Table 2 Panel C suggests there is a run-up of the percentage of negative words (or negative tone in the extant literature) in a short window before the ASR initiation date and a run-down in a short window after (both up and down are statistically significant at the 0.01 level). The percentage of negative words in other periods, however, is statistically indistinguishable from that in the benchmark period. Those statistics suggest that ASR firms may manage negative tone of press releases around ASR commencement.

[22] The percentage of negative words in my sample is lower than 1.19 percent for the earnings announcements sample in Davis and Tama-Sweet (2012). It is not uncommon that the percentage of negative words varies with disclosure outlets, which Davis and Tama-Sweet (2012) attribute to the difference in the timing, form, function, and visibility of alternative disclosure outlets.

Table 2: Firm-Generated Press Releases

Panel A: Firm-Generated Press Releases by Media Outlets

	Number of Press Releases	Percentage
PR Newswire (U.S.)	12,590	33.8
Business Wire	9,671	26.0
ENP Newswire	4,062	10.9
M2 Presswire	3,938	10.6
Dow Jones Institutional News	3,043	8.2
GlobeNewswire	1,041	2.8
Canada NewsWire	749	2.0
PR Newswire Europe	644	1.7
Regulatory News Service	479	1.3
PR.com (Press Releases)	399	1.1
AAP MediaNet Press Releases	315	0.9
Other	334	0.7
	37,265	100

Panel B: Summary Statistics of Firm-Generated Press Releases

	N	Mean	Median	Std. Dev.	5%	95%
Word count	37,265	517	410	476	111	1,241
Percentage of negative words	37,265	0.73%	0.42%	1.02%	0	2.63%

Panel C: Percentage of Negative Words around ASRs

	Benchmark	Pre-ASR		During ASR		Post-ASR	
	Week −35 to −11	Week −10 to −6	Week −5 to −1	Week +1 to +5	Week +6 to last	Week +1 to +5	Week +6 to +10
N	13,552	2,772	3,189	2,868	9,211	2,839	2,834
Mean	**0.716%**	**0.718%**	**0.780%**	**0.641%**	**0.731%**	**0.717%**	**0.734%**
Diff. from benchmark		0.002%	**0.064%**	**-0.075%**	0.015%	0.001%	0.018%

Note: Table 2 includes 37,265 press releases generated by ASR firms during the following periods: (1) the benchmark period, defined as the 25 weeks from week −35 to week −11 before the ASR initiation date; (2) week −10 to week −6 before the ASR initiation date; (3) week −5 to week −1 before the ASR initiation date; (4) the first 5 weeks of the ASR contract period; (5) the 6th week to the last week of the ASR contract period; (6) week +1 to week +5 after the ASR completion date; (7) week +6 to week +10 after the ASR completion date. Because the contract period of the ASR sample varies from 2 to 62 weeks, the "week +6 to last" period may include up to 57 weeks for an ASR.

Panel A reports the frequency of firm-generated press releases by media outlets. Panel B reports statistics of firm-generated press releases. Word count is the number of non-numeric words after deleting boilerplate disclaimer and company description in press releases. Percentage of negative words is based on Loughran and McDonald's (2011) word classification. Panel C reports the percentage of negative words in each of above periods, with all bold values being significant at the 0.01 level (two-tail).

4.3.3 Estimation of Weekly Abnormal Negative News

I use an event study approach to estimate the abnormal component of weekly negative news coverage, the main measure of firm-generated news management.[23] Table 3 Panel A reports the mean of coefficients and adjusted R^2 estimated from Equation (2) using the data within the benchmark period (25 weeks) for each ASR. *t*-statistics (untabulated) are calculated using standard errors of the coefficients across individual regressions. The mean coefficients are statistically significant with the predicted sign. The mean adjusted R^2 (0.152) is comparable to 0.148 in Davis and Tama-Sweet (2012) and higher than 0.044 in Huang et al. (2014). Table 3 Panel B reports the average of weekly abnormal negative news for each five-week period on the timeline from week −10 before the ASR initiation date to week +10 after the ASR completion date, except that I group the sixth week up to the last week of the ASR contract period into an individual. Specifically, Table 3 Panel B reports the average of weekly abnormal negative news during six periods: (1) week −10 to week −6 before the ASR initiation date; (2) week −5 to week −1 before the ASR initiation date; (3) the first five weeks of the ASR contract period; (4) the sixth week up to the last week of the ASR contract period; (5) week +1 to week +5 after the ASR completion date; (6) week +6 to week +10 after the ASR completion date. Figure 3 is a graphic presentation of Table 3 Panel B. The abnormal negative news increases to 0.24 percent (*p*-value = 0.001) within the five weeks before the ASR initiation date, and then decreases to −0.11 percent (*p*-value = 0.020) within the five weeks after. In any other period, the abnormal negative news is not statistically significant different from

[23] I retain as many observations as possible and do nothing about outliers, because each event study regression uses a relatively small sample and the number of observations would be important. In addition, outliers are not necessarily bad data points based on the calculation procedure described in Section 4.2.3. As a robustness check, I truncate the dependent variable, *NEGNEWS*, at 1 and 99 percentiles and find that: (1) the correlation of the measure of news management before and after truncation are very high (0.942); and (2) the results in Table 5 and Table 9 remain qualitatively unchanged. These findings suggest that outliers are less of a concern for the news management test.

zero. The results shown in Table 3 Panel B and Figure 3 is consistent with the firm-generated news management hypothesis.

Table 3: Estimation of Weekly Abnormal Negative News (Measure of News Management)

Panel A: Estimation of Weekly Normal Negative News

	Predicted Sign	Coef.
Intercept		0.574***
EA	+	0.555###
AGM	+	0.108#
ΔAF	−	-0.380#
VOL	+	0.528###
Mean Adj. R^2		0.152
Mean number of obs.		25
Number of regressions		365

Panel B: Weekly Abnormal Negative News around ASRs

	Pre-ASR		During ASR		Post-ASR	
	Week −10 to −6	Week −5 to −1	Week +1 to +5	Week +6 to last	Week +1 to +5	Week +6 to +10
N	1,821	1,815	1,790	4,592	1,750	1,747
Mean	-0.02%	0.24%***	-0.11%**	0.02%	0.03%	0.01%

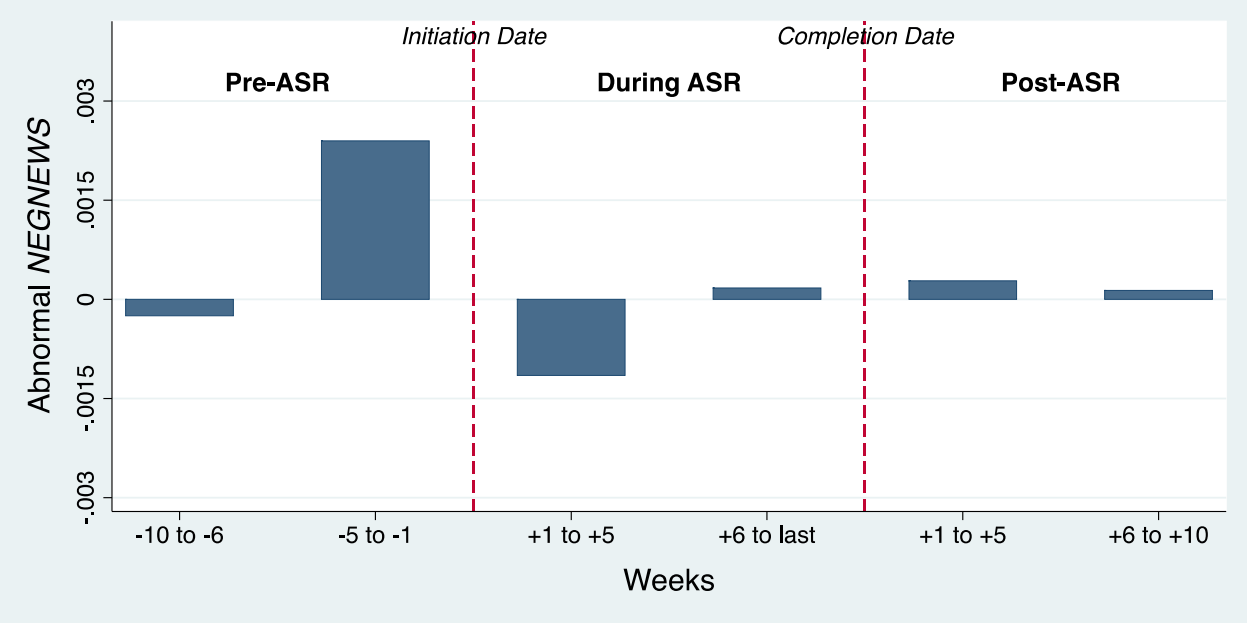
Note: Table 3 reports estimation results for weekly abnormal negative news, the measure of news management. Panel A reports coefficient estimates in the following model for each ASR using data during the benchmark period, defined as the 25 weeks from week −35 to week −11 before the ASR initiation date:

$$NEGNEWS_t = \beta_0 + \beta_1 EA_t + \beta_2 AGM_t + \beta_3 \Delta AF_t + \beta_4 VOL_t + \varepsilon_t$$

where *t* is the week index. *NEGNEWS* is the sum of negative tone of all firm-generated press releases in week *t*. *EA* (*AGM*) is a dummy variable that equals 1 if there is an earnings announcement (annual general meeting) in week *t*, and 0 otherwise. *ΔAF* is the change in analysts' consensus forecast of annual EPS from week *t*-1 to week *t*, scaled by the end-of-week stock price. *VOL* is the trading volume in week *t* divided by the end-of-week number of outstanding shares. The reported coefficients are the mean of coefficients across individual regressions. *t*-statistics are calculated using standard errors of the coefficients across individual regressions. The adjusted R^2 (number of observations) is the mean of adjusted R^2 (number of observations) across individual regressions.

Panel B is the tabular presentation of Figure 3, and reports the average of weekly abnormal negative news during the following periods: (1) week −10 to week −6 before the ASR initiation date; (2) week −5 to week −1 before the ASR initiation date; (3) the first 5 weeks of the ASR contract period; (4) the 6th week to the last week of the ASR contract period; (5) week +1 to week +5 after the ASR completion date; (6) week +6 to week +10 after the ASR completion date. Because the contract period of the ASR sample varies from 2 to 62 weeks, the "week +6 to last" period may include up to 57 weeks for an ASR. * (#), ** (##), and *** (###) indicate two-tail (one-tail) significance levels of 0.10, 0.05, and 0.01, respectively.

Figure 3: Weekly Abnormal Negative News around ASRs



Note: Figure 3 presents the average of weekly abnormal negative news during the following periods: (1) week −10 to week −6 before the ASR initiation date; (2) week −5 to week −1 before the ASR initiation date; (3) the first 5 weeks of the ASR contract period; (4) the 6th week up to the last week of the ASR contract period; (5) week +1 to week +5 after the ASR completion date; (6) week +6 to week +10 after the ASR completion date. Because the contract period of the ASR sample varies from 2 to 62 weeks, the "+6 to last" period may include up to 57 weeks for an ASR.

Weekly abnormal negative news is residuals from the following model:

$$NEGNEWS_t = \beta_0 + \beta_1 EA_t + \beta_2 AGM_t + \beta_3 \Delta AF_t + \beta_4 VOL_t + \varepsilon_t$$

where *t* is the week index. β_0–β_4 are estimated using data from the benchmark period, defined as the 25 weeks from week −35 to week −11 before the ASR initiation date. *NEGNEWS* is the sum of negative tone of all firm-generated press releases in week *t*. *EA* (*AGM*) are a dummy variable that equals 1 if there is an earnings announcement (annual general meeting) in week *t*, and 0 otherwise. *ΔAF* is the change in analysts' consensus forecast of annual EPS, scaled by the stock price. *VOL* is the weekly trading volume divided by the number of outstanding shares.

Note that Table 2 Panel C differs from Table 3 Panel B. Although they compare the same six sub-periods from week −10 before the ASR initiation date to week +10 after the ASR completion date, Table 2 Panel C reports the average negative tone of firm-generated press releases in each sub-period. In contrast, Table 3 Panel B reports the average of weekly *abnormal* negative news in each sub-period, which captures not only the negative tone of firm-generated press release but also the coverage of firm-generated press releases. As I describe in Section 4.2.3, weekly

abnormal negative news is the measure of news management (i.e., *NM*) in this research. It is designed to capture the discretionary portion of both coverage and negative tone of firm-generated press releases. The coverage and negative tone are two dimensions of press releases that firms can manage prior to an ASR.

4.3.4 Estimation of Quarterly Abnormal Accruals

I use the discretionary current accruals model to estimate quarterly abnormal accruals, adjusted for performance using the procedure described by Kothari et al. (2005).[24] Table 4 Panel A reports the estimated coefficients in Equation (3). There are 1,773 industry-quarters during the sample period. On average, each industry-quarter regression uses 162 observations. The reported coefficients (adjusted R^2) are the mean of the coefficients (adjusted R^2) across individual regressions, and *t*-statistics (untabulated) are calculated using standard errors of the coefficients across individual regressions. The mean adjusted R^2 is 0.376, which is comparable with that from discretionary accruals models in prior studies (e.g., Zang 2012). Table 4 Panel B reports performance-matched abnormal accruals during three quarters prior to the ASR initiation date (quarter −3, −2 and −1), the first quarter during the ASR contract period, other quarters in the contract period and three quarters after the ASR completion date (quarter +1, +2 and +3). Figure 4 is a graphic presentation of Table 4 Panel B. The results are consistent with the earnings management hypothesis. Specifically, performance-matched abnormal accruals are significantly negative in quarter −1 (*p*-value = 0.010), and quarter −2 also shows lower than normal accruals (*p*-value = 0.053). In other quarters, performance-matched abnormal accruals are not significantly difference from zero. Figure 4 plots performance-matched abnormal accruals from quarter −3 to

[24] Following Louis and White (2007), Gong et al. (2008), Louis et al. (2008), I truncate continuous variables in this model at 1 and 99 percentiles.

quarter +3, showing a significant dip in quarter −1. Figure 4 suggests that, on average, firms deflate reported earnings in the quarter immediately prior to an ASR.

Table 4: Estimation of Quarterly Abnormal Current Accruals (Measure of Earnings Management)

Panel A: Estimation of Normal Current Accruals

	Coef.
Intercept	-0.034***
ΔSALE − ΔAR	-0.137***
Q1	0.786**
Q2	0.918***
Q3	-0.318
Q4	-0.913***
Mean Adj. R^2	0.376
Mean number of obs.	162
Number of regressions	1,773

Panel B: Quarterly Abnormal Current Accruals around ASRs

	Pre-ASR			During ASR		Post-ASR		
	Quarter −3	Quarter −2	Quarter −1	Quarter +1	Quarter +2 to last	Quarter +1	Quarter +2	Quarter +3
N	345	342	346	285	154	343	338	332
Mean	-0.0021	-0.0028*	-0.0051***	-0.0018	-0.0028	-0.0024	-0.0023	-0.0020

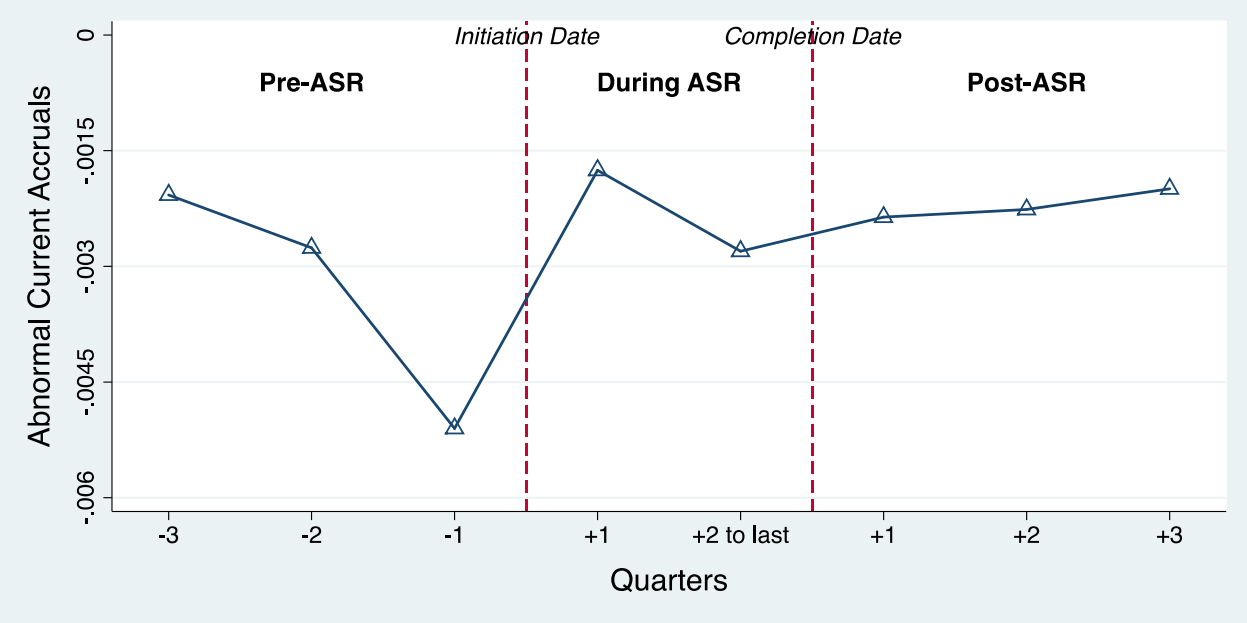
Note: Table 4 reports estimation results for quarterly abnormal current accruals, the measure of earnings management. Panel A reports coefficient estimates in the following model using all firms in COMPUSTAT for each calendar quarter and Fama-French 48 industry:

$$CA_i = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{ji} + \beta_5(\Delta SALE_i - \Delta AR_i) + \varepsilon_i$$

where *i* is the firm index. *CA* is current accruals (the difference between quarterly income before extraordinary items and quarterly operating cash flows less depreciation and amortization expense). Q_j is a dummy variable that equals 1 for fiscal quarter *j*, and 0 otherwise. *ΔSALE* (*ΔAR*) is the quarterly change in sales (accounts receivable). All variables, including fiscal quarter dummy variables, are scaled by total assets at the beginning of the quarter. The reported coefficients are the mean of coefficient estimates across individual regressions. The adjusted R^2 (number of observations) is the mean of adjusted R^2 (number of observations) across individual regressions.

Panel B is the tabular presentation of Figure 4, and reports the average of quarterly abnormal current accruals, adjusted for performance (Kothari et al. 2005), in the following quarters: (1) quarter −3, −2, and −1 before the ASR initiation date; (2) the first quarter of the ASR contract period; (3) the second quarter to the last quarter of the ASR contract period; (4) quarter +1, +2, and +3 after the ASR completion date. Because the contract period of the ASR sample varies from 0 to 3 quarters, the "quarter +2 to last" period may include up to 2 quarters for an ASR. *, **, and *** indicate two-tail significance levels of 0.10, 0.05, and 0.01, respectively.

Figure 4: Quarterly Abnormal Current Accruals around ASRs



Note: Figure 4 presents the average of quarterly abnormal current accruals, adjusted for performance (Kothari et al. 2005), in the following quarters: (1) quarter −3, −2, and −1 before the ASR initiation date; (2) the first quarter of the ASR contract period; (3) the second quarter up to the last quarter of the ASR contract period; (4) quarter +1, +2, and +3 after the ASR completion date. Because the contract period of the ASR sample varies from 0 to 3 quarters, the "+2 to last" period may include up to 2 quarters for an ASR.

Quarterly abnormal current accruals are residuals from the following model:

$$CA_i = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{ji} + \beta_5(\Delta SALE_i - \Delta AR_i) + \varepsilon_i$$

where i is the ASR firm index. β_0–β_5 are estimated using all firms in COMPUSTAT for each calendar quarter and Fama-French 48 industry. CA is current accruals (the difference between quarterly income before extraordinary items and quarterly operating cash flows less depreciation and amortization expense). Q_j is a dummy variable that equals 1 for fiscal quarter j, and 0 otherwise. $\Delta SALE$ (ΔAR) is the quarterly change in sales (accounts receivable). All variables, including fiscal quarter dummy variables, are scaled by total assets at the beginning of the quarter. The estimated quarterly abnormal current accruals are adjusted for performance following Kothari et al. (2005).

4.3.5 Results of Testing Hypotheses 1–2

The time-series pattern of weekly abnormal negative news and quarterly abnormal accruals shown in Figure 3 and Figure 4 is consistent with Hypothesis 1 and 2. Now I use the multivariate regression models in Equation (4) and Equation (5) to further test both hypotheses.

Table 5 reports the results of the test of Hypothesis 1 with Equation (4). The coefficient on *NMPRE1* is positive and statistically significant, indicating that the abnormal negative news during week −5 to week −1 is higher than that during week −10 to week −6. In addition, the value of the coefficient on *NMPRE1* is much greater than the value of the intercept, indicating that the increase in the abnormal negative news during week −5 to week −1 is statistically significant in magnitude. The coefficient on *NMDUR1* is negative, indicating the abnormal negative news during the first five weeks of the ASR contract period is lower than that during week −10 to week −6. However, the coefficient on *NMDUR1* is only marginally significant in a one-tail test. The *p*-values of coefficients on *NMDUR2* and *NMPOST* indicate that the abnormal negative news during other weeks of the ASR contract period and the post-ASR period is not significantly different from that during week −10 to week −6. In sum, the regression results provide evidence that managers increase the negative news coverage prior to an ASR.

Table 5: News Management Prior to ASRs

	Predicted Sign	Coef.	*p*-value
Intercept		0.012	0.001
NMPRE1	+	0.270	0.005
NMDUR1		-0.089	0.283
NMDUR2		0.038	0.627
NMPOST		0.019	0.796
Firm fixed effect		Yes	
Year fixed effect		Yes	
Adj. R^2		0.106	
N		13,515	

Note: Table 5 reports the results of the following regression using data from week −10 before the ASR initiation date through week +10 after the ASR completion date:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index and *t* is the week index. *NM* is abnormal negative news in week *t*. Higher values of *NM* represent more price-deflating news management. *NMPRE1* is a dummy variable that equals 1 if week *t* falls in the period from week −5 to week −1 before the ASR initiation date, and 0 otherwise. *NMDUR1* is a dummy variable that equals 1 if week *t* falls in the first 5 weeks of the ASR contract period, and 0 otherwise. *NMDUR2* is a dummy variable that equals 1 if week *t* falls in the period from the 6th week to the last week of the ASR contract period, and 0 otherwise. *NMPOST* is a dummy variable that equals 1 if week *t* falls in the period from week +1 to week +10 after the ASR completion date. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the

firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Table 6 reports the results of the test of Hypothesis 2 with Equation (5). The coefficient on *EMPRE1* is positive, suggesting an increase in abnormal negative accruals in quarter −1 versus quarter −3 and −2. In addition, the value of the coefficient on *EMPRE1* indicates that such increase is large in magnitude, although the coefficient on *EMPRE1* is only marginally significant in a one-tail test. Thus, it provides limited evidence that managers use negative current accruals to deflate earnings prior to an ASR. The *p*-values of coefficients on *EMDUR1*, *EMDUR2* and *EMPOST* indicate that abnormal accruals during the quarters within the ASR contract period and post-ASR period are not significantly different from those in quarter −3 and −2.

Table 6: Earnings Management Prior to ASRs

	Predicted Sign	Coef.	*p*-value
Intercept		0.192	0.000
EMPRE1	+	0.236	0.091
EMDUR1		-0.024	0.906
EMDUR2		0.198	0.499
EMPOST		-0.055	0.733
Firm fixed effect		Yes	
Year fixed effect		Yes	
Adj. R^2		0.208	
N		2,485	

Note: Table 6 reports the results of the following regression using data from quarter −3 before the ASR initiation date through quarter +3 after the ASR completion date:

$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index and *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. Higher values of *EM* represent more downward accrual-based earnings management. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *EMDUR1* is a dummy variable that equals 1 if quarter *t* is the first quarter during the ASR contract period, and 0 otherwise. *EMDUR2* is a dummy variable that equals 1 if quarter *t* is any other quarter than the first one during the ASR contract period, and 0 otherwise. *EMPOST* is a dummy variable that equals 1 if quarter *t* is quarter +1, +2, or +3 after the ASR completion date. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Chapter 5

The Association between ASR Motivations and Pre-ASR News/Earnings Management

5.1 Hypothesis Development (Hypotheses 3–4)

Firms can use ASRs and OMRs alternatively to achieve certain goals of share repurchase programs. On one hand, firms prefer ASRs to OMRs because those goals can be better met with rapid completion and enhanced credibility. On the other hand, the particular goal of an ASR also can influence whether and how a firm attempts to deflate stock prices prior to the ASR.

In Chapter 3, I discuss five commonly cited motivations for share repurchase programs: (1) signal undervaluation; (2) return capital to shareholders to reduce agency costs; (3) improve capital structure; (4) increase EPS; and (5) defend against takeover threats. I group the first and the last as price-boosting motivations because the goal of the planned share repurchases is to increase the repurchasing firm's stock price, thereby conveying managers' private information about the firm's good prospect to the market or deterring potential unfriendly buyers. Because the initial goals of these share repurchase programs are inconsistent with deflating stock prices in the first place, I posit that news management and earnings management are less likely prior to an ASR motivated by undervaluation concerns and takeover defense. In addition, news management and earnings management are expected to have different consequences on EPS. Specifically, news management can deflate stock prices without hurting EPS, while downward earnings management will deflate both stock prices and EPS. Therefore, I posit that earnings management is less likely prior to an ASR motivated by increasing EPS, but such motivation should not mute news management activities. I express my predictions in the following two hypotheses:

H3: Managers use less news management and earnings management prior to an ASR to deflate stock prices if the ASR is motivated by signaling undervaluation and defending against takeover threats.

H4: Managers use less earnings management prior to an ASR to deflate stock prices if the ASR is motivated by increasing EPS.

5.2 Research Design

5.2.1 Identification of Motivations for ASRs

Motivations for ASRs are not directly observable. I review 104 press releases concerning share repurchase programs or ASRs. Although some firms state motivations for their upcoming ASRs, I find that most of them use boilerplate language such as "create shareholder value" and may not reveal their real intent. Therefore, I follow prior literature to use the following variables to make an inference about the motivation for an ASR. Those variables, unless otherwise stated, are measured at the end of quarter −1 before the ASR initiation date.

5.2.1.1 Signal Undervaluation

If a firm is undervalued prior to an ASR, I expect that the firm likely conducts the ASR to signal undervaluation. I use the firm-specific misvaluation measure in Rhodes-Kropf, Robinson, and Viswanathan (2005) as the measure of undervaluation. Rhodes-Kropf et al. (2005) emphasize the difference between industry-wide and firm-specific misvaluation by decomposing the market-to-book ratio into three components: firm-specific misvaluation, industry-wide misvaluation and long-term value-to-book ratio. The firm-specific misvaluation is the error that arises when the firm-specific market value deviates from the value derived from the contemporaneous industry-wide multiples. It measures the over- or under-valuation of a firm relative to its industry peers and isolates the firm's idiosyncratic misvaluation from the common misvaluation shared by the entire

industry. The firm-specific misvaluation is more relevant for signaling undervaluation, because a firm may not be urged to combat undervaluation if the undervaluation is common for the entire industry.[25] The industry-wide misvaluation is the error that arises when the contemporaneous industry-wide multiples deviate from the long-run steady industry-wide multiples. This captures the concept that the industry could be overheated, and thus firms in the industry could share a common misvaluation component. The last component is the ratio of the value derived from the long-run steady industry-wide multiples and the book value. It is the true value-to-book ratio implied by long-run growth opportunities and is supposedly the error-free market-to-book ratio if the firm is perfectly valued.

For each calendar quarter and Fama-French 48 industry, I regress the firm-level market value on firms' fundamentals using all firms in COMPUSTAT. The regression rests on the valuation model that expresses the market value as a linear function of the book value and the net income (Barth, Beaver, and Landsman 2001):

$$MV_i = \beta_0 + \beta_1 BV_i + \beta_2 NI_i + \varepsilon_i \tag{6}$$

where *i* is the firm index, *MV* is the market value, *BV* is the book value, and *NI* is the net income. To account for the right-skewness in accounting data, Rhodes-Kropf et al. (2005) suggest using a logarithm transformation:

$$\ln(MV_i) = \beta_0 + \beta_1 \ln(BV_i) + \beta_2 \ln(|NI_i|) + \beta_3 NEG_i \times \ln(|NI_i|) + \varepsilon_i \tag{7}$$

where |*NI*| is the absolute value of net income and *NEG* is a dummy variable that equals one if net income is negative, and zero otherwise. The residual from each regression, *MISVAL*, stands for the

[25] Other features of the firm-specific misvaluation are noteworthy: (1) it is easy to estimate, since it does not require particular assumptions and forward-looking financial statement data as in the residual income model (e.g., D'Mello and Shroff 2000; Dong, Hirshleifer, Richardson, and Teoh 2006); and (2) it is based on a vector of multiples rather than on a single multiple (e.g., price-to-sales in Chemmanur et al. (2010)) and, therefore, makes the best use of financial statement data and likely reduces the measurement error.

firm-specific misvaluation. A negative *MISVAL* at the fiscal quarter before an ASR suggests that a firm is undervalued relative to its industry peers before the ASR. The more negative *MISVAL* is, the more the firm is undervalued relative to its industry peers.

5.2.1.2 Return Capital to Shareholders

Agency theory predicts that a firm likely conducts an ASR to return capital to shareholders if the firm has large free cash flows and faces declining investment opportunities prior to the ASR (Dittmar 2000; Grullon and Ikenberry 2000). I calculate operating cash flows scaled by total assets (*OCF*) and market-to-book ratio (*MB*) of each ASR firm at the fiscal quarter before an ASR. Operating cash flows are used as a proxy for free cash flows, and market-to-book ratios are used as a proxy for investment opportunities in prior research (e.g., Collins and Kothari 1989). *OCFDIFF* is the firm-specific operating cash flows (scaled by total assets) minus the industry median operating cash flows (scaled by total assets). *MBDIFF* is the firm-specific market-to-book ratio minus the industry median market-to-book ratio. If an ASR firm has higher operating cash flows and a lower market-to-book ratio at the fiscal quarter before the ASR (i.e., $OCFDIFF > 0$ and $MBDIFF < 0$), I expect that return of capital is the motivation for the ASR.

5.2.1.3 Improve Capital Structure

The further a firm is below its targeted leverage ratio prior to an ASR, the more likely capital structure adjustment is to be the motivation for the ASR. To model the targeted leverage ratio, I follow Flannery and Rangan (2006) and run the pooled cross-sectional regression of actual leverage ratios on a set of firm characteristics using quarterly data of all non-financial firms in COMPUSTAT during the sample period:

$$LEV_i = \beta_0 + \beta_1 EBIT_i + \beta_2 MB_i + \beta_3 DEPN_i + \beta_4 SIZE_i + \beta_5 PPE_i + \beta_6 R\&D_i + \beta_7 R\&D\_DUM_i + \beta_8 LIML_i + \beta_9 RATED_i + \varepsilon_{it} \quad (8)$$

where *i* is the firm index. *LEV* is the actual leverage ratio (the sum of long-term debt and debt in current liabilities, divided by the sum of long-term debt, debt in current liabilities and market value of equity). *EBIT* is earnings before interest and taxes. *MB* is market-to-book ratio. *DEPN* is depreciation expense. *SIZE* is the logarithm of total assets. *PPE* is net property, plant and equipment. *R&D* is research and development expense. *R&D_DUM* is a dummy variable equal to one for firms with missing *RD*. *LIML* is the lagged median leverage ratio of the same Fama-French 48 industry. *RATED* is a dummy variable equal to one if the firm has a public debt rating, and zero otherwise. All variables, except *SIZE* and those expressed as a ratio or dummy variable, are scaled by total assets. I include firm fixed effects to account for relatively stable, unobserved factors that affect the targeted leverage ratio. The residual from the regression, *LEV_DIFF*, stands for the distance between the actual leverage ratio and the targeted one. A negative *LEV_DIFF* at the fiscal quarter before an ASR suggests that the actual leverage ratio is below the targeted leverage ratio before the ASR. The more negative *LEV_DIFF* is, the further the actual leverage ratio is below its targeted leverage ratio.

5.2.1.4 Increase EPS

Following Marquardt et al. (2009) and Chemmanur et al. (2010), I assume that an ASRs is likely motivated by the desire to increase EPS if top executives' bonus is directly tie to EPS. I review the executive compensation section in the latest definitive proxy statement filed by each ASR firm before an ASR. I define *EPSBONUS* as a dummy variable that equals one if the section reveals that top executives' bonus is directly tied to EPS, and zero otherwise.

5.2.1.5 Defend Against Takeover Threats

Akyol et al. (2014) examine whether a firm is the target of a takeover rumor during the 12-month period prior to an ASR and use it as a proxy for the takeover defense motivation. I search

for takeover rumors using Capital IQ's "Key Development–Potential Transactions and M&A Rumors and Discussions" screening function. I define *TAKEOVER* as a dummy variable that equals one if the firms appear in this database during the preceding 12 months, and zero otherwise.

5.2.2 Regression Models for Testing Hypotheses 3–4

I classify the sample of ASRs into three categories: (1) ASRs that have price-boosting motivations, that is, signaling undervaluation and defending against takeover threats; (2) ASRs that have the motivation of increasing EPS; and (3) all other ASRs. I make the classification based on motivation variables described in Section 5.2.1. To test Hypotheses 3 and 4, I use the following regression models:

$$\begin{aligned} NM_{it} = {} & \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} \\ & + \alpha_5 PRICEUP_{it} + \alpha_6 EPSBONUS_{it} \\ & + \alpha_7 NMPRE1_{it} \times PRICEUP_{it} + \alpha_8 NMDUR1_{it} \times PRICEUP_{it} \\ & + \alpha_9 NMDUR2_{it} \times PRICEUP_{it} + \alpha_{10} NMPOST_{it} \times PRICEUP_{it} \\ & + \alpha_{11} NMPRE1_{it} \times EPSBONUS_{it} + \alpha_{12} NMDUR1_{it} \times EPSBONUS_{it} \\ & + \alpha_{13} NMDUR2_{it} \times EPSBONUS_{it} + \alpha_{14} NMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned} \tag{9}$$

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} \\ & + \beta_5 PRICEUP_{it} + \beta_6 EPSBONUS_{it} \\ & + \beta_7 EMPRE1_{it} \times PRICEUP_{it} + \beta_8 EMDUR1_{it} \times PRICEUP_{it} \\ & + \beta_9 EMDUR2_{it} \times PRICEUP_{it} + \beta_{10} EMPOST_{it} \times PRICEUP_{it} \\ & + \beta_{11} EMPRE1_{it} \times EPSBONUS_{it} + \beta_{12} EMDUR1_{it} \times EPSBONUS_{it} \\ & + \beta_{13} EMDUR2_{it} \times EPSBONUS_{it} + \beta_{14} EMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned} \tag{10}$$

where *i* is the ASR firm index and *t* is the week/quarter index. *PRICEUP* is a dummy variable that equals one if the ASR is likely to be motivated by signaling undervaluation and defending against

takeover threats, and zero otherwise. *EPSBONUS* is a dummy variable that equals one if the ASR is likely to be motivated by increasing EPS, and zero otherwise. Other variables are defined the same as in Equation (4) and Equation (5). I include firm and year fixed effects and control for heteroskedasticity. If managers use news management and earnings management to a less extent prior to an ASR motivated by signaling undervaluation and defending against takeover threats as predicted by Hypothesis 3, I should expect $\alpha_1 > 0$, $\alpha_7 < 0$, $\beta_1 > 0$ and $\beta_7 < 0$ in Equation (9) and Equation (10). If managers use earnings management to a less extent prior to an ASR motivated by increasing EPS as predicted by Hypothesis 4, I should expect $\beta_1 > 0$ and $\beta_{11} < 0$ in Equation (10), but there exists no similar pattern for α_1 and α_{11} in Equation (9).

5.3 Empirical Analysis

5.3.1 Descriptive Statistics and Correlations of Motivation Variables

Table 7 Panel A reports descriptive statistics of the variables that are used to infer motivations for an ASR. *MISVAL* is the firm-specific misvaluation derived from the model developed by Rhodes-Kropf et al. (2005). Interestingly, descriptive statistics show that the average ASR firm is not undervalued relative to its industry peers, inconsistent with the popular belief that a repurchase program is used to signal undervaluation. *OCFDIFF* (*MBDIFF*) is the distance between an ASR firm's operating cash flows (market-to-book ratio) and the industry median. On average, ASR firms generate higher operating cash flows than their industry peers, indicating ASR firms may have more available cash. As agency theory predicts that firms with positive *OCFDIFF* and negative *MBDIFF* use share repurchases to return capital to shareholders, I define *RETURNCASH* as a dummy variable that equals one if *OCFDIFF* > 0 and *MBDIFF* < 0, and zero otherwise. *LEVDIFF* is the difference between the actual leverage ratio and the targeted leverage ratio. Descriptive statistics show that on average, the leverage ratio of ASR firms is below the

targeted level, perhaps consistent with ASRs being motivated by the desire to increase leverage ratios. I define *HIGHLEV* as a dummy variable that equals one if *LEVDIFF* > 0, and zero otherwise. Descriptive statistics also show that 30.1 percent ASR firms have top executives' bonus tied with the EPS metric, and 12.3 percent ASR firms are rumored to be a takeover target within 12 months prior to ASRs.

Table 7 Panel A indicates that the sum of the mean of motivation variables are greater than one, suggesting that those motivations may coexist. This is consistent with the observation in reviewing the actual announcements of share repurchase programs. Table 7 Panel B reports correlations of the five motivation variables. *UNDERVAL* is positively and significantly correlated with *RETURNCASH*, perhaps because firms with declining investment opportunities are more likely to be undervalued by the market.

Table 7: Descriptive Statistics and Correlations of Motivation Variables

Panel A: Descriptive Statistics of Motivation Variables

	N	Mean	Median	Std. Dev.	P5	P95
MISVAL	348	0.110	0.068	0.373	-0.422	0.796
OCFDIFF	363	0.025	0.015	0.040	-0.020	0.111
MBDIFF	363	0.260	0.070	0.954	-0.837	2.118
LEVDIFF	362	-0.014	-0.006	0.069	-0.115	0.094
UNDERVAL	348	0.397	0	0.490	0	1
HIGHCASH	363	0.339	0	0.474	0	1
HIGHLEV	365	0.449	0	0.498	0	1
EPSBONUS	365	0.301	0	0.459	0	1
TAKEOVER	365	0.123	0	0.329	0	1

Panel B: Correlations of Motivation Variables

	UNDERVAL	*HIGHCASH*	*HIGHLEV*	*EPSBONUS*	*TAKEOVER*
UNDERVAL	1.000				
HIGHCASH	0.419***	1.000			
HIGHLEV	0.061	0.138***	1.000		
EPSBONUS	0.005	-0.016	-0.065	1.000	
TAKEOVER	0.027	-0.004	0.013	-0.101*	1.000

Note: Table 7 Panel A reports descriptive statistics of variables that are used to proxy for motivations of ASRs. All variables, unless otherwise stated, are measured at the end of quarter −1 before the ASR initiation date.

Motivation	Variable Definition
Signal undervaluation	If the ASR firm is undervalued relative to its industry peers (based on the Fama-French 48 industry classification) before an ASR, the ASR is likely to be motivated by signaling undervaluation. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. A negative *MISVAL* suggests that the firm is undervalued relative to its industry peers. *UNDERVAL* is a dummy variable that equals 1 if *MISVAL* < 0, and 0 otherwise.
Return capital to shareholders	If the ASR firm has higher operating cash flows and less investment opportunities than its industry peers before an ASR, the ASR is likely to be motivated by return of capital to shareholders. *OCFDIFF* is the distance between the firm-specific operating cash flows (scaled by total assets) and the industry median operating cash flows (scaled by total assets). A positive *OCFDIFF* suggests that the firm has higher operating cash flows than its industry peers. *MBDIFF* is the distance between the firm-specific market-to-book ratio (a proxy for investment opportunities) and the industry median market-to-book ratio. A negative *MBDIFF* suggests that the firm has less investment opportunities than its industry peers. *HIGHCASH* is a dummy variable that equals 1 if *OCFDIFF* > 0 and *MBDIFF* < 0, and 0 otherwise.
Improve capital structure	If the ASR firm has a higher than target leverage ratio before an ASR, the ASR is likely to be motivated by the desire to reduce the leverage ratio to the optimal level. *LEVDIFF* is the distance between the actual leverage ratio and the target leverage ratio. The target leverage ratio is estimated from Flannery and Rangan's (2006). A positive *LEVDIFF* suggests that the firm has a higher than target leverage ratio. *HIGHLEV* is a dummy variable that equals 1 if *LEVDIFF* > 0, and 0 otherwise.
Increase EPS	If bonuses of top executives are directly tie to EPS, the ASR is likely to be motivated by the desire to increase EPS. *EPSBONUS* is a dummy variable that equals 1 if the latest definitive proxy statement before the ASR indicates that bonuses of top executives are tied to EPS, and 0 otherwise.
Defend against takeover threats	If the ASR firm faces takeover threats before an ASR, the ASR is likely to be motivated by takeover defense. *TAKEOVER* is a dummy that equals 1 if the firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise.

Panel B reports correlations of motivation variables. *, **, and *** indicate two-tail significance levels of 0.10, 0.05, and 0.01, respectively.

5.3.2 Results of Testing Hypothesis 3–4

Hypothesis 3 and 4 examine whether news management and earnings management vary with motivations for ASRs in the predicted manner. I first report the results of the univariate analysis which examines the variation in pre-ASR news management and earnings management,

using each inferred motivation as the partitioning variable. Since the results reported in Table 5 and Table 6 provides evidence of news management over the period from week −5 to week −1 and earnings management in quarter −1, I measure the firm-specific pre-ASR news management at the average weekly abnormal negative news over the period from week −5 to week −1 (denoted as *PRENM*), and measure the firm-specific pre-ASR earnings management at abnormal current accruals in quarter −1 (multiplied by −1 and denoted as *PREEM*). Higher values of *PRENM* and *PREEM* represent more price-deflating news management and earnings management prior to ASRs. In Table 8 Panel A, I partition the sample into 138 ASRs that are most likely motivated by signaling undervaluation and 210 ASRs that are not. The results show that both *PRENM* and *PREEM* are significantly positive in the non-undervalued subsample but are insignificant in the undervalued subsample, consistent with Hypothesis 3 that firms use less news management and earnings management prior to ASRs when undervaluation is the concern to begin with. Similarly, Table 8 Panel E partitions the sample into 45 ASRs that are most likely motivated by takeover defense and 320 that are not. The results are also consistent with Hypothesis 3 that managers use less news management and earnings management prior to ASRs when takeover threat is the concern to begin with. For ASRs that are most likely motivated by the desire to increase EPS, the results in Table 8 Panel D show that *PRENM* is significantly positive while *PREEM* is indistinguishable from zero, perhaps because only news management allows managers to deflate stock prices in a manner that will not hurt EPS. In contrast, for ASRs that are not likely motivated by the desire to increase EPS, both *PRENM* and *PREEM* are significantly positive. This is not surprising since both news management and earnings management have no undesired effect in this context. The results reported in Table 8 Panel D provide evidence in support of Hypothesis 4 that firms use less earnings management prior to ASRs when increasing EPS is the motivation in the

first place, and suggest that firms weigh alternative available price-deflating tools and select the one that serves their purpose best. Lastly, for completeness, I also report the results of sample partition based on the return of capital motivation and the capital structure improvement motivation, although I have no priori predictions on these partition schemes.

Table 8: News/Earnings Management Prior to ASRs under Various Motivations

Panel A: Signal Undervaluation

	UNDERVAL = 1			*UNDERVAL* = 0		
	Mean	*p*-value	N	Mean	*p*-value	*N*
PRENM	0.0013	0.347	138	0.0043	0.008	210
PREEM	0.0019	0.650	138	0.0071	0.000	210

Panel B: Return Capital to Shareholders

	HIGHCASH = 1			*HIGHCASH* = 0		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0021	0.270	123	0.0034	0.010	240
PREEM	0.0128	0.007	123	0.0009	0.591	240

Panel C: Improve Capital Structure

	HIGHLEV = 1			*HIGHLEV* = 0		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0031	0.091	163	0.0029	0.027	200
PREEM	0.0078	0.011	163	0.0029	0.272	200

Panel D: Increase EPS

	EPSBONUS = 1			*EPSBONUS* = 0		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0025	0.070	110	0.0034	0.015	255
PREEM	0.0016	0.541	110	0.0067	0.012	255

Panel E: Defend against Takeover

	TAKEOVER = 1			*TAKEOVER* = 0		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0021	0.452	45	0.0032	0.006	320
PREEM	0.0018	0.849	45	0.0056	0.002	320

Note: Table 8 reports the univariate analysis of cross-sectional variation in pre-ASR news management and earnings management under various motivations. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). Higher values of *PRENM* and *PREEM* represent more price-deflating news management and earnings management prior to ASRs. *UNDERVAL* is a dummy variable that equals 1 if the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model is negative, and 0 otherwise. *HIGHCASH* is a dummy variable that equals 1 if the firm has higher operating cash flows (scaled by total assets) than the industry median and a lower market-to-book ratio than

the industry median. *HIGHLEV* is a dummy variable that equals 1 if the actual leverage ratio is greater than the target leverage ratio. The target leverage ratio is estimated from Flannery and Rangan's (2006) model. *EPSBONUS* is a dummy variable that equals 1 if bonuses of top executives are directly tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise. All variables, unless stated otherwise, are measured at the end of quarter −1 before the ASR initiation date. Two-tail *p*-values are reported.

In addition to the univariate analysis, I use the multivariate regression models in Equation (9) and Equation (10) to test Hypothesis 3 and 4. Table 9 reports the results of the effects of various motivations on news management. Like the results reported in Table 5, the coefficient on *NMPRE1* is significantly positive, and the value of the coefficient on *NMPRE1* is much greater than the value of the intercept, providing evidence of a large magnitude of news management during week −5 to week −1. In addition, after I separate out ASRs that are motivated by undervaluation concerns and takeover defense (i.e., price-boosting motivations) or by the desire to increase EPS, the coefficient on *NMPRE1* is almost doubled compared to the same coefficient in Table 5 (both coefficients have a *p*-value less than 0.01), indicating a stronger evidence of news management for the remaining ASRs. The coefficient on *NMPRE1*×*PRICEUP* is significantly negative, suggesting that news management is reduced during week −5 to week −1 if the ASR is motivated by undervaluation concerns and takeover defense. The further *F*-test indicates that the sum of the coefficients on *NMPRE1* and *NMPRE1*×*PRICEUP* is not statistically different from zero, suggesting that there appears to be no news management for ASRs that are motivated by undervaluation concerns and takeover defense. Thus, price-boosting motivations mute news management.

Table 9: News Management Prior to ASRs under Various Motivations

	Predicted Sign	Coef.	*p*-value
Intercept		0.064	0.002
NMPRE1	+	0.481	0.007
NMDUR1		-0.019	0.893
NMDUR2		-0.047	0.689
NMPOST		0.061	0.596
PRICEUP		0.034	0.821
EPSBONUS		-0.196	0.266
NMPRE1×PRICEUP	−	-0.426	0.013
NMDUR1×PRICEUP		-0.104	0.536
NMDUR2×PRICEUP		-0.088	0.598
NMPOST×PRICEUP		-0.199	0.117
NMPRE1×EPSBONUS		-0.071	0.716
NMDUR1×EPSBONUS		-0.083	0.640
NMDUR2×EPSBONUS		0.040	0.415
NMPOST×EPSBONUS		0.143	0.301
Firm fixed effect		Yes	
Year fixed effect		Yes	
Adj. R^2		0.108	
N		13,515	
F-test			
PRE1 + PRE1×PRICEUP = 0		*F* = 0.22	0.638

Note: Table 9 reports the results of the following regression using data from week −10 before the ASR initiation date through week +10 after the ASR completion date:

$$\begin{aligned} NM_{it} = {} & \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} \\ & + \alpha_5 PRICEUP_{it} + \alpha_6 EPSUP_{it} \\ & + \alpha_7 NMPRE1_{it} \times PRICEUP_{it} + \alpha_8 NMDUR1_{it} \times PRICEUP_{it} \\ & + \alpha_9 NMDUR2_{it} \times PRICEUP_{it} + \alpha_{10} NMPOST_{it} \times PRICEUP_{it} \\ & + \alpha_{11} NMPRE1_{it} \times EPSBONUS_{it} + \alpha_{12} NMDUR1_{it} \times EPSBONUS_{it} \\ & + \alpha_{13} NMDUR2_{it} \times EPSBONUS_{it} + \alpha_{14} NMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned}$$

where *i* is the ASR firm index and *t* is the week index. *NM* is abnormal negative news in week *t*. Higher values of *NM* represent more price-deflating news management. *NMPRE1* is a dummy variable that equals 1 if week *t* falls in the period from week −5 to week −1 before the ASR initiation date, and 0 otherwise. *NMDUR1* is a dummy variable that equals 1 if week *t* falls in the first 5 weeks of the ASR contract period, and 0 otherwise. *NMDUR2* is a dummy variable that equals 1 if week *t* falls in the period from the 6th week to the last week of the ASR contract period, and 0 otherwise. *NMPOST* is a dummy variable that equals 1 if week *t* falls in the period from week +1 to week +10 after the ASR completion date. *PRICEUP* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase stock prices (either signaling undervaluation or defending against takeover). *EPSBONUS* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase EPS, that is, bonuses of top executives are directly tie with EPS. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Table 10 reports the result of the effects of different motivations on earnings management. Like the results reported in Table 6, the coefficient on *EMPRE1* is significantly positive, providing evidence of earnings management in quarter −1. In addition, Table 10 shows an increase in both magnitude and significance level of the coefficient on *EMPRE1*, after I separate out ASRs that are motivated by undervaluation concerns and takeover defense (i.e., price-boosting motivations) or by the desire to increase EPS, indicating stronger evidence of accrual-based earnings management for the remaining ASRs. The coefficient on *EMPRE1*×*PRICEUP* is negative, consistent with the conjecture that managers are less likely to use earnings management before an ASR with price-boosting motivations, although the coefficient on *EMPRE1*×*PRICEUP* is not statistically significant. The coefficient on *EMPRE1*×*EPSBONUS* is significantly negative, consistent with the conjecture that managers are less likely to use downward earnings management prior to an ASR motivated by the desire to increase EPS, since downward earnings management would have an undesired consequence. Using the *F*-test, I find that neither the sum of the coefficients on *EMPRE1* and *EMPRE1*×*PRICEUP* nor the sum of the coefficients on *EMPRE1* and *EMPRE1*×*EPSBONUS* is statistically different from zero. Thus, there appears to be no earnings management for ASRs that are motivated by undervaluation concerns and takeover defense or by the desire to increase EPS. Given that only the coefficient on *EMPRE1*×*EPSBONUS* is significantly negative, the muting effect of the EPS-boosting motivation on downward earnings management appears to be stronger. In sum, the empirical results presented in Table 9 and Table 10 largely provide support for predictions in Hypothesis 3 and 4.

Table 10: Earnings Management Prior to ASRs under Various Motivations

	Predicted Sign	Coef.	*p*-value
Intercept		0.154	0.000
EMPRE1	+	0.521	0.014
EMDUR1		-0.186	0.559
EMDUR2		-0.032	0.928
EMPOST		0.003	0.988
PRICEUP		0.038	0.892
EPSBONUS		0.057	0.866
EMPRE1×PRICEUP	−	-0.296	0.255
EMDUR1×PRICEUP		-0.130	0.759
EMDUR2× PRICEUP		0.555	0.382
EMPOST×PRICEUP		0.021	0.934
EMPRE1×EPSBONUS	−	-0.466	0.072
EMDUR1×EPSBONUS		0.068	0.767
EMDUR2×EPSBONUS		-0.082	0.911
EMPOST×EPSBONUS		-0.207	0.399
Firm fixed effect		Yes	
Year fixed effect		Yes	
Adj. R^2		0.211	
N		2,485	
F-test			
PRE1 + PRE1×PRICEUP = 0		*F* = 0.25	0.619
PRE1 + PRE1×EPSBONUS = 0		*F* = 0.02	0.879

Note: Table 10 reports the results of the following regression using data from quarter −3 before the ASR initiation date through quarter +3 after the ASR completion date:

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} \\ & + \beta_5 PRICEUP_{it} + \beta_6 EPSUP_{it} \\ & + \beta_7 EMPRE1_{it} \times PRICEUP_{it} + \beta_8 EMDUR1_{it} \times PRICEUP_{it} \\ & + \beta_9 EMDUR2_{it} \times PRICEUP_{it} + \beta_{10} EMPOST_{it} \times PRICEUP_{it} \\ & + \beta_{11} EMPRE1_{it} \times EPSBONUS_{it} + \beta_{12} EMDUR1_{it} \times EPSBONUS_{it} \\ & + \beta_{13} EMDUR2_{it} \times EPSBONUS_{it} + \beta_{14} EMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned}$$

where *i* is the ASR firm index and *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. Higher values of *EM* represent more downward accrual-based earnings management. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *EMDUR1* is a dummy variable that equals 1 if quarter *t* is the first quarter during the ASR contract period, and 0 otherwise. *EMDUR2* is a dummy variable that equals 1 if quarter *t* is any other quarter than the first one during the ASR contract period, and 0 otherwise. *EMPOST* is a dummy variable that equals 1 if quarter *t* is quarter +1, +2, or +3 after the ASR completion date. *PRICEUP* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase stock prices (either signaling undervaluation or defending against takeover). *EPSBONUS* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase EPS, that is, bonuses of top executives are directly tie with EPS. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Chapter 6

The Association between Pre-ASR News/Earnings Management and Operating/Stock Price Performance

6.1 The Association between Pre-ASR News/Earnings Management and Pre-ASR Stock Price Performance

6.1.1 Hypothesis Development (Hypothesis 5)

If managers deflate stock prices successfully prior to ASRs through news management and earnings management, I should expect a negative association between pre-ASR news/earnings management and pre-ASR stock price performance. This section examines the efficacy of pre-ASR news management and earnings management. Note, however, that a necessary condition for managers to take actions to deflate stock prices is merely their *belief* that these actions can deflate stock prices, not necessarily that these actions end up being successful.

Few prior studies examine the relation between pre-event managers' behaviors and pre-event stock price performance, although these studies argue that pre-event managers' behaviors aim at swaying pre-event stock prices in the desired direction (e.g., Brockman et al. 2008; Gong et al. 2008). An exception is Coles et al. (2006). They examine earnings management around cancellations and subsequent reissues of employee stock options. They find evidence of abnormally low accruals in the period following announcements of cancellations of employee stock options up to the time the options are reissued with the strike price set at the then-current (reissue day) stock price. However, they find that abnormal accruals do not predict stock price performance over that period. They argue that investors do not respond to abnormal accruals because incentives for managers to manipulate earnings and stock prices over that period are so

apparent at options cancellation announcements that investors fully anticipate and correct for subsequent earnings manipulation.

Section 2.3 discusses the disclosure requirements for ASRs. Although firms usually announce ASRs in a timely manner, investors will not be aware of an upcoming ASR until the ASR announcement date that is almost identical to the ASR initiation date. Because the intent of managers to deflate stock prices prior to an ASR is not transparent during the pre-ASR period, I expect investors to be, at least in part, misled by pre-ASR news management and earnings management. Therefore, I expect a negative association between pre-ASR news/earnings management and pre-ASR stock price performance. I express my prediction in the following hypothesis:

H5: Pre-ASR stock price performance is negatively associated with pre-ASR news management and earnings management.

6.1.2 Regression Models for Testing Hypothesis 5

To examine the efficacy of news management and earnings management, I examine contemporary stock returns over the period when managers use news management and earnings management. Specifically, I examine cumulative abnormal returns from trading day −25 to −3 prior to ASR announcements. This period, approximately from week −5 to week −1, is consistent with the window for detecting news management and the average leading period of the last earnings announcement before ASR announcements. I exclude trading day −2 and −1 to avoid the possible run-up of stock prices prior to ASR announcements. Abnormal returns are measured at the market-adjusted stock returns, that is, raw stock returns minus CRSP index value-weighted returns.[26] To test Hypothesis 5, I use the following regression models:

[26] The empirical results remain qualitatively unchanged if I use the cumulative abnormal returns calculated using the standard market model. The parameters of the market model are estimated over the period from

$$PRECAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 OCF_i + \alpha_5 PRIORRET_i + \varepsilon_{it} \quad (11)$$

$$PRECAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 OCF_i + \beta_5 PRIORRET_i + \varepsilon_{it} \quad (12)$$

where *i* is the ASR firm index. *PRECAR* is the cumulative market-adjusted abnormal returns from trading day −25 to −3 prior to ASR announcements. *PRENM* and *PREEM* measure the firm-specific pre-ASR news management and earnings management, respectively. *PRENM* is the average weekly abnormal negative news over the period from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). Higher values of *PRENM* and *PREEM* represent more news management and earnings management prior to ASRs. I include the following control variables suggested by prior literature: *SIZE* is the logarithm of the market value of equity. *BM* is the book-to-market ratio. *OCF* is operating cash flows divided by total assets. *SIZE*, *BM* and *OCF* are measured at the end of the fiscal quarter preceding trading day −25. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −70 to −31. *SIZE* and *BM* are the most commonly used firm characteristics in explaining variation in stock returns (Bessembinder and Zhang 2013). Coles et al. (2006) find that operating cash flows are positively associated with pre-event abnormal returns. *PRIORRET* is included to control for stock return momentum (Shivakumar 2000; Kahle 2002; Bargeron et al. 2011; Babenko, Tserlukevich, and Vedrashko 2012). I include Fama-French 12 industry and year fix effects and use White robust standard errors to control for heteroskedasticity. I expect $\alpha_1 < 0$ and $\beta_1 < 0$ in Equation (11) and Equation (12).

6.1.3 Results of Testing Hypothesis 5

Table 11 Panel A indicates that the average cumulative abnormal return over the period from trading day −25 to −3 prior to ASR announcements is 0.33 percent but not statistically

252 trading days to 44 trading days before ASR announcements using the CRSP value-weighted return as the market return.

significant at a conventional level. This does not necessarily contradict Hypothesis 5. But if the hypothesis holds, firms engaging in more news management and earnings management activities should have lower cumulative abnormal returns than firms engaging in less such activities. Table 11 Panel B compares pre-ASR stock returns for firms with the lowest versus the highest level of pre-ASR news management and earnings management. First, I sort ASR firms into quartiles based on the firm-specific pre-ASR news management (*PRENM*) and earnings management (*PREEM*), and calculate pre-ASR cumulative abnormal returns for the lowest quartile versus the highest quartile. Table 11 Panel B indicates that ASR firms ranked in the lowest quartile of pre-ASR news management (i.e., the least news management) experience 0.89 percent contemporary abnormal returns. In contrast, ASR firms ranked in the highest quartile of pre-ASR news management experience −0.82 percent contemporary abnormal returns. The difference between the lowest versus the highest quartile is 1.71 percent (one-tail *p*-value = 0.068). In addition, ASR firms ranked in the lowest (highest) quartile of pre-ASR earnings management experience 1.26 (−1.73) percent contemporary abnormal returns. The difference is 2.99 percent (one-tail *p*-value = 0.010). The results in Table 11 Panel B are consistent with the notion that firms engaging in more news management and earnings management activities have lower cumulative abnormal returns than firms engaging in less such activities. The results also indicate the economic significance of using news management and earnings management prior to ASRs. The highest level of news (earnings) management can deflate stock prices by 1.71 (2.99) percent over the five weeks prior to ASRs. Similarly, Ahern and Sosyura (2014) find that active news management can raise stock prices temporarily by 5.17 percent during the negotiation period (65 days on average) of a fixed exchange ratio stock merge.

Table 11 Panel C reports the results of the regressions of pre-ASR contemporary abnormal returns on pre-ASR news management and earnings management. After controlling for firm size, book-to-market ratio, operating cash flows, and prior stock price performance, the coefficients on pre-ASR news management (*PRENM*) and earnings management (*PREEM*) are negative and statistically significant. The results show a negative association between pre-ASR news/earnings management and contemporary stock returns, suggesting that news management and earnings management, at least in part, successfully deflate stock prices prior to ASRs, since the market is not aware of the upcoming ASR and simply responds to negatives news and negative accruals observed during the pre-ASR period.

Table 11: Pre-ASR News/Earnings Management and Pre-ASR Stock Price Performance

Panel A: Pre-ASR Stock Price Performance

PRECAR	0.33%
p-value (one-tail)	0.220
N	365

Panel B: Pre-ASR Stock Price Performance in Lowest versus Highest Pre-ASR *NM and EM*

	Lowest Quartile of *PRENM*	Highest Quartile of *PRENM*	Highest − Lowest	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest
PRECAR	0.89%	-0.82%	-1.71%	1.26%	-1.73%	-2.99%
p-value (one-tail)	0.130	0.163	0.068	0.066	0.038	0.010
N	91	90		87	86	

Panel C: Regression of Pre-ASR Stock Price Performance on Pre-ASR *NM* and *EM*

	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		-0.034	0.485	-0.013	0.802
PRENM	−	-0.534	0.033		
PREEM	−			-0.285	0.005
SIZE		0.003	0.452	0.001	0.928
BM		0.020	0.280	0.019	0.349
OCF		0.097	0.499	0.270	0.142
PRIORRET		-0.005	0.928	-0.010	0.856
Industry fixed effect		Yes		Yes	
Year fixed effect		Yes		Yes	
Adj. R^2		0.112		0.108	
N		355		345	

Note: Table 11 Panel A reports the average cumulative market-adjusted abnormal return from trading day −25 to −3 before ASR announcements, using the CRSP index value-weighted return as the market return. Panel B reports the average cumulative abnormal return from trading day −25 to −3 in the lowest quartile versus the highest quartile of pre-ASR news/earnings management, with the lowest quintile representing the least pre-ASR news/earnings management. Panel C reports the results of the following regressions:

$$PRECAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 OCF_i + \alpha_5 PRIORRET_i + \varepsilon_{it}$$

$$PRECAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 OCF_i + \beta_5 PRIORRET_i + \varepsilon_{it}$$

where *i* is the ASR firm index. *PRECAR* is cumulative market-adjusted abnormal returns from trading day −25 to −3 prior to ASR announcements. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). *SIZE* is the logarithm of the market value of equity. *BM* is the book value of equity divided by the market value of equity. *OCF* is operating cash flows divided by total assets. *SIZE*, *BM* and *OCF* are measured at the end of the fiscal quarter preceding trading day −25. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −70 to −31. Fama-French 12 industry and year fixed effects are included and White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

6.2 The Association between Pre-ASR News/Earnings Management and ASR Announcement Returns

6.2.1 Hypothesis Development (Hypothesis 6)

This section investigates whether ASR announcements cause investors to correct for earlier news management and earnings management. Shivakumar (2000) examines the similar research question around seasoned equity offerings (SEOs). He finds evidence of upward accrual-based earnings management prior to SEOs. In addition, he finds that pre-SEO abnormal accruals predict two-day negative price reaction to SEO announcements. He interprets his findings as investors being able to disentangle earlier earnings management activities and undo their effects at SEO announcements.

Due to the disclosure requirements for ASRs discussed in Section 2.3, investors will be aware of the upcoming ASR once the firm enters into an ASR contract. The mean (median) days between the ASR announcement date and the initiation date are 0.14 (0) days in my sample of 365 ASRs announced between 2004 and 2013. Given that the announcement of an ASR may alert investors to managers' attempt to deflate stock prices prior to the ASR, investors may adjust their

previous valuation once the ASR is announced, and thus react positively to the ASR announcement. This argument suggests a positive association between pre-ASR news/earnings management and market reaction to ASR announcements. In addition, if the market is completely efficient, the valuation adjustment should be completed at the ASR announcement date, and there should be no association between pre-ASR news/earnings management and post-ASR stock price performance.

However, whether investors can disentangle pre-ASR news management and earnings management, or whether they can fully correct for them, is an empirical question. Prior studies find that investors fail to fully undo the effects of pre-event earnings management at event announcements and thus pre-event earnings management is associated with post-event abnormal returns (e.g., Rangan 1998; Teoh et al. 1998; Louis 2004). As Gong et al. (2008) suggest, as long as investors are uncertain about managers' incentives, they may not be able to anticipate pre-event earnings management and reconstruct unmanaged earnings to correctly adjust the valuation. In the ASR setting, one source of such uncertainty may come from the difficulty in telling whether managers use an ASR to signal undervaluation or defend against takeover threats. Managers who are concerned about undervaluation and takeover threats are less likely to deflate stock prices prior to an ASR. Because managers' real intent is not directly observable, the incentives of managers prior to an ASR are not sufficiently apparent to investors, which may prevent investors from disentangling earlier news management and earnings management and undoing their effects when the ASR is announced. Because of these conflicting arguments, I express my hypothesis in the null form and leave it to the subsequent empirical test.

H6: Market reaction to ASR announcements is not associated with pre-ASR news management and earnings management.

6.2.2 Regression Models for Testing Hypothesis 6

To examine whether ASR announcements cause investors to correct for pre-ASR news management and earnings management, I examine cumulative market-adjusted abnormal returns from trading day −2 to +2 around the ASR announcements date, using the CRSP value-weighted return as the market return.[27] To test Hypothesis 6, I use the following regression models:

$$ANNCAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 PRIORRET_i + \alpha_5 ASRSIZE_i + \alpha_6 MISVAL_i + \alpha_7 OCFDIFF_i + \alpha_8 MBDIFF_i + \alpha_9 LEVDIFF_i + \alpha_{10} EPSBONUS_i + \alpha_{11} TAKEOVER_i + \varepsilon_{it} \quad (13)$$

$$ANNCAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it} \quad (14)$$

where *i* is the ASR firm index. *ANNCAR* is the cumulative abnormal returns over the five days around the ASR announcement date. *SIZE* and *BM* are defined the same as in Equation (11) and Equation (12), and are measured at the end of quarter −1. *PRIORRET* is the cumulative market-adjusted abnormal returns over the period from trading day −45 to −6 before ASR announcements. To control for ASR characteristics, I include ASR size and motivations variables (see discussion in Section 5.2). ASR size (*ASRSIZE*) is defined as the number of shares to be repurchased divided by the number of outstanding shares at the end of quarter −1. *MISVAL*, *OCFDIFF*, *MBDIFF*, *LEVDIFF*, *EPSBONUS* and *TAKEOVER* are motivation variables as defined in Section 5.2. I include Fama-French 12 industry and year fix effects and use White robust standard errors to

[27] Trading day 0 is the ASR announcement date, or the next trading day if the ASR announcement date is not a trading day. The empirical results remain qualitatively unchanged if I use the cumulative abnormal returns calculated using the standard market model. The parameters of the market model are estimated over the period from 252 trading days to 44 trading days before ASR announcements using the CRSP value-weighted return as the market return.

control for heteroskedasticity. If investors correct earlier mispricing at the ASR announcement date, I should observe a positive coefficient for both pre-ASR news management and earnings management in these regressions. Otherwise, an insignificant coefficient suggests that investors fail to adjust the valuation for news management and earnings management prior to an ASR when the ASR is announced.

6.2.3 Results of Testing Hypothesis 6

Table 12 Panel A reports the average five-day cumulative abnormal return around ASR announcements. The average announcement return is 1.44 percent and statistically significant (one-tail p-value < 0.001). The result is consistent with prior studies and suggests that ASR announcements are value-increasing events. Bargeron et al. (2011) report the average three-day announcement return of 1.42 percent for ASRs during the period from 2004 to 2008. Chemmanur et al. (2010) calculate announcement returns over the 15-day window (from trading day −7 to trading day +7), and report the average announcement return of 2.04 percent for ASRs during the period from 2004 to 2007. Bonaimé (2012) report the average five-day announcement return of 1.93 percent for OMR-only programs for the period 1988–2007, but it declines in recent years and is 1.19 percent during the period 2004–2007.

Table 12 Panel B indicates that the average announcement return is 1.50 percent for ASR firms ranked in the lowest quartile of pre-ASR news management, versus 1.31 percent for ASR firms ranked in the highest quartile of pre-ASR news management. Both are statistically significant at the 0.01 level but the difference between the lowest and the highest quartile is not statistically significant. Similarly, ASR firms ranked in the lowest (highest) quartile of pre-ASR earnings management experience an announcement return of 1.44 (1.45) percent. The difference is again not significantly different from zero. The results in Table 12 Panel B are consistent with the

interpretation that investors fail to anticipate earlier news management and earnings management and undo their effects at the ASR announcement date.

Table 12 Panel C reports the results from the regressions of firm-specific announcement returns on pre-ASR news management and earnings management. The coefficients on pre-ASR news management (*PRENM*) and earnings management (*PREEM*) are not statistically significant at a conventional level. Again, the insignificant coefficients suggest that investors fail to see through earlier news management and earnings management and respond accordingly at the ASR announcement date. Consistent with Bargeron et al. (2011), the coefficient on *ASRSIZE* is positive and significant at the 0.01 level, indicating that larger ASRs are associated with higher announcement returns.

Table 12: Pre-ASR News/Earnings Management and ASR Announcement Returns

Panel A: ASR Announcement Returns

ANNCAR	1.44%
p-value (one-tail)	0.000
N	365

Panel B: ASR Announcement Returns in Lowest versus Highest Pre-ASR *NM and EM*

	Lowest Quartile of *PRENM*	Highest Quartile of *PRENM*	Highest − Lowest	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest
CAR	1.50%	1.31%	-0.19%	1.44%	1.45%	0.01%
p-value (one-tail)	0.002	0.000	0.381	0.001	0.003	0.493
N	91	90		87	86	

Panel C: Regression of Announcement Returns on Pre-ASR *NM* and *EM*

		Dep. Var. = *NM*		Dep. Var. = *EM*	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		-0.006	0.814	0.004	0.877
PRENM	?	-0.113	0.316		
PREEM	?			-0.061	0.363
SIZE		0.002	0.521	0.001	0.755
BM		0.008	0.641	0.010	0.557
PRIORRET		-0.026	0.313	-0.023	0.369
ASRSIZE		0.247	0.001	0.234	0.002
MISVAL		0.009	0.276	0.011	0.224
OCFDIFF		0.033	0.600	0.058	0.422
MBDIFF		0.002	0.707	0.002	0.735
LEVDIFF		0.051	0.284	0.046	0.321
EPSBONUS		-0.006	0.293	-0.006	0.311
TAKEOVER		-0.019	0.211	-0.019	0.209
Industry fixed effect		Yes		Yes	
Year fixed effect		Yes		Yes	
Adj. R^2		0.111		0.107	
N		345		344	

Note: Table 12 Panel A reports the average 5-day cumulative market-adjusted abnormal return from trading day −2 to +2 around ASR announcements, using the CRSP index value-weighted return as the market return. Panel B reports the average 5-day cumulative abnormal return around ASR announcements in the lowest quartile versus the highest quartile of pre-ASR news/earnings management, with the lowest quintile representing the least pre-ASR news/earnings management. Panel C reports the results of the following regressions:

$$ANNCAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 PRIORRET_i + \alpha_5 ASRSIZE_i + \alpha_6 MISVAL_i + \alpha_7 OCFDIFF_i + \alpha_8 MBDIFF_i + \alpha_9 LEVDIFF_i + \alpha_{10} EPSBONUS_i + \alpha_{11} TAKEOVER_i + \varepsilon_{it}$$

$$ANNAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it}$$

where *i* is the ASR firm index. *ANNCAR* is 5-day cumulative abnormal returns from trading day −2 to +2 around ASR announcements. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). *SIZE* is the logarithm of the market value of equity. *BM* is the book value of equity divided by the market value of equity. *SIZE* and *BM* are measured at the end of quarter −1 before the ASR initiation date. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −45 to −6 before the ASR initiation date. *ASRSIZE* is the number of shares to be repurchased divided by the number of outstanding shares at the end of quarter −1. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. *OCFDIFF* is the difference between the firm-specific operating cash flows (scaled by total assets) and the industry median. *MBDIFF* is the difference between the firm-specific market-to-book ratio and the industry median. *LEVDIFF* is the difference between the firm-specific leverage ratio and the target leverage ratio derived from Flannery and Ragan's (2006) model. *MISVAL*, *OCFDIFF*, *MBDIFF*, and *LEVDIFF* are measured at quarter −1. *EPSBONUS* is a dummy variable that equals 1 if bonuses of top executives are tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the ASR firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise. Fama-French 12 industry and year fixed effects are included and White robust

standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

To further corroborate the interpretation that investors cannot undo the effects of pre-ASR news management and earnings management at the ASR announcement date, I analyze earnings response coefficients around ASR announcements. If ASR announcements alert investors to the increased incentives for managers to use downward earnings management prior to ASRs, I should expect investors to react less to unexpected earnings after ASR announcements, because investors will perceive post-ASR earnings less value-relevant. In contrast, if investors cannot infer pre-ASR earnings management at the ASR announcement date and naively respond to unexpected earnings, I should observe no significant change in earnings response coefficients following ASR announcements.

Following Shivakumar (2000), I estimate the earnings response coefficients using a pooled regression of earnings announcement returns on unexpected earnings for fiscal quarters from quarter −8 to quarter +8 around ASR announcements.[28] Earnings announcement returns are measured as the three-day cumulative market-adjusted abnormal returns around earnings announcements from trading day −1 to +1, using the CRSP index value-weighted return as the market return. Unexpected earnings for a particular quarter are measured as the difference between the actual EPS and the analysts' consensus forecast, scaled by the end-of-quarter stock price.[29] I

[28] The empirical results remain qualitatively unchanged if I instead use fiscal quarters from quarter −4 to quarter +4.

[29] The analysts' consensus forecast of EPS for a particular quarter is defined as the median of analysts' forecasts of that quarter's EPS issued within 90 days before that quarter's earnings announcement. The measurement of unexpected earnings uses the analysts' consensus forecast as the expected earnings. In an additional robustness check, I use the actual EPS in the same quarter of the previous fiscal year as the expected earnings, based on the assumption that EPS follows a seasonal random walk. The empirical results remain qualitatively unchanged.

also include the logarithm of market value of equity to control for the firm size. Specifically, I use the following regression model:

$$EACAR_{it} = \alpha_0 + \alpha_1 UE_{it} + \alpha_2 POST_{it} + \alpha_3 UE_{it} \times POST_{it} + +\alpha_4 SIZE_{it} + \varepsilon_{it} \quad (15)$$

where *i* is the ASR firm index and *t* is the quarter index. *EACAR* is the three-day earnings announcement returns and *UE* is the unexpected earnings in the released quarterly earnings. *POST* is a dummy variable that equals one if quarter *t* is after the ASR announcement, and zero otherwise. *SIZE* is the logarithm of the market value of equity. I use White robust standard errors to control for heteroskedasticity. *UE*×*POST* is used to identify any changes in earnings response coefficients around ASR announcements. If ASR announcements cause investors to revise their earnings response in post-announcement quarters, I should expect $\alpha_3 < 0$; otherwise I should expect α_3 to be not significantly different from zero.

Table 13 reports the regression results. Earnings response coefficients in pre-announcement quarters are 0.17 and statistically significant (one-tail *p*-value < 0.001), suggesting that investors price unexpected earnings positively in these quarters. The coefficient on *UE*×*POST* is not significantly different from zero, indicating that earnings response coefficients do not decrease significantly in post-announcement quarters. This result is consistent with the interpretation that investors fail to infer earlier earnings management at the ASR announcement date and naively respond to unexpected earnings in post-announcement quarters. In sum, the empirical results from the announcement return analysis and the earnings response coefficient analysis consistently suggest that an ASR announcement is not a clear signal for investors to learn about earlier news management and earnings management, probably because the real motivation for the ASR is not sufficiently evident or because investors interpret the motivation conveyed by the ASR

announcement differently. For example, investors probably will not form a unanimous opinion about whether the ASR firm is undervalued.

Table 13: Earnings Response Coefficients around ASR Announcements

	Predicted Sign	Coef.	*p*-value
Intercept		-0.009	0.353
UE	+	0.170	0.000
POST		0.001	0.769
UE×*POST*	?	-0.011	0.726
SIZE		0.001	0.441
Adj. R^2		0.016	
N		5,565	

Note: Table 13 reports earnings response coefficients using the following pooled regression of earnings announcement returns on unexpected earnings for fiscal quarters from quarter −8 to quarter +8 around ASR announcements:

$$EACAR_{it} = \alpha_0 + \alpha_1 UE_{it} + \alpha_2 POST_{it} + \alpha_3 UE_{it} \times POST_{it} + +\alpha_4 SIZE_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index and *t* is the quarter index. *EACAR* is 3-day cumulative market-adjusted abnormal returns from trading day −1 to +1 around earnings announcements, using the CRSP index value-weighted return as the market return. *UE* is unexpected earnings in released quarterly earnings, defined as the difference between the actual EPS of quarter *t* and analysts' consensus forecast of EPS for quarter *t*, scaled by the stock price at the end of quarter *t*. *POST* is a dummy variable that equals 1 if quarter *t* is after ASR announcements, and 0 otherwise. *SIZE* is the logarithm of the market value of equity at the end of quarter *t*. White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

6.3 The Association between Pre-ASR Earnings Management and Post-ASR Operating Performance

6.3.1 Hypothesis Development (Hypothesis 7)

If managers use downward accrual-based earnings management to deflate stock prices prior to an ASR, using the reported operating performance prior to the ASR as a benchmark is likely to result in an improvement in the post-ASR reported operating performance. Furthermore, reversals of pre-ASR negative abnormal accruals in future periods are likely to fuel the post-ASR operating performance improvement. The more aggressively managers deflate earnings using downward accrual-based earnings management prior to an ASR, the greater improvement in the

operating performance there may be following the ASR. I express my prediction in the following hypothesis:

H7: Post-ASR operating performance improvement is positively associated with pre-ASR earnings management.

6.3.2 Measurement of Post-ASR Operating Performance and Regression Model for Testing Hypothesis 7

Following Lie (2005) and Gong et al. (2008), I measure the post-ASR operating performance as the performance-matched quarterly return-on-assets (ROA) over one or two years after the ASR initiation date. ROA is the income before extraordinary items of a given quarter divided by total assets at the beginning of that quarter. I define the performance-matched ROA for a given firm as the firm-specific ROA minus the ROA of a matched firm with similar pre-ASR operating performance.

I select matched firms following the procedure used by Lie (2005) and Gong et al. (2008). For each ASR firm, I select all non-ASR firms in the same two-digit SIC code with operating performance for quarter −1 before the ASR initiation date within ±20 percent or within ±0.01; the average of operating performance for quarter −4, −3, −2 and −1 within ±20 percent or within ±0.01; and pre-ASR market-to-book ratio within ±20 percent or within ±0.1. If no firm meets these criteria, I relax the industry criterion to one-digit SIC code. From all matching firms, I select the firm with the smallest sum of absolute values of ROA differences, defined as:

$$\left|\mathrm{ROA}_{\text{quarter }-1,\text{ ASR firm}} - \mathrm{ROA}_{\text{quarter }-1,\text{ matched firm}}\right| + \left|\mathrm{ROA}_{\text{quarter }-4,-3,-2\text{ and }-1,\text{ ASR firm}} - \mathrm{ROA}_{\text{quarter }-4,-3,-2\text{ and }-1,\text{ matched firm}}\right|$$

Untabulated results show that ASR firms and matched firms are similar in terms of pre-ASR operating performance and growth potential. The mean (median) ROA for quarter −1 is 1.90

percent (1.53 percent) for ASR firms and 1.88 percent (1.55 percent) for matched firms; the mean (median) quarterly ROA for quarter −4, −3, −2 and −1 is 1.87 percent (1.61 percent) for ASR firms and 1.83 percent (1.58 percent) for matched firms; and the mean (median) pre-ASR market-to-book ratio is 3.47 (2.58) for ASR firms and 3.28 (2.40) for matched firms.

The empirical results in Chapter 4 indicate that ASR firms deflate earnings in quarter −1 before the ASR initiation date. Because the above matching procedure selects matched firms based on the ROA for quarter −1, the ROA of ASR firms includes the portion of managed earnings. This approach is consistent with Lie (2005) and Gong et al. (2008), and is appropriate for this research. If managers deflate earnings prior to ASRs, ASR firms that have an artificially low ROA are likely to be matched with firms that indeed have a low ROA. As a result, when the intentional deflation of earnings discontinues after the ASR initiation date, ASR firms will show a greater improvement in post-ASR operating performance than matched firms. Therefore, the matching procedure and the research design capture the driver of the operating performance improvement as predicted by Hypothesis 7.

To test whether there is a positive association between pre-ASR earnings management and post-ASR improvement in operating performance, I use the following regression model:

$$\begin{aligned}\Delta ROA_i = {} & \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i \\ & + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i \\ & + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it}\end{aligned} \qquad (16)$$

where i is the ASR firm index. ΔROA measures the post-ASR improvement in operating performance, defined as the average of performance-matched quarterly ROAs over one or two years after the ASR initiation date minus the performance-matched ROA in quarter −1. Other variables are defined the same as in Equation (13) and Equation (14). I include Fama-French 12

industry and year fix effects and use White robust standard errors to control for heteroskedasticity. I expect $\beta_1 > 0$ in Equation (16).

6.3.3 Results of Testing Hypothesis 7

Table 14 Panel A reports that the average increase in ROA is 0.37 percent for the one-year horizon and 0.56 percent for the two-year horizon following ASRs, and both are statistically significant at the 0.01 level on a one-tail test. Table 14 Panel B indicates that ASR firms ranked in the lowest quartile of pre-ASR earnings management experience an increase in ROA by 0.18 (−0.08) percent over the one-year (two-year) horizon following ASRs. In contrast, ASR firms ranked in the highest quartile of pre-ASR earnings management experience an increase in ROA by 0.83 (0.79) percent over the one-year (two-year) horizon following ASRs. The difference between the lowest and the highest quartile is 0.65 (0.87) percent over the one-year (two-year) horizon following ASRs and is statistically significant on a one-tail test. The results in Table 14 Panel B suggest a positive association between pre-ASR earnings management and post-ASR improvement in operating performance for one or two years after the ASR initiation date.

Table 14 Panel C reports the results from the regression of firm-specific post-ASR improvement in operating performance on pre-ASR earnings management. Consistent with my expectation, the coefficient on pre-ASR earnings management (*PREEM*) is positive and statistically significant at the 0.05 level on a one-tail test for both one-year and two-year horizons. The results provide further evidence that pre-ASR earnings management predicts the post-ASR improvement in operating performance.

Table 14: Pre-ASR Earnings Management and Post-ASR Operating Performance

Panel A: Post-ASR Improvement in Operating Performance

	1 Year	2 Year
Δ*ROA*	0.37%	0.56%
p-value (one-tail)	0.006	0.009
N	365	365

Panel B: Post-ASR Improvement in Operating Performance in Lowest versus Highest Pre-ASR *EM*

	1 Year			2 Year		
	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest
Δ*ROA*	0.18%	0.83%	0.65%	-0.08%	0.79%	0.87%
p-value (one-tail)	0.209	0.018	0.076	0.368	0.062	0.060
N	87	86		87	86	

Panel C: Regression of Post-ASR Improvement in Operating Performance on Pre-ASR *EM*

		1 Year		2 Year	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.027	0.025	0.025	0.052
PREEM	+	0.171	0.044	0.238	0.041
SIZE		-0.002	0.019	-0.002	0.171
BM		-0.010	0.287	-0.024	0.030
OCF		0.018	0.629	0.041	0.441
PRIORRET		0.009	0.206	0.016	0.122
ASRSIZE		-0.053	0.313	-0.095	0.154
MISVAL		-0.001	0.786	-0.005	0.258
OCFDIFF		0.009	0.679	0.007	0.850
MBDIFF		0.002	0.487	0.004	0.337
LEVDIFF		-0.001	0.921	0.004	0.704
EPSBONUS		0.027	0.025	0.025	0.052
TAKEOVER		0.171	0.145	0.238	0.142
Industry fixed effect					
Year fixed effect					
Adj. R^2		0.098		0.132	
N		344		344	

Note: Table 14 Panel A reports the average improvement in operating performance over 1-year and 2-year horizons after the ASR initiation date. The improvement in operating performance is defined as the performance-matched quarterly ROA averaged over 1-year or 2-year horizons minus the performance-matched ROA for quarter −1 before the ASR initiation date. Panel B reports the improvement in operating performance over 1-year and 2-year horizons in the lowest quartile versus the highest quartile of pre-ASR earnings management, with the lowest quintile representing the least pre-ASR earnings management. Panel C reports the results of the following regressions:

$$\Delta ROA_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it}$$

where *i* is the ASR firm index. Δ*ROA* is the improvement in operating performance over the 1-year or 2-year horizon. *PREEM* is quarterly abnormal current accruals in quarter −1 prior to the ASR initiation date (multiplied by −1). *SIZE* is the logarithm of the market value of equity. *BM* is the book value of equity divided by the market value of equity. *SIZE* and *BM* are measured at the end of quarter −1 before the ASR initiation date. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −45 to −6 before the ASR initiation date. *ASRSIZE* is the number of shares to be repurchased divided by the number of outstanding shares at the end of quarter −1. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. *OCFDIFF* is the difference between the firm-specific operating cash flows (scaled by total assets) and the industry median. *MBDIFF* is the difference between the firm-specific market-to-book ratio and the industry median. *LEVDIFF* is the difference between the firm-specific leverage ratio and the target leverage ratio derived from Flannery and Ragan's (2006) model. *MISVAL*, *OCFDIFF*, *MBDIFF* and *LEVDIFF* are measured at quarter −1. *EPSBONUS* is a dummy variable that equals 1 if bonuses of top executives are tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the ASR firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise. Fama-French 12 industry and year fixed effects are included and White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

6.4 The Association between Pre-ASR News/Earnings Management and Post-ASR Stock Price Performance

6.4.1 Hypothesis Development (Hypothesis 8)

If the market fails to disentangle pre-ASR news management and earnings management, or fails to fully correct for their effects at the ASR announcement date, I should expect a positive association between pre-ASR news/earnings management and post-ASR abnormal returns. This is because the effects of news management and earnings management will be revealed eventually. For example, if the pre-ASR earnings is artificially lowered by downward earnings management, an ASR firm will likely surprise the market with a faster than expected earnings growth rate in future earnings announcements, leading to positive abnormal returns following the ASR. The extent of pre-ASR news management and earnings management should be able to predict the post-ASR stock price performance. I express my prediction in the following hypothesis:

H8: Post-ASR stock price performance is positively associated with pre-ASR news management and earnings management.

6.4.2 Measurement of Post-ASR Stock Price Performance and Research Design for Testing Hypothesis 8

Bessembinder and Zhang (2013) and Mitchell and Stafford (2000) summarize two methods that have been widely used to measure long-term abnormal returns after corporate events. The first is the buy-and-hold abnormal return method based on the difference between buy-and-hold returns of event firms and buy-and-hold returns of control firms or reference portfolios (e.g., a market index). Barber and Lyon (1997) document that the buy-and-hold abnormal returns benchmarked to control firms yield well-specified test statistics while the buy-and-hold abnormal returns benchmarked to reference portfolios yield severely mis-specified test statistics. The second approach to measuring long-term abnormal returns is the calendar-time portfolio method that focuses on the mean abnormal time series returns of event firm portfolios. Fama (1998) advocates the calendar-time portfolio method because it eliminates biases arising from the cross-sectional dependence across events. In the existent literature, both the buy-and-hold abnormal return method and the calendar-time portfolio method are subject to criticism. In this research, I employ both the control-firm buy-and-hold abnormal return method and the calendar-time portfolio method to test Hypothesis 8 and assess the consistency of results across these two methods. I do not use the reference-portfolio buy-and-hold abnormal return method due to its mis-specified test statistics (Barber and Lyon 1997).

6.4.2.1 Control-Firm Buy-and-Hold Abnormal Return Method

Following Barber and Lyon (1997) and several other studies using the control-firm buy-and-hold return method (Shivakumar 2000; Louis 2004; Babenko et al. 2012), I calculate the post-ASR stock price performance as the difference between the raw buy-and-hold return of an ASR firm and the raw buy-and-hold return of a control firm. The control firm is chosen from all firms

with a market value of equity between 70 percent and 130 percent of that of the ASR firm. Among all matching firms, I choose the firm that has the closest book-to-market ratio to that of the ASR firm. All variables for the matching are measured at the end of quarter −3 before the ASR initiation date to leave out the effect of pre-ASR stock price deflation. I calculate buy-and-hold abnormal returns for ASR firms over one-year and two-year horizons, starting the day after the ASR initiation date.

To examine whether there is a positive association between pre-ASR news/earnings management and post-ASR stock price performance, I use the following regression models:

$$BHAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 PRIORRET_i + \alpha_5 ASRSIZE_i + \alpha_6 MISVAL_i + \alpha_7 OCFDIFF_i + \alpha_8 MBDIFF_i + \alpha_9 LEVDIFF_i + \alpha_{10} EPSBONUS_i + \alpha_{11} TAKEOVER_i + \varepsilon_{it} \quad (17)$$

$$BHAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it} \quad (18)$$

where *i* is the ASR firm index. *BHAR* is the buy-and-hold abnormal returns over one or two years following the ASR initiation date.[30] Other variables are defined the same as in Equation (13) and Equation (14). I include Fama-French 12 industry and year fix effects and use White robust standard errors to control for heteroskedasticity. If the effects of pre-ASR news management and earnings management unfolds eventually, I should expect $\alpha_1 > 0$ and $\beta_1 > 0$ in Equation (17) and Equation (18).

[30] Mitchell and Stafford (2000) point out that the duration of the holding period is somewhat arbitrary and various holding period horizons are often analyzed in prior literature. I follow this approach and use one-year and two-year horizons in the analyses of both post-ASR operating performance and stock price performance.

6.4.2.2 Calendar-Time Portfolio Method

Bessembinder and Zhang (2013) and Mitchell and Stafford (2000) point out that statistical inferences are influenced by the choice of return metrics and methodology. Thus, I use the calendar-time portfolio method as an alternative to the control-firm buy-and-hold abnormal return method. Specifically, for each month, I form an equal-weighted portfolio of all ASR firms that have conducted an ASR in the past one or two years. I compute the monthly excess returns of the formed portfolios over the risk-free rate, which yields a time series of monthly excess returns.[31] Then I regress the time series of monthly excess returns on the time series of Fama-French three factors, namely, the market excess return over the risk-free rate factor, the small-minus-big capitalization factor, and the high-minus-low book-to-market factor (Fama and French 1993):

$$R_t - R_{ft} = \alpha + \beta\left(R_{mt} - R_{ft}\right) + s \times SMB_t + h \times HML_t + \varepsilon_t \quad (19)$$

where R_t is the monthly return of an equal-weighted portfolio in month t. This portfolio includes all ASR firms that have conducted an ASR in the past one or two years. R_{ft} is the return on one-month T-bills in month t, representing the risk-free rate. R_{mt} is the return on a market index in month t. SMB_t is the difference in the returns of a portfolio of small and big stocks in month t. HML_t is the difference in the returns of a portfolio of high book-to-market stocks and low book-to-market stocks in month t. The estimated intercept from this regression is the average monthly abnormal return over one or two years following the ASR initiation date.

Unlike the control-firm buy-and-hold abnormal return method, the calendar-time portfolio method generates a single monthly abnormal return (the estimated intercept) that is averaged across ASR firms. As a result, I cannot obtain a firm-specific abnormal return metric for a

[31] The earliest ASR in my sample commenced in March 2004 and the latest ASR commenced in December 2013. As a result, the calendar-time portfolio method spans 129 (141) months from March 2004 to November 2014 (November 2015) for the one-year (two-year) horizon with the average month containing 34 (62) observations.

multivariate regression analysis to examine whether there is a positive association between pre-ASR news/earnings management and post-ASR abnormal. As an alternative, I form quartiles for each month by sorting all ASR firms that have conducted an ASR in the past one or two years based on pre-ASR news management (*PRENM*) or earnings management (*PREEM*). *PRENM* and *PREEM* are defined as in Equation (11) and Equation (12). The equal-weighted returns are then calculated for each month and quartile, and the intercept in Equation (19) is then estimated for each quartile using the time series equal-weighted returns (in excess of the risk-free rate). If there is a positive association between pre-ASR news/earnings management and post-ASR abnormal returns, I should observe a monotonic increase in the estimated intercept from the lowest quartile to the highest quartile. For this purpose, I report the estimated intercept for each of the four quartiles.

6.4.3 Results of Testing Hypothesis 8

6.4.3.1 Results of the Control-Firm Buy-and-Hold Abnormal Return Method

I test if pre-ASR news management and earnings management predicts post-ASR stock returns over one-year and two-year horizons after the ASR initiation date. This section presents the results using the control-firm buy-and-hold abnormal return method. Table 15 Panel A reports a post-ASR buy-and-hold abnormal return of 3.30 percent for the one-year horizon and 14.69 percent for the two-year horizon, which are both statistically significant and are equivalent to a monthly abnormal return of 0.27 percent and 0.57 percent, respectively. Table 15 Panel B indicates that ASR firms ranked in the highest quartile of pre-ASR earnings management have superior post-ASR buy-and-hold abnormal returns to ASR firms ranked in the lowest quartile, that is, 9.69 percent versus −5.64 percent for the one-year horizon, and 32.11 percent versus −1.29 percent for the two-year horizon. The one-year and two-year return differences between the highest and the

lowest quartiles of pre-ASR earnings management are statistically significant at the 0.01 level. However, I do not find similar results in the highest versus the lowest quartile of pre-ASR news management. *t*-tests indicate that the one-year and two-year return differences between the highest and the lowest quartiles of pre-ASR news management are indistinguishable from zero. These findings suggest that pre-ASR earnings management, but not pre-ASR news management, has power in explaining post-ASR long-term stock returns.

Table 15 Panel C reports the results from the regressions of firm-specific post-ASR buy-and-hold abnormal returns (over one or two years) on pre-ASR news management. The coefficients on pre-ASR news management (*PRENM*) are not statistically different from zero, suggesting the absence of the positive association between pre-ASR news management and post-ASR long-term stock returns. Table 15 Panel D reports the results from the regressions of firm-specific post-ASR buy-and-hold abnormal returns (over one or two years) on pre-ASR earnings management. In contrast to the insignificant coefficients on pre-ASR news management (*PRENM*) obtained from the previous regressions, the coefficients on pre-ASR earnings management (*PREEM*) are significantly positive with either one-year or two-year buy-and-hold abnormal returns as the dependent variable. The results suggest that pre-ASR earnings management is positively associated with post-ASR long-term stock returns as expected. Again, these results of multivariate regressions confirm that pre-ASR earnings management, but not pre-ASR news management, can predict post-ASR long-term stock returns.

Table 15: Pre-ASR News/Earnings Management and Post-ASR Buy-and-Hold Abnormal Returns (BHAR)

Panel A: Post-ASR BHAR		
	1 Year	2 Year
BHAR	3.30%	14.69%
Equivalent monthly return	0.27%	0.57%
p-value (one-tail)	0.058	0.000
N	365	365

Panel B: Post-ASR BHAR in Lowest versus Highest Pre-ASR *NM* and *EM*

	1 Year					
	Lowest Quartile of *PRENM*	Highest Quartile of *PRENM*	Highest − Lowest	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest
BHAR	5.41%	3.72%	-1.69%	-5.64%	9.69%	15.33%
p-value (one-tail)	0.081	0.172	0.379	0.045	0.021	0.004
N	91	90		87	86	

	2 Year					
	Lowest Quartile of *PRENM*	Highest Quartile of *PRENM*	Highest − Lowest	Lowest Quartile of *PREEM*	Highest Quartile of *PREEM*	Highest − Lowest
BHAR	18.03%	17.92%	-0.11%	-1.29%	32.11%	33.40%
p-value (one-tail)	0.001	0.003	0.495	0.415	0.000	0.000
N	91	90		87	86	

Panel C: Regression of Post-ASR BHAR on Pre-ASR *NM*

		1 Year		2 Year	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.025	0.923	0.096	0.807
PRENM	+	-0.741	0.251	-0.490	0.386
SIZE		0.016	0.419	0.027	0.388
BM		-0.040	0.780	-0.030	0.889
OCF		0.118	0.602	0.233	0.501
PRIORRET		-0.020	0.973	0.662	0.460
ASRSIZE		0.004	0.961	-0.109	0.439
MISVAL		0.835	0.236	1.206	0.264
OCFDIFF		-0.040	0.252	-0.015	0.780
MBDIFF		0.666	0.065	1.582	0.004
LEVDIFF		0.039	0.454	0.008	0.922
EPSBONUS		-0.039	0.599	-0.050	0.662
TAKEOVER		0.025	0.923	0.096	0.807
Industry fixed effect		Yes			
Year fixed effect		Yes			
Adj. R^2		0.067		0.086	
N		345		345	

Panel D: Regression of Post-ASR BHAR on Pre-ASR *EM*

		1 Year		2 Year	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		-0.019	0.941	-0.021	0.957
PREEM	+	2.249	0.015	4.754	0.002
SIZE		0.022	0.270	0.042	0.169
BM		-0.020	0.887	0.001	0.997
OCF		0.147	0.509	0.292	0.391
PRIORRET		0.080	0.891	0.869	0.331
ASRSIZE		-0.075	0.437	-0.263	0.075
MISVAL		0.320	0.668	0.118	0.918
OCFDIFF		-0.020	0.560	0.022	0.674
MBDIFF		0.746	0.037	1.707	0.002
LEVDIFF		0.042	0.412	0.018	0.816
EPSBONUS		-0.034	0.644	-0.044	0.695
TAKEOVER		-0.019	0.941	-0.021	0.957
Industry fixed effect		Yes			
Year fixed effect		Yes			
Adj. R^2		0.083		0.114	
N		344		344	

Note: Table 15 Panel A reports the average buy-and-hold abnormal returns over 1-year and 2-year horizons after the ASR initiation date. The buy-and-hold abnormal return is defined as the raw buy-and-hold return of an ASR firm minus the raw buy-and-hold return of a control firm, matched by size and book-to-market ratio. The control firm is chosen from all firms with a market value of equity between 70% and 130% of that of the ASR firm, and has the closest book-to-market ratio to that of the ASR firm. Size and book-to-market ratio for the matching are measured at the end of quarter −3 before the ASR initiation date. Panel B reports the average buy-and-hold abnormal returns over 1-year and 2-year horizons in the lowest quartile versus the highest quartile of pre-ASR news/earnings management, with the lowest quintile representing the least pre-ASR news/earnings management. Panel C and Panel D reports the results of the following regressions, respectively:

$$BHAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + {}_4 PRIORRET_i + \alpha_5 ASRSIZE_i + \alpha_6 MISVAL_i + \alpha_7 OCFDIFF_i + \alpha_8 MBDIFF_i + \alpha_9 LEVDIFF_i + \alpha_{10} EPSBONUS_i + \alpha_{11} TAKEOVER_i + \varepsilon_{it}$$

$$BHAR_i = \beta_0 + \beta_1 PREEM_i + \beta_2 SIZE_i + \beta_3 BM_i + \beta_4 PRIORRET_i + \beta_5 ASRSIZE_i + \beta_6 MISVAL_i + \beta_7 OCFDIFF_i + \beta_8 MBDIFF_i + \beta_9 LEVDIFF_i + \beta_{10} EPSBONUS_i + \beta_{11} TAKEOVER_i + \varepsilon_{it}$$

where *i* is the ASR firm index. *BHAR* is buy-and-hold abnormal returns over 1-year and 2-year horizons after the ASR initiation date. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). *SIZE* is the logarithm of the market value of equity. *BM* is the book value of equity divided by the market value of equity. *SIZE* and *BM* are measured at the end of quarter −1 before the ASR initiation date. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −45 to −6 before the ASR initiation date. *ASRSIZE* is the number of shares to be repurchased divided by the number of outstanding shares at the end of quarter −1. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. *OCFDIFF* is the difference between the firm-specific operating cash flows (scaled by total assets) and the industry median. *MBDIFF* is the difference between the firm-specific market-to-book ratio and the industry median. *LEVDIFF* is the difference between the firm-specific leverage ratio and the target leverage ratio derived from Flannery and Ragan's (2006) model. *MISVAL*, *OCFDIFF*, *MBDIFF*, and *LEVDIFF* are measured at quarter −1. *EPSBONUS* is a dummy

variable that equals 1 if bonuses of top executives are tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the ASR firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise. Fama-French 12 industry and year fixed effects are included and White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

6.4.3.2 Results of the Calendar-Time Portfolio Method

This section reports the results using the alternative calendar-time portfolio method. Table 16 Panel A reports a post-ASR monthly calendar-time abnormal return of 0.29 percent (one-tail *p*-value = 0.091) for the one-year horizon and 0.44 percent (one-tail *p*-value = 0.005) for the two-year horizon. Compared to the control-firm buy-and-hold abnormal return method, the calendar-time portfolio method yields a lower average monthly abnormal return for the two-year horizon and lower significance levels for both one-year and two-year horizons. Table 16 Panel B reports monthly calendar-time abnormal returns for quartiles 1–4 based on pre-ASR news management (*PRENM*). No pattern is discernable across these quartiles and the return difference between the highest and the lowest quartiles is not statistically significant. This suggests that pre-ASR news management cannot predict post-ASR long-term stock returns. In contrast, Table 16 Panel C shows a monotonic increase in the monthly calendar-time abnormal return from the lowest quartile to the highest quartile based on pre-ASR earnings management (*PREEM*) for the two-year horizon. For the one-year horizon, the monthly abnormal return is also monotonically increasing up to the third quartile. The significance level of estimated abnormal returns is largely improved for the higher quartiles for both one-year and two-year horizons. In addition, the difference in monthly abnormal returns between the highest and the lowest quartiles is 0.69 percent for the one-year horizon and 0.68 percent for the two-year horizon (equivalent to a holding return of 8.60 percent for the one-year horizon and 17.66 percent for the two-year horizon), both of which are significant on a one-tail test. This suggests that a zero-investment strategy longing the highest quartile and shorting the

lowest quartile can yield a monthly profit of 0.69 percent or 0.68 percent after controlling for Fama-French three risk factors. The findings in Table 16 Panel C are consistent with the conjecture that pre-ASR earnings management is positively associated with post-ASR long-term stock returns.

Table 16: Pre-ASR News/Earnings Management and Post-ASR Calendar-Time Abnormal Returns (CTAR)

Panel A: Post-ASR CTAR

	1 Year	2 Year
Monthly CTAR	0.29%	0.44%
p-value (one-tail)	0.091	0.005

Panel B: Post-ASR CTAR for Quartiles Formed Based on Pre-ASR *NM*

	1 Year				
	Lowest Quartile of *PRENM*	2	3	Highest Quartile of *PRENM*	Highest − Lowest
Monthly CTAR	0.28 %	0.26%	0.71%	0.12%	-0.16%
p-value (one-tail)	0.210	0.205	0.094	0.369	0.308

	2 Year				
	Lowest Quartile of *PRENM*	2	3	Highest Quartile of *PRENM*	Highest − Lowest
Monthly CTAR	0.50%	0.43%	0.01%	0.58%	0.08%
p-value (one-tail)	0.020	0.019	0.497	0.014	0.485

Panel C: Post-ASR CTAR of Quartiles Formed Based on Pre-ASR *EM*

	1 Year				
	Lowest Quartile of *PREEM*	2	3	Highest Quartile of *PREEM*	Highest − Lowest
Monthly CTAR	-0.11%	-0.01%	0.67%	0.58%	0.69%
p-value (one-tail)	0.365	0.499	0.079	0.074	0.061

	2 Year				
	Lowest Quartile of *PREEM*	2	3	Highest Quartile of *PREEM*	Highest − Lowest
Monthly CTAR	0.23%	0.27%	0.36%	0.91%	0.68%
p-value (one-tail)	0.166	0.123	0.164	0.002	0.049

Note: Table 16 Panel A reports the average calendar-time abnormal returns over 1-year and 2-year horizons after the ASR initiation date. The calendar-time abnormal return is the estimated intercept from the following Fama-French 3-factor model (Fama and French 1993):

$$R_t - R_{ft} = \alpha + \beta\left(R_{mt} - R_{ft}\right) + s \times SMB_t + h \times HML_t + \varepsilon_t$$

where R_t is the monthly return of an equal-weighted portfolio in month *t*. This portfolio includes all ASR firms that have conducted an ASR in the past 1 or 2 years. R_{ft} is the return on 1-month T-bills in month *t*, representing the risk-free rate. R_{mt} is the return on a market index in month *t*. SMB_t is the difference in the returns of a portfolio of small and big stocks in month *t*. HML_t is the difference in the returns of a portfolio of high book-to-market stocks and low book-to-market stocks in month *t*. White robust standard errors are used to control for heteroskedasticity. Panel B reports the calendar-time abnormal returns over 1-year and 2-year horizons for each quartile that are formed for each month by sorting all ASR firms that have conducted an ASR in the past 1 or 2 years based on pre-ASR news management, with the lowest quintile representing the least pre-ASR news management. Panel C reports the calendar-time abnormal returns over 1-year and 2-year horizons for each quartile that are formed for each month by sorting all ASR firms that have conducted an ASR in the past 1 or 2 years based on pre-ASR earnings management, with the lowest quartile representing the least pre-ASR earnings management.

I note that both the control-firm buy-and-hold abnormal return method and the calendar-time portfolio method yield similar results. However, the calendar-time portfolio method yields smaller abnormal returns and lower significance levels of test statistics. This is consistent with Loughran and Ritter (2000) who argue that the calendar-time portfolio method has low power to detect long-term abnormal returns.

6.4.3.3 Further Discussion on the Association between Pre-ASR News Management and Post-ASR Stock Price Performance

I hypothesize that post-ASR stock price performance is positively associated with pre-ASR news management and earnings management. However, the empirical results presented in Section 6.4.3.1 and Section 6.4.3.2 show that post-ASR stock price performance is only positively associated with pre-ASR earnings management, but not news management. One interpretation is that pre-ASR earnings management is reversed in the long term while pre-ASR news management is reversed quickly and thus has no long-term effects on post-ASR stock price performance. This interpretation appears to be consistent with the patterns shown in Figure 3 and Figure 4. In Figure 3, the pre-ASR news management appears to be reversed in the first five week after the ASR initiation date; whereas in Figure 4 I do not observe a quick reversal of pre-ASR earnings management. If pre-ASR earnings management is reversed gradually in the long run, earnings

surprises relative to the earnings expectation based on the deflated pre-ASR earnings will persist in the long run (as shown in Section 6.3.3). Because investors naively respond to unexpected earnings (as shown in Section 6.2.3), the positive association between pre-ASR earnings management and post-ASR stock price performance should exist in the long run. If pre-ASR news management is reversed quickly and investors naively respond to post-ASR unexpected positive news as they naively respond to post-ASR unexpected earnings, I should expect a positive association between pre-ASR news management and post-ASR stock price performance in a short window.

To test this conjecture, I regress the cumulative market-adjusted abnormal returns during the period from trading day +3 to +25 after the ASR initiation date on pre-ASR news management. This period coincides with week +1 to week +5 following the ASR initiation date. I exclude trading day +1 and +2 to avoid the possible run-up of stock prices in the ASR announcement window. I control for other variables in Equation (13) and Equation (14). The evidence of a positive coefficient on pre-ASR news management (*PRENM*) will be consistent with my conjecture.

Table 17 reports the regression results. As expected, the coefficient on *PRENM* is significantly positive (one-tail p-value = 0.058). I also regress the cumulative market-adjusted abnormal returns during the period from trading day +3 to +25 on pre-ASR earnings management (*PREEM*). Untabulated results show an insignificant coefficient on *PREEM*, further providing evidence that the pace of reversals in pre-ASR news management and earnings management determines the different horizons over which they are positively associated with post-ASR stock price performance.

Table 17: Pre-ASR News Management and Post-ASR 5-Week Stock Price Performance

	Predicted Sign	Coef.	*p*-value
Intercept		-0.051	0.121
PRENM	+	0.168	0.058
SIZE		0.004	0.196
BM		0.026	0.174
OCF		-0.008	0.828
PRIORRET		-0.005	0.944
ASRSIZE		0.004	0.764
MISVAL		-0.041	0.688
OCFDIFF		0.001	0.902
MBDIFF		0.012	0.837
LEVDIFF		0.015	0.037
EPSBONUS		0.003	0.761
TAKEOVER		-0.051	0.121
Industry fixed effect		Yes	
Year fixed effect		Yes	
Adj. R^2		0.091	
N		345	

Note: Table 17 reports the results of the regression of cumulative market-adjusted abnormal returns from trading day +3 to +25 on pre-ASR news management:

$$POSTCAR_i = \alpha_0 + \alpha_1 PRENM_i + \alpha_2 SIZE_i + \alpha_3 BM_i + \alpha_4 PRIORRET_i + \alpha_5 ASRSIZE_i + \alpha_6 MISVAL_i + \alpha_7 OCFDIFF_i + \alpha_8 MBDIFF_i + \alpha_9 LEVDIFF_i + \alpha_{10} EPSBONUS_i + \alpha_{11} TAKEOVER_i + \varepsilon_{it}$$

where *i* is the ASR firm index. *POSTCAR* is cumulative market-adjusted abnormal returns from trading day +3 to +25, using the CRSP index value-weighted return as the market return. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *SIZE* is the logarithm of the market value of equity. *BM* is the book value of equity divided by the market value of equity. *SIZE* and *BM* are measured at the end of quarter −1 before the ASR initiation date. *PRIORRET* is cumulative market-adjusted abnormal returns from trading day −45 to −6 before the ASR initiation date. *ASRSIZE* is the number of shares to be repurchased divided by the number of outstanding shares at the end of quarter −1. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. *OCFDIFF* is the difference between the firm-specific operating cash flows (scaled by total assets) and the industry median. *MBDIFF* is the difference between the firm-specific market-to-book ratio and the industry median. *LEVDIFF* is the difference between the firm-specific leverage ratio and the targeted leverage ratio derived from Flannery and Ragan's (2006) model. *MISVAL*, *OCFDIFF*, *MBDIFF*, and *LEVDIFF* are measured at quarter −1. *EPSBONUS* is a dummy variable that equals 1 if bonuses of top executives are tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the ASR firm is the target of takeover rumors during the 12-month period before the ASR, and 0 otherwise. Fama-French 12 industry and year fixed effects are included and White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

The results reported in Table 17 show that the price-deflation effect of news management does not persist long. Thus, one may argue that the advantage of ASRs over OMRs involving a

lower repurchase price achieved by news management is not obvious, since the final repurchase price is determined by the average price during the contract period. However, the purpose of news management and earnings management is two-fold: first, to maximize the main benefit of ASRs, namely, immediacy. Bargeron et al. (2008) indicate that immediacy is an important determinant for the ASR decision. If firms elect to use ASRs, they should want the shares to be delivered fast; second, to minimize the opportunity cost of ASRs. News management may not do very well for the second purpose, but it helps to achieve the first purpose. Table 11 Panel B indicates that when sorting ASR firms into quartiles based on pre-ASR news management, the top quartile (firms with the most news management activities) achieve 1.7% lower abnormal returns prior to ASRs than the bottom quartile (i.e., firms with the least news management activities).

With that said, Table 17 indicates that the price-deflation effect of news management persists for five weeks. The average contract period is 126 days. Thus, the price-deflation effect covers 28 percent of the entire contract period, which at least in part helps achieve the second purpose of reducing the repurchase price. Furthermore, I find support for the idea that firms coordinate available tools to best serve their interest in ASRs. News management and earnings management can be used together to maximize the benefit and minimize the cost of ASRs, even if one tool is better than the other at certain aspect. This research shows that when used collectively, news management and earnings management drive down the initial price and the effect is not entirely undone at ASR announcements and persist long term into the post-ASR.

6.4.3.4 Further Discussion on Pre-ASR News Management

In Section 4.3.5, I find evidence of pre-ASR news management. Specifically, I find that negative news in the five weeks before the ASR initiation date is abnormally high. This could be managers shifting negative news from the short window after the ASR initiation date to the short

window before the ASR initiation date (the *shifting* hypothesis), or mangers creating negative news in the pre-ASR short window (the *creating* hypothesis). The empirical results thus far are more consistent with the shifting hypothesis.

First, the pattern shown in Figure 3 appears to support the shifting hypothesis. There is a run-up of negative news in the five weeks before the ASR initiation date, followed by a run-down in the five weeks after. During all other periods, the levels of abnormal negative news are close to zero. Such pattern is more likely a result of strategically relocating negative news around the ASR initiation date.

Second, the regression results in Table 5, which provide evidence of pre-ASR news management, show a positive coefficient on *NMPRE1* and a negative coefficient on *NMDUR1*, both of which are significant on a one-tail test. The results conform to the pattern shown in Figure 3. Furthermore, the shifting hypothesis predicts a zero sum of the two coefficients, while the creating hypothesis predicts a positive sum of the two coefficients. The *F*-test fails to reject the null that the sum of the two coefficients equals zero (*p*-value = 0.127), providing support for the shifting hypothesis.

Third, the empirical results in Section 6.2 largely suggest that the ASR announcement date do not alert investors to pre-ASR news management and earnings management. If investors naively respond to news released by ASR firms around the ASR initiation date, the shifting hypothesis predicts a negative association between pre-ASR news management and abnormal returns in the short window before the ASR initiation date, and a positive association between pre-ASR news management and abnormal returns in the short window after the ASR initiation date, as a result of the strategic relocation of negative news. Instead, although the creating hypothesis also predicts negative abnormal returns in the short window before the ASR initiation date, it

predicts no positive association between pre-ASR news management and abnormal returns in the short window after the ASR initiation date, because the creating hypothesis predict no reversals of negative news. The empirical results reported in Section 6.4.3.3 supports the shifting hypothesis.

In sum, although the above discussion may not be definitive, the pattern in abnormal negative news and the consequence of that pattern shown in this research are more consistent with the shifting hypothesis as if managers keep the total amount of negative news constant and simply change the flow of negative news around the ASR initiation date.

Chapter 7

Additional Analyses

7.1 Real Earnings Management Prior to ASRs

In Section 4.1.2, I conjecture that managers do not use real earnings management to deflate stock prices prior to ASRs. In this section, I formally test this conjecture. Following Zang (2012) and Roychowdhury (2006), I examine real earnings management measured as:

(1) abnormal discretionary expenditures (*ABDISX*). Managers can increase selling, general and administrative expenses, research and development and advertising expenses at their discretion to deflate earnings, which leads to abnormally high discretionary expenses relative to sales and lower reported earnings; and

(2) abnormal production costs (*ABPROD*). Roychowdhury (2006) argue that managers can temporally increase sales by offering excessive price discounts or decrease costs of goods sold by overproduction. With higher production levels resulting from overproduction, one unit of goods absorbs less fixed overhead costs, allowing firms to report lower costs of goods sold. Both excessive price discounts and overproduction lead to abnormally high production costs relative to sales. Although Roychowdhury (2006) examines managers' attempt to manipulate earnings upward, theoretically this can go both ways.[32]

[32] In this research, I follow Zang (2012) and do not use abnormal operating cash flows as a proxy for real earnings management activities, because abnormal operating cash flows may be influenced by other real earnings management activities in the opposite direction. For example, decreasing discretionary expenditures has a positive effect on contemporaneous operating cash flows, while increasing price discounts has a negative effect on operating cash flows. This inconsistency makes the net effect of real earnings management activities on abnormal operating cash flows ambiguous.

Other studies provide further evidence that these measures capture real earnings managements (Cohen, Dey, and Lys 2008; Cohen and Zarowin 2010; Zang 2012). I also aggregate the two real earnings management measures into one measure by taking their sum (*REMSUM*).

Following Roychowdhury (2006) and other studies, I express normal discretionary expenditures as a linear function of sales. For each calendar quarter and Fama-French 48 industry, I estimate normal discretionary expenditures from the following regression model using all non-financial firms (Fama-French 44–47 or SIC 6000–6999) in COMPUSTAT:

$$DISX_t = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{jt} + \beta_5 SALE_{t-1} + \varepsilon_t \quad (20)$$

where $DISX_t$ is discretionary expenditures in quarter t (i.e., the sum of quarterly selling, general and administrative expenses and research and development expenses).[33] Q_{jt} is a dummy variable that equals one if quarter t is fiscal quarter j (j = 1, 2, 3 or 4), and zero otherwise. $SALE_{t-1}$ is sales in quarter $t-1$. All variables, including the fiscal quarter dummy variables Q_{jt}, are scaled by total assets at the end of quarter $t-1$. I require at least 20 observations for each regression. The residuals from each regression represent quarterly abnormal discretionary expenditures (*ABDISX*).

I estimate normal production costs using the following regression model for each calendar quarter and Fama-French 48 industry with at least 20 observations:

$$PROD_t = \beta_0 + \sum_{j=1}^{4} \beta_j Q_{jt} + \beta_5 SALE_t + \beta_6 \Delta SALE_t + \beta_7 \Delta SALE_{t-1} + \varepsilon_t \quad (21)$$

[33] Unlike prior literature that uses annual data, I exclude advertising expenses from the discretional expenditures (*DISX*) because COMPUSTAT Quarterly does not report quarterly advertising expenses. In addition, 55.7 percent of COMPUSTAT firms with non-missing quarterly selling, general and administrative (SG&A) expenses do not report quarterly research and development (R&D) expenses. I treat missing R&D expenses as zero, reasonably assuming that firms do not report R&D expenses when they are immaterial. In an additional robustness analysis (untabulated), I drop observations with missing R&D expenses. The results remain unchanged qualitatively.

where $PROD_t$ is production costs in quarter t, that is, the sum of costs of goods sold in quarter t and the change in inventory from quarter $t-1$ to t. $SALE_t$ is sales in quarter t. $\Delta SALE_t$ is the change in sales from quarter $t-1$ to t. $\Delta SALE_{t-1}$ is the change in sales from quarter $t-2$ to $t-1$. Q_{jt} are defined the same as before. All variables, including the fiscal quarter dummy variables Q_{jt}, are scaled by total assets at the end of quarter $t-1$. The residuals from each regression represent quarterly abnormal production costs (*ABPROD*).

I multiply *ABPROD* by −1 so that higher values of *ABDISX*, *ABPROD* and *REMSUM* indicate more downward real earnings management. Finally, I run the regression in Equation (5) after replacing *EM* with *ABDISX*, *ABPROD* and *REMSUM*, respectively. If managers use real earnings management to deflate stock prices prior to ASRs, I should expect the coefficient on *EMPRE1* is significantly positive in each regression. An insignificant coefficient on *EMPRE1* is consistent with the conjecture of no real earnings management prior to ASRs. The regression model is:

$$DepVar_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it} \quad (22)$$

where *EMPRE1*, *EMDUR1*, *EMDUR2* and *EMPOST* are defined the same as in Equation (5). *DepVar* represents *ABDISX*, *ABPROD* or *REMSUM*. I include firm and year fixed effects and use White standard errors adjusted to account for the possible correlation within the firm cluster.

Table 18 presents the results. The coefficient on *EMPRE1* is not significant at a conventional level in all three regressions.[34] Thus, I cannot reject the null that ASR firms do not

[34] The adjusted R^2 of the three regressions are much higher than that of the regression in Table 6. First, I rule out the impact of outliers because I obtain qualitatively similar results if I truncate the dependent variable at 1 and 99 percentiles. Second, I include firm fixed effects in these regressions. If there are minimal variation in real earnings management for each firm across quarters around the ASR initiation date (as insignificant coefficients on *EMPRE1*, *EMDUR1*, *EMDUR2* and *EMPOST* may suggest), the firm fixed effects will capture the flat level of real earnings management for each firm with a high degree of fitness. In fact, 73.3 percent of coefficients on the firm fixed effects are significant at the 0.10 level.

use downward real earnings management prior to ASRs using all three measures of real earnings management. The evidence collectively, at least in part, alleviates the concern that the insignificant coefficients may be due to the lack of power of the test. This evidence further supports my design choice in Section 4.2.4 to focus on accrual-based earnings management.

Table 18: Real Earnings Management Prior to ASRs

	DepVar = ABDISX		*DepVar = ABPROD*		*DepVar = REMSUM*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Intercept	4.579	0.000	2.683	0.423	1.847	0.296
EMPRE1	-0.077	0.622	-0.015	0.937	-0.092	0.669
EMDUR1	-0.123	0.574	-0.198	0.256	-0.308	0.294
EMDUR2	-0.177	0.439	-0.370	0.228	-0.592	0.130
EMPOST	-0.320	0.157	-0.042	0.818	-0.396	0.200
Firm fixed effect	Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes	
Adj. R^2	0.866		0.775		0.844	
N	2,535		2,392		2,392	

Note: Table 18 reports the results of the following regression using data from quarter −3 before the ASR initiation date through quarter +3 after the ASR completion date:

$$DepVar_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index and *t* is the quarter index. *DepVar* represents 3 measures of real earnings management, that is, abnormal discretionary expenditures (*ABDISX*), abnormal production costs multiplied by −1 (*ABPROD*), and the sum of them (*REMSUM*). Higher values of *ABDISX*, *ABPROD* and *REMSUM* represent more downward real earnings management. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *EMDUR1* is a dummy variable that equals 1 if quarter *t* is the first quarter during the ASR contract period, and 0 otherwise. *EMDUR2* is a dummy variable that equals 1 if quarter *t* is any other quarter than the first one during the ASR contract period, and 0 otherwise. *EMPOST* is a dummy variable that equals 1 if quarter *t* is quarter +1, +2, or +3 after the ASR completion date. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

7.2 Cross-Sectional Variation in News Management and Earnings Management Prior to ASRs

This section discusses a few sources of cross-sectional variation in pre-ASR news management and earnings management prior to ASRs. I start with two common sources that may cause cross-sectional variation in pre-ASR news management and earnings management in the

same direction. Then I examine one source that may cause cross-sectional variation in pre-ASR news management and earnings management prior to ASRs in opposite directions.

7.2.1 Sources of Cross-Sectional Variation in News Management and Earnings Management

7.2.1.1 ASR Size and Managers' Ownership

I expect ASR size and managers' ownership to cause cross-sectional variation in news management and earnings management in the same direction. First, I posit that managers' incentives to use news management and earnings management prior to an ASR increase with the dollar value of the ASR (i.e., the ASR size), as a larger ASR size suggests more cost savings from deflating stock prices. Second, deflating stock prices benefits remaining shareholders. The larger ownership (including stock holdings and options) managers have prior to ASRs, the greater the direct benefit they receive as remaining shareholders from reduced repurchase prices. Thus, I posit that managers' incentives to use price-deflating news management and earnings management prior to ASRs increase with their ownership.

7.2.1.2 The Firm's Need to Meet Earnings Targets

Graham, Harvey, and Rajgopal (2005) find that interviewed chief financial officers believe that meeting earnings targets is important for building creditability with capital market and their own career reputation, and that they are willing to sacrifice firm value and manage earnings or analysts' expectations to guarantee that their earnings targets are met. Following this observation, I argue that reducing repurchase prices is a secondary consideration to meeting earnings targets. Because downward earnings management may hurt EPS, an undesired consequence particularly for firms with very small EPS buffer over analysts' earnings forecasts in quarter −1, I posit that firms just meeting analysts' earnings targets are less likely to use pre-ASR earnings management. Instead, they resort to news management.

7.2.2 Empirical Test Models and Predictions

I formally test my conjectures using the following regression models:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 CondVar_i + \alpha_3 NMPRE1_{it} \times CondVar_i + \varepsilon_{it} \quad (23)$$

$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 CondVar_i + \beta_3 EMPRE1_{it} \times CondVar_i + \varepsilon_{it} \quad (24)$$

where *NM*, *EM*, *NMPRE1* and *EMPRE1* are defined the same as in Equation (4) and Equation (5). I exclude other sub-period dummy variables for brevity because previous empirical tests find evidence of news management and earnings management only in the period immediately prior to ASRs.[35] *CondVar* represents conditioning variables to proxy for the sources of cross-section variation in pre-ASR news management and earnings management. Specifically, I use the following conditioning variables: (1) *ASRSIZE_DUM*, which is a dummy variable that equals one if *ASRSIZE* is above its median, and zero otherwise. *ASRSIZE* is calculated as the number of shares to be repurchased divided by the total number of outstanding shares at the beginning of quarter −1; (2) *CEOOWN_DUM*, which is a dummy variable that equals one if *CEOOWN* is above its median, and zero otherwise. *CEOOWN* is calculated as CEO's ownership divided by the total number of outstanding shares at the beginning of quarter −1.[36] Due to the reporting frequency of executive compensation data, I use CEO's ownership reported for the fiscal year ended before the beginning of quarter −1; and (3) *Meet*, which is a dummy variable that equals one if the actual EPS of an ASR firm for quarter −1 exceeds analysts' consensus forecast within only two cents, and zero otherwise.[37] This follows Zang (2012) who define suspect firms just meeting a particular benchmark as firm-years with actual EPS less that benchmark between zero and two cents.

[35] The results remain qualitatively unchanged if other sub-period dummy variables are included.
[36] CEO's ownership is the sum of the number of shares (excluding stock options) and the number of stock options (exercisable and un-exercisable) held by CEO. As an additional check, I use the dollar value of CEO's ownership to capture CEO's stock-based wealth. The results remain qualitatively unchanged.
[37] I also use one cent and three cents cut-offs. Both yield similar results, except that the one-tail *p*-value of the coefficient on *EMPRE1*×*MEET* in Equation (24) increases to 0.135 if I use one cent cut-off.

7.2.3 Empirical Analysis

I first present the results of univariate analysis in Table 19 Panel A. The univariate analysis focuses on news management during the period from week −5 to week −1 and earnings management in quarter −1, since I find evidence of news management and earnings management in these periods in Chapter 4. I partition my sample into one subset of ASRs with an ASR size below the median and the other subset of ASRs with an ASR size above the median. Inconsistent with my conjecture, I do not observe an increase in pre-ASR news management (*PRENM*) from the below-median subset to the above-median subset. But pre-ASR earnings management (*PREEM*) increases with the ASR size. Overall, these results provide limited evidence of my conjecture about ASR size. Next, I parturition my sample into one subset of ASRs with CEO's ownership below the median and the other subset of ASRs with CEO's ownership above the median. In contrast to my conjecture, pre-ASR news management (*PRENM*) decreases, instead of increases, with CEO's ownership, although pre-ASR earnings management (*PREEM*) shows an insignificant increase from the below-median subset to the above-median subset. Lastly, I partition my ASR sample into one subset where firms have a very small safety buffer to meet earnings targets (*MEET* = 1) and the other subset where firms have an EPS either well above or well below earnings targets (*MEET* = 0). The results show insignificant pre-ASR earnings management for ASRs in the subset of *MEET* = 1, but significant pre-ASR earnings management for ASRs in the subset of *MEET* = 0, suggesting that firms with a very small EPS safety buffer have an urge not to deflate earnings prior to ASRs. I also observe an increase in pre-ASR news management from the subset of *MEET* = 0 to the subset of *MEET* = 1, suggesting the substitution of news management for earnings management in a specific situation where firms are deterred from using earnings management prior to ASRs.

I then present the results of multivariate regression analyses on ASR size (Table 19 Panel B), managers' ownership (Panel C), and the firm's need to meet earnings targets (Panel D). The results in Panel B show a significantly positive coefficient on *NMPRE1* with *NM* as the dependent variable, indicating the overall presence of news management prior to ASRs. The coefficient on *NMPRE1*×*ASRSIZE_DUM* is positive but not statistically significant, suggesting that the level of pre-ASR news management does not vary with the ASR size. When I run the regression with *EM* as the dependent variable, the coefficient on *EMPRE1* is not positive at a conventional level any more. Instead, the coefficient on *EMPRE1*×*ASRSIZE_DUM* is positive and statistically significant (one-tail *p*-value = 0.016), suggesting that pre-ASR earnings management mainly exist in large ASRs. The results are consistent with those in the univariate analysis, and indicate that only pre-ASR earnings management, but not news management, increases with ASR size. One possible explanation for the results is the ease of news management compared to earnings management. As Ahern and Sosyura (2014) point out, firm-generated news management is convenient and effectively is permitted by law and regulations. In contrast, prior literature (e.g., Marquardt and Wiedman 2004) discusses various costs related to earnings management, such as reduced future reporting flexibility, litigation risks and reputation losses. As a result, firms may use the handy news management tool regardless of the ASR size, but use the earnings management tool only when they can justify its costs with more savings for large ASRs.

Table 19 Panel C presents the results on CEO's ownership. The significantly positive coefficient on *NMPRE1* with *NM* as the dependent variable is consistent with the notion that there is news management prior to ASRs. However, the coefficient on *NMPRE1*×*CEOOWN_DUM* is negative and statistically significant, a result contradicting my conjecture. The coefficients on *EMPRE1* and *EMPRE1*×*CEOOWN_DUM* are positive as expected, but neither are statistically

significant at a conventional level. Overall, the results are similar to those in the univariate analysis, and provide little evidence that pre-ASR news management and earnings management increase with managers' ownership. These findings, however, are somewhat consistent with Chen and Huang (2013) who document a significantly negative association between CEO's equity holdings and downward earnings management prior to OMRs after the passage of Sarbanes-Oxley Act. Chen and Huang (2013) attribute their results to heightened scrutiny following Sarbanes-Oxley Act that is supposed to curb managers' self-serving behaviors such as news management and earnings management examined in my research. The sample period of my research is entirely in the post-Sarbanes-Oxley Act era. I also expect the disclosure requirements of ASRs to strengthen the deterrence since managers cannot conduct ASRs silently.

Table 19 Panel D presents the results on the firm's need to meet earnings targets. As expected, the coefficients on *NMPRE1* and *EMPRE1* are positive and statistically significant at the 0.05 and 0.10 level respectively. Furthermore, the coefficient on *EMPRE1*×*MEET* with *EM* as the dependent variable is negative and statistically significant (one-tail *p*-value = 0.086), while the coefficient on *NMPRE1*×*MEET* with *NM* as the dependent variable is positive and statistically significant (one-tail *p*-value = 0.034). These results support the notion that managers' incentives to meet analysts' earnings targets take precedence over their incentives to reduce repurchase costs. This analysis sheds light on a specific situation where managers rank their preferences and make trade-off between available tools to deflate stock prices prior to ASRs.

Table 19: Cross-Sectional Variation in News/Earnings Management Prior to ASRs

Panel A: Univariate Analysis of Cross-Sectional Variation in News/Earnings Management

	ASRSIZE_DUM = 0			*ASRSIZE_DUM* = 1		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0031	0.054	183	0.0031	0.038	180
PREEM	0.0018	0.384	173	0.0084	0.014	173

	CEOOWN_DUM = 0			*CEOOWN_DUM* = 1		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0067	0.002	169	0.0003	0.760	168
PREEM	0.0040	0.095	160	0.0055	0.123	159

	MEET = 0			*MEET = 1*		
	Mean	*p*-value	N	Mean	*p*-value	N
PRENM	0.0019	0.108	256	0.0059	0.012	107
PREEM	0.0056	0.013	241	0.0040	0.330	105

Panel B: Cross-Sectional Variation in News/Earnings Management with ASR Size

	Dep. Var. = *NM*			Dep. Var. = *EM*		
	Predicted Sign	Coef.	*p*-value	Predicted Sign	Coef.	*p*-value
Intercept		0.020	0.009		0.333	0.000
NMPRE1	+	0.239	0.042			
EMPRE1				+	-0.224	0.149
ASRSIZE_DUM		0.000	0.996		-0.164	0.254
NMPRE1×ASRSIZE_DUM	+	0.057	0.378			
EMPRE1×ASRSIZE_DUM				+	0.925	0.016
Firm fixed effect		Yes			Yes	
Year fixed effect		Yes			Yes	
Adj. R^2		0.106			0.211	
N		13,515			2,485	

Panel C: Cross-Sectional Variation in News/Earnings Management with Managers' Ownership

	Dep. Var. = *NM*			Dep. Var. = *EM*		
	Predicted Sign	Coef.	*p*-value	Predicted Sign	Coef.	*p*-value
Intercept		-0.067	0.010		0.115	0.000
NMPRE1	+	0.588	0.001			
EMPRE1				+	0.055	0.414
CEOOWN_DUM		0.071	0.331		0.169	0.635
NMPRE1×CEOOWN_DUM	+	-0.621	0.001			
EMPRE1×CEOOWN_DUM				+	0.297	0.265
Firm fixed effect		Yes			Yes	
Year fixed effect		Yes			Yes	
Adj. R^2		0.108			0.221	
N		12,637			2,303	

Panel D: Cross-Sectional Variation in News/Earnings Management with the Firm's Need to Meet Earnings Targets

	Dep. Var. = *NM*			Dep. Var. = *EM*		
	Predicted Sign	Coef.	*p*-value	Predicted Sign	Coef.	*p*-value
Intercept		-0.017	0.064		0.069	0.000
NMPRE1	+	0.164	0.032			
EMPRE1				+	0.428	0.075
MEET		0.136	0.375		0.270	0.362
NMPRE1×*MEET*	+	0.353	0.034			
EMPRE1×*MEET*				−	-0.606	0.086
Firm fixed effect		Yes			Yes	
Year fixed effect		Yes			Yes	
Adj. R^2		0.106			0.210	
N		13,515			2,485	

Note: Table 19 Panel A reports the univariate analysis of cross-sectional variation in pre-ASR news/earnings management with ASR size, managers' ownership and the firm's need to meet earnings target. *PRENM* is the average weekly abnormal negative news from week −5 to week −1 before the ASR initiation date. *PREEM* is quarterly abnormal current accruals in quarter −1 before the ASR initiation date (multiplied by −1). Higher values of *PRENM* and *PREEM* represent more price-deflating news management and earnings management prior to ASRs. *ASRSIZE_DUM* is a dummy variable that equals 1 if *ASRSIZE* is above its median, and 0 otherwise. *ASRSIZE* is calculated as the number of shares to be repurchased divided by the total number of outstanding shares at the beginning of quarter −1. *CEOOWN_DUM* is a dummy variable that equals 1 if *CEOOWN* is above its median, and 0 otherwise. *CEOOWN* is calculated as CEO's ownership (shares excluding stock options plus exercisable and un-exercisable stock options held by CEO) divided by the total number of outstanding shares at the beginning of quarter −1. *MEET* is a dummy variable that equals 1 if the actual EPS of quarter −1 exceeds analysts' consensus forecast within only 2 cents, and 0 otherwise.

Panel B reports the results of the regressions that examine cross-sectional variation in pre-ASR news/earnings management with various factors:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 CondVar_i + \alpha_3 NMPRE1_{it} \times CondVar_i + \varepsilon_{it}$$
$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 CondVar_i + \beta_3 EMPRE1_{it} \times CondVar_i + \varepsilon_{it}$$

where *i* is the ASR firm index. In the first regression, *t* is the week index. *NM* is the abnormal negative news in week *t*. *NMPRE1* is a dummy variable that equals 1 if week *t* falls in the period from week −5 to week −1 before the ASR initiation date, and 0 otherwise. In the second regression, *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *CondVar* represents *ASRSIZE_DUM*, *CEOOWN_DUM* and *MEET*, whose name appears at the respective row. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

7.3 The Effect of Firm Size on the Measurement of News Management

The measure of news management, *NM*, is derived from another measure, *NEGNEWS*, which is defined as the sum of the negative tone of all firm-generated press releases in a particular

week. Because larger firms usually have more press releases than smaller firms, there may be a concern that larger firms may have higher *NEGNEWS* simply due to the larger quantity of firm-generated press releases. Untabulated analysis indeed shows a positive correlation of 0.237 (p-value < 0.001) between *NEGNEWS* and firm size (the logarithm of total assets measured at the end of quarter −1), primarily because the count of firm-generated press releases in a particular week is strongly correlated with firm size (correlation = 0.276 and p-value < 0.001).

Despite the significantly positive correlation between *NEGNEWS* and firm size, the measure of news management, *NM*, is not necessarily weighted more heavily towards larger firms. *NM* is defined as the abnormal component of *NEGNEWS*, which is estimated using an event study approach. This approach uses each firm as its own control. As a result, *NM* leaves out the baseline of *NEGNEWS*, which is positively correlated with firm size, and only measures the deviation from the baseline of *NEGNEWS*, which is not necessarily correlated with firm size any more. In fact, untabulated analysis shows that there is no significant correlation between *NM* and firm size (correlation = 0.006 and p-value = 0.494).

I include firm fixed effects in the main regressions in Table 5 and Table 9, which can mitigate the concern about the effect of firm size on the measurement of news management to some extent. In an additional robustness check (untabulated), I control for the firm size in the regressions in Table 5 and Table 9. The results remain qualitatively unchanged, and the coefficients on firm size in both regressions are indistinguishable from zero.

7.4 The Robustness of the Choice of Pre-ASR Window for Testing News Management

In Section 4.3.5, I choose to detect pre-ASR news management using the five-week window prior to ASRs. As a robustness test for this design choice, I use other pre-ASR news management windows in this section. To avoid using two symmetric windows around the ASR

initiation date like in my main research design, I use a simplified version of Equation (4) for the robustness check:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE_{it} + \alpha_2 NMDUR_{it} + \alpha_3 NMPOST_{it} + \varepsilon_{it} \quad (25)$$

where *NMDUR* is a dummy variable that equals one if week *t* falls in the contract period, and zero otherwise. *NMPOST* is a dummy variable that equals one if week *t* falls in the period from week +1 to week +10 after the ASR completion date, and zero otherwise. *NMPRE* is a dummy variable that equals one if week *t* falls in a specified pre-ASR news management window, which alternates among 10 windows: one week, two weeks, three weeks, …, and 10 weeks prior to ASRs. The baseline is the five-week window, that is, the window of my main research design. For brevity, I only report the estimate and *p*-value of the coefficient on *NMPRE*, the variable of main interest. In the baseline regression, the estimate and *p*-value of the coefficient on *NMPRE* is nearly identical with those in Table 5, suggesting that the simplified version of the regression model is a good substitute and has similar power. Next, I alternate the pre-ASR window from one week to 10 weeks, which gives me 10 estimates of the coefficient on *NMPRE*. The results are presented in Table 20. The estimate of the coefficient is 0.417 for the one-week window. Then, starting from the two-week window, the estimate of the coefficient is monotonically decreasing from 0.454 (for the two-week window) to 0.134 (for the ten-week window). All the 10 estimates of the coefficient are statistically significant at the 0.01 level. This suggests that the news management test is robust to the design choice of the pre-ASR window. In addition, the largely monotonic increase in the coefficient estimate strongly shows the run-up of negative news when the ASR initiation date is approaching. This is consistent with my argument that news management targets at a short-time window before the ASR initiation date.

Table 20: News Management Prior to ASRs Using Various Pre-ASR Windows

Testing Window	Coef. on *NMPRE*	*p*-value
1 week	0.417	0.004
2 weeks	0.454	0.001
3 weeks	0.386	0.001
4 weeks	0.339	0.001
5 weeks (baseline)	0.268	0.001
6 weeks	0.222	0.002
7 weeks	0.207	0.002
8 weeks	0.170	0.004
9 weeks	0.158	0.006
10 weeks	0.134	0.009

Note: Table 20 reports the estimate and *p*-value of the coefficient on *NMPRE* from the following regression using various pre-ASR windows:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE_{it} + \alpha_2 NMDUR_{it} + \alpha_3 NMPOST_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index and *t* is the week index. *NM* is the abnormal negative news in week *t*. Higher values of *NM* represent more price-deflating news management. *NMPRE* is a dummy variable that equals 1 if week *t* falls in a specified pre-ASR news management window, which alternates among 10 windows: 1 week, 2 weeks, 3 weeks, …, and 10 weeks prior to ASRs. *NMDUR* is a dummy variable that equals 1 if week *t* falls in the contract period, and 0 otherwise. *NMPOST* is a dummy variable that equals 1 if week *t* falls in the period from week +1 to week +10 after the ASR completion date. For each regression, firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail as the sign of coefficient is predicted.

7.5 Alternative Measures of Undervaluation

When I identify the motivation of and ASR, I follow Rhodes-Kropf et al. (2005) and use the computed firm-specific misvaluation as the measure of undervaluation. As a robustness check, I use alternative measures of undervaluation calculated using the method in Purnanandam and Swaminathan (2004) and Chemmanur et al. (2010). Specifically, for each ASR firm in my sample, I identify a matched firm in the same industry-quarter with comparable sales and earnings before interest, tax, depreciation and amortization (EBITDA) margin. I match on industry, sales and EBITDA margin to ensure that matching firms have similar operating risks and profitability, and are close to ASR firms on fundamentals (Purnanandam and Swaminathan 2004). For each ASR firm, I first select all COMPUSTAT firms (excluding ASR firms in my sample) in the same Fama-

French 48 industry at the end of quarter −1. Next, I sort these firms into three portfolios based on sales and then each sales portfolio into three portfolios based on EBITDA margin (defined as EBITDA divided by sales). Both sales and EBITDA in the matching procedure are measured at the average for the four consecutive quarters ended quarter −1. This procedure creates nine portfolios for each industry-quarter. I then match each ASR firm to the enclosing sales-EBITDA margin portfolio. From that portfolio, I select the firm with the closet sales as a match.

For each ASR firm and matched firm, I calculate the price-to-sales ratio (*P/S*), price-to-EBITDA ratio (*P/EBITDA*), and price-to-assets ratio (*P/A*), where price (*P*) is the market value of equity at the end of quarter −1. Sales and EBITDA are measured at the average for the four consecutive quarters ended quarter −1. Assets (*A*) is the book value of total assets at the end of quarter −1. I calculate *P/S*, *P/EBITDA* and *P/A* because sales and assets are commonly available and positive, and EBITDA is arguably less subject to accounting distortions. I do not use the popular price-to-earnings ratio (*P/E*) because earnings may be negative, and Dong et al. (2006) argue that *P/E* is a less accurate measure of misvaluation because short-term fluctuation in earnings will shift *P/E* even if the degree of misvaluation remains unchanged. I deem an ASR firm as undervalued if the selected ratio of the ASR firm is less than that of the matched firm. This gives me three alternative measures of undervaluation. Untabulated statistics show that the mean and median of the three ratios of ASR firms are greater than the mean and median of matched firms, which appears somewhat inconsistent with ASR firms being generally undervalued.

Using alternative measures of undervaluation, I re-run the regressions in Equation (9) and Equation (10). Untabulated results indicate that *NMPRE1*×*PRICEUP*, *EMPRE1*×*PRICEUP* and *EMPRE1*×*EPSBONUS* enter each regression with a negative coefficient as expected, but not significant at the conventional level. The sign and *p*-value of *NMPRE1* and *EMPRE1* remain

qualitatively unchanged as predicted. Therefore, the results of regressions in Equation (9) and Equation (10) appear sensitive to the method of undervaluation measurement. However, Rhodes-Kropf et al.'s (2005) model rests on the valuation model that uses both book value of assets and net income as valuation inputs. It is essentially based on a vector of ratios rather than on a single ratio (e.g., price-to-assets), and thus makes the best use of accounting data and probably reduces measurement errors.

7.6 The Effect of the Fourth Fiscal Quarter on Pre-ASR Earnings Management

In Section 4.3.5, I find that managers use downward earnings management to deflate stock prices in quarter −1 prior to the ASR initiation date. This section examines the effects of quarter −1 being the fourth fiscal quarter on pre-ASR earnings management. First, unlike interim quarters, the fourth fiscal quarter requires the preparation of annual report that must be audited with more procedures to be performed and an audit opinion (and thus assurance on financial statements) to be issued.[38] In fact, 98.6 percent of ASR firms in my sample are audited by Big 4 auditors who are considered to have high audit quality. The heightened scrutiny from auditors should reduce managers' discretion and make earnings management harder in the fourth fiscal quarter. Thus, I expect to observe less earnings management if quarter −1 is the fourth fiscal quarter.

Second, in Section 5.3.2, I find that managers use less downward earnings management in quarter −1 if their bonuses are directly tied to EPS. I am interested in whether such observation will be more pronounced if quarter −1 is the fourth fiscal quarter. Because bonus evaluation usually happens after the fourth fiscal quarter, and reversals of the fourth-quarter earnings deflation can only be reflected in the next year, I may observe that EPS-tied bonuses discourage pre-ASR

[38] Although auditors may provide compilation or review on financial statements for interim quarters, they usually perform fewer audit procedures and express no or very limited assurance on interim financial statements.

earnings management more strongly. On the other hand, this may not be true since bonus evaluation is usually based on the full-year EPS and managers may not hurt the full-year EPS target even if they deflate earnings in the fourth fiscal quarter.

To examine the effects of the fourth fiscal quarter, I re-run the regression of Equation (10) in two subsets of the ASR sample. One subset consists of ASRs with quarter −1 being the fourth fiscal quarter, and the other subset consists of ASRs with quarter −1 being not the fourth fiscal quarter. The results from this analysis are presented in Table 21. The coefficient on *EMPRE1* for the subset of ASRs with quarter −1 being the fourth fiscal quarter is indistinguishable from zero, while the coefficient on *EMPRE1* for the subset of ASRs with quarter −1 being not the fourth fiscal quarter is positive and statistically significant (one-tail *p*-value = 0.040). The finding suggests that pre-ASR earnings management prevail only if quarter −1 is not the fourth fiscal quarter, which provides evidence for my first prediction. For the second empirical question, I find that *EMPRE1*×*EPSBONUS* enters the regression with a negative coefficient (one-tail *p*-value = 0.023) only for the subset of ASRs with quarter −1 being not the fourth fiscal quarter, suggesting that there is no evidence that EPS-tied bonuses discourage pre-ASR earrings management more strongly if quarter −1 is the fourth fiscal quarter.[39]

[39] However, this finding may simply be due to the observation that there is no pre-ASR earnings management for ASRs with quarter −1 being the fourth fiscal quarter, as indicated by the coefficient on *EMPRE1* in the same table.

Table 21: Regressions of Earnings Management for ASRs with the Fourth Fiscal Quarter Prior to ASRs and for ASRs with Non-Fourth Fiscal Quarter Prior to ASRs

		Quarter −1 is the fiscal year-end quarter		Quarter −1 is not the fiscal year-end quarter	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.448	0.007	0.161	0.000
EMPRE1	?	0.018	0.974	0.550	0.079
EMDUR1		-0.722	0.296	-0.314	0.451
EMDUR2		0.655	0.434	-0.173	0.650
EMPOST		-0.447	0.518	0.113	0.614
PRICEUP		0.468	0.711	-0.148	0.609
EPSBONUS		-0.643	0.571	0.209	0.451
EMPRE1×PRICEUP	?	0.466	0.702	-0.408	0.461
EMDUR1×PRICEUP		0.350	0.769	-0.004	0.994
EMDUR2×PRICEUP		-0.124	0.943	0.574	0.416
EMPOST×PRICEUP		-0.043	0.952	0.107	0.689
EMPRE1×EPSBONUS	?	0.654	0.582	-1.061	0.046
EMDUR1×EPSBONUS		2.399	0.011	0.399	0.419
EMDUR2×EPSBONUS		1.291	0.576	-0.58	0.403
EMPOST×EPSBONUS		0.597	0.478	-0.496	0.077
Firm fixed effect		Yes		Yes	
Year fixed effect		Yes		Yes	
Adj. R^2		0.211		0.171	
N		612		1,873	

Note: Table 21 reports the results of the following regressions in 2 subsets of the ASR sample. One subset consists of ASRs with quarter −1 being the fourth fiscal quarter, and the other subset consists of ASRs with quarter −1 being not the fourth fiscal quarter.

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} \\ & + \beta_5 PRICEUP_{it} + \beta_6 EPSUP_{it} \\ & + \beta_7 EMPRE1_{it} \times PRICEUP_{it} + \beta_8 EMDUR1_{it} \times PRICEUP_{it} \\ & + \beta_9 EMDUR2_{it} \times PRICEUP_{it} + \beta_{10} EMPOST_{it} \times PRICEUP_{it} \\ & + \beta_{11} EMPRE1_{it} \times EPSBONUS_{it} + \beta_{12} EMDUR1_{it} \times EPSBONUS_{it} \\ & + \beta_{13} EMDUR2_{it} \times EPSBONUS_{it} + \beta_{14} EMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned}$$

where *i* is the ASR firm index and *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. Higher values of *EM* represent more downward accrual-based earnings management. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *EMDUR1* is a dummy variable that equals 1 if quarter *t* is the first quarter during the ASR contract period, and 0 otherwise. *EMDUR2* is a dummy variable that equals 1 if quarter *t* is any other quarter than the first one during the ASR contract period, and 0 otherwise. *EMPOST* is a dummy variable that equals 1 if quarter *t* is quarter +1, +2, or +3 after the ASR completion date. *PRICEUP* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase stock prices (either signaling undervaluation or defending against takeover). *EPSBONUS* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase EPS, that is, bonuses of top executives are directly tie with EPS. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

7.7 The Causality between ASRs and Pre-ASR News/Earnings Management

In this research, I find evidence of news management and earnings management prior to an ASR, and attribute this finding to managers' attempt to reduce repurchase costs for the ASR (the strategic *management* explanation). However, an alternative explanation could be managers timing the ASR at the time stock prices are low due to the declining operating performance and reduced investment opportunities of the firm, and abnormal negatives news and abnormal negative accruals (i.e., my measures of news management and earnings management) simply capture the perceived bad prospect of the firm (the strategic *timing* explanation). To rule out the alternative explanation and establish the causality between ASRs and pre-ASR news/earnings management, I first draw on the evidence from several previous analyses and then perform a few additional analyses, all of which appear more consistent with the strategic management explanation.

7.7.1 Previous Evidence in Favor of the Strategic Management Explanation

First, in Section 7.6, I find that pre-ASR earnings management appears to exist in unaudited quarter −1 but not in audited quarter −1. A plausible explanation is that the heightened scrutiny from auditors reduces managers' discretion and makes earnings management harder in audited quarter −1. However, such difference in earnings management between unaudited quarter −1 and audited quarter −1 should not be expected if abnormal accruals are unrelated to earnings management.

Second, the pattern of pre-ASR news management shown in Figure 3 suggests that managers accelerate the release of negative news from the short window following the ASR initiation date to the short window preceding the ASR initiation date. The stark contrast of a run-up of negative news before the ASR initiation date and a run-down after the ASR initiation date is

more likely a result of strategically manipulating the flow of negative news than merely a result of a timing decision.

Third, in Section 5.3.2, I find that the variation in pre-ASR news management and earnings management under different motivations for ASRs is largely consistent with the predictions of the strategic management explanation.

Fourth, the undervaluation measures I used in Section 5.3.2 and Section 7.5 indicate that the average ASR firm in my sample has higher valuation than its industry peer, which appears inconsistent with the strategic timing explanation.

Lastly, if firms time ASRs at their bad times when abnormal negatives news and abnormal negative accruals merely capture bad news about prospects, the stock price deflation prior to ASRs (as I document in Section 6.1) should persist as it is driven by firms' fundamentals. However, the stock performance reversals for one-year and two-year horizons shown in Section 6.4.3 contradict this prediction, but is consistent with the prediction of the strategic management explanation.

7.7.2 Additional Analyses in Favor of the Strategic Management Explanation

7.7.2.1 News/Earnings Management for 80 ASR Firms with Superior and Stable Pre-ASR Operating Performance

To obtain more confidence in the strategic management explanation, I perform a few additional analyses. The first analysis is to examine a group of ASR firms for which the strategic timing explanation should be less plausible. Specifically, I select 80 ASR firms that have superior and stable operating performance for four consecutive quarters prior to ASRs. For this group of ASR firms, abnormal negative news and abnormal negative accruals are much less likely driven by bad operating performance. If I can still find evidence of pre-ASR news management and

earnings management for this group of ASR firms, the evidence should strongly support the strategic management explanation.

To select ASR firms with superior and stable operating performance, I sort all COMPUSTAT firms into quintiles based on quarterly return-on-assets (ROA) for each calendar quarter and Fama-French 48 industry. I select all ASR firms whose ROA in each of the four consecutive quarters ended quarter −1 (i.e., quarter −4, −3, −2 and −1) is ranked in the top two quintiles in each industry-quarter. From these ASR firms, I then select the ASR firms whose ROA in each of quarter −3, −2 and −1 are within ±0.01 of the ROA for quarter −4. This procedure gives me 80 ASR firms with superior and stable operating performance prior to ASRs.

I re-run the regressions in Equation (4) and Equation (5) to test for news management and earnings management prior to ASRs, and report the results in Table 22 Panel A. Consistent with the results in Section 4.3.5, the coefficients on *NMPRE1* and *EMPRE1* are negative and statistically significant in both regressions. Because selected ASR firms have superior and stable operating performance prior to ASRs, I have more confidence to conclude that pre-ASR news management and earnings management is attributable to the ASR decision itself, rather than a merely result of the endogeneity (i.e., both ASR decision and abnormal negative news/accruals are the result of bad operating performance). These findings support the strategic management explanation.

7.7.2.2 News/Earnings Management after Controlling for Operating Performance and Investment Opportunities

Since the strategic timing explanation argues that abnormal negative news and abnormal negative accruals simply capture the declining operating performance and reduced investment opportunities of ASR firms, controlling for operating performance and investment opportunities

should be able to rule out the possibility. In fact, I already control for operating performance in the measurement of news management and earnings management in previous analyses. For example, I use performance-matched abnormal accruals to measure earnings management; when I estimate abnormal negative news, I use changes in analysts' forecasts as an explanatory variable to control for operating performance. In this section, I explicitly control for operating performance and investment opportunities in the regressions in Equation (4) and Equation (5) testing for pre-ASR news management and earnings management. If the strategic timing explanation is plausible, adding these controls should suppress the coefficients on *EMPRE1* and *NMPRE1*. In contrast, the evidence of positive coefficients on *EMPRE1* and *NMPRE1* should support the strategic management explanation.

I use return-on-assets (*ROA*) and market-to-book ratio (*MB*) to proxy for operating performance and investment opportunities, respectively. Both *ROA* and *MB* are measured for the contemporary quarter when *NM* or *EM*, the dependent variable, is measured. The regression results presented in Table 22 Panel B are consistent with previous analyses. The coefficients on *NMPRE1* and *EMPRE1* are positive and statistically significant in both regressions. Furthermore, the coefficients on *ROA* and *MB* are largely positive and statistically significant, probably suggesting that good operating performance and growth opportunities give managers more room to manage news and earnings downward.

7.7.2.3 Bad News Management Earnings Forecasts Prior to ASRs

This section examines a specific type of voluntary disclosure, management forecasts.[40] If managers also manipulate this type of voluntary disclosure around ASRs, management forecasts

[40] Admittedly, the information content (negative or positive) in management forecasts may or may not be captured by my measure of news management in this research. The interpretation of the results in this section is based on the assumption that firms use all types of disclosures in concerted efforts.

issued prior to ASRs are more likely to fall short of the then-current analysts' consensus forecast. Such "bad news" management forecasts are expected to deflate stock prices too. If the strategic timing explanation is plausible and managers simply time ASRs at the time stock prices are low, I would expect no changes in the likelihood of bad news management forecasts prior to ASRs.

I use the following logit regression model to examine whether bad news management forecasts are more likely to be issued in the specified pre-ASR period:

$$BN\_MF_{ij} = \alpha_0 + \alpha_1 BEFORE_{ij} + \alpha_2 SIZE_{ij} + \alpha_3 MB_{ij} + \alpha_4 HL_{ij} + \alpha_5 LOSS_{ij} + \alpha_6 EARNVOL_{ij} + \varepsilon_{ij} \quad (26)$$

where *i* is the ASR firm index and *j* is the management forecast index. I use all management forecasts issued from 180 days before the ASR initiation date to 180 days after the ASR completion date. *BN_MF* is a dummy variable that equals one if management forecast *j* is below the then-current analysts' consensus forecast, and zero otherwise.[41] *BEFORE* is a dummy variable that equals one if management forecast *j* is issued in the five weeks preceding the ASR initiation date, and zero otherwise. I follow Brockman et al. (2008) and include the following control variables, because prior literature provides evidence of the association between management forecasts and these control variables: *SIZE* if the logarithm of the market value of equity. *MB* is the market-to-book ratio. *HL* is a dummy variable that equals one if the firm is in one of high-litigation-risk industries, and zero otherwise.[42] *Loss* is a dummy variable that equals one if the firm reports a loss, and zero otherwise. *SIZE*, *MB* and *LOSS* are measured at the last quarter preceding the issuance date of management forecast *j*. *EARNVOL* is the standard deviation of quarterly earnings over 12 consecutive quarters ended the last quarter preceding the issuance date of management forecast *j*.

[41] Management forecasts and then-current analysts' consensus forecast are obtained from I/B/E/S Guidance. I retain management forecasts of any metrics, of which EPS and sales forecasts accounts for 70 percent.
[42] High-litigation-risk industries refer to biotechnology (SIC 2833–2836 and 8731–8734), computers (SIC 3570–3577 and 7370–7374), electronics (SIC 3600–3674), and retail (SIC 5200–5961) industries.

The results presented in Table 22 Panel C indicate that the management forecasts issued in the five weeks before the ASR initiation date are more likely to fall short of the then-current analysts' consensus forecast; the coefficient on *BEFORE* is positive and statistically significant (one-tail *p*-value = 0.039). Again, this finding is consistent with the prediction of the strategic management explanation.

Table 22: Additional Analysis on Causality between ASR and News/Earnings Management

Panel A: News/Earnings Management for 80 ASR Firms with Superior and Stable Pre-ASR Operating Performance

		Dep. Var. = *NM*		Dep. Var. = *EM*	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.006	0.016	0.068	0.000
NMPRE1 or *EMPRE1*	+	0.289	0.032	0.290	0.053
NMDUR1 or *EMDUR1*		0.086	0.621	0.131	0.659
NMDUR2 or *EMDUR1*		0.163	0.189	0.272	0.513
NMPOST or *EMDUR1*		0.136	0.245	-0.111	0.545
Firm fixed effect		Yes		Yes	
Year fixed effect		Yes		Yes	
Adj. R^2		0.104		0.323	
N		2,869		563	

Panel B: News/Earnings Management after Controlling for Operating Performance and Investment Opportunity

		Dep. Var. = *NM*		Dep. Var. = *EM*	
	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		-0.176	0.001	0.356	0.000
NMPRE1 or *EMPRE1*	+	0.280	0.004	0.264	0.094
NMDUR1 or *EMDUR1*		-0.096	0.262	-0.055	0.782
NMDUR2 or *EMDUR1*		0.042	0.603	0.224	0.459
NMPOST or *EMDUR1*		0.028	0.706	-0.069	0.668
ROA		0.021	0.554	0.166	0.044
MB		0.038	0.058	0.145	0.005
Firm fixed effect		Yes		Yes	
Year fixed effect		Yes		Yes	
Adj. R^2		0.106		0.216	
N		13,127		2,457	

Panel C: Management Earnings Forecasts Prior to ASRs

	Predicted Sign	Dep. Var. = *BN_MF* Coef.	*p*-value
Intercept		-0.905	0.102
BEFORE	+	0.203	0.039
SIZE		-0.033	0.600
MB		-0.019	0.306
LITIGATION		0.073	0.581
LOSS		0.575	0.000
EARNVOL		3.985	0.070
Adj. R^2		0.011	
N		6,363	

Note: Table 22 Panel A reports the results of the following regressions using 80 ASR firms that have superior and stable operating performance in 4 consecutive quarters ended quarter −1:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} + \varepsilon_{it}$$
$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it}$$

where *i* is the ASR firm index. In the first regression, *t* is the week index. *NM* is the abnormal negative news in week *t*. *PRE1* is a dummy variable that equals 1 if week *t* falls in the period from week −5 to week −1 before the ASR initiation date, and 0 otherwise. In the second regression, *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. Higher values of *EM* represent more downward accrual-based earnings management. *PRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Panel B reports the result of the above regressions using all ASRs with 2 more control variables, return-on-assets (*ROA*) and market-to-book ratio (*MB*). *ROA* and *MB* are measured at the contemporary quarter when *NM* or *EM* is measured. Firm and year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Panel C reports the result of the following logit regression using management forecasts issued from 180 days before the ASR initiation date to 180 days after the ASR completion date.

$$BN\_MF_{ij} = \alpha_0 + \alpha_1 BEFORE_{ij} + \alpha_2 SIZE_{ij} + \alpha_3 MB_{ij} + \alpha_4 HL_{ij} + \alpha_5 LOSS_{ij} + \alpha_6 EARNVOL_{ij} + \varepsilon_{ij}$$

where *i* is the ASR firm index and *j* is the management forecast index. *BN_MF* is a dummy variable that equals 1 if management forecast *j* is below the then-current analysts' consensus forecast, and 0 otherwise. *BEFORE* is a dummy variable that equals 1 if management forecast *j* is issued in 5 weeks preceding the ASR initiation date, and 0 otherwise. *SIZE* if the logarithm of the market value of equity. *MB* is market-to-book ratio. *HL* is a dummy variable that equals 1 if the firm is in one of the high-litigation-risk industries, and 0 otherwise. High-litigation-risk industries refer to biotechnology (SIC 2833–2836 and 8731–8734), computers (SIC 3570–3577 and 7370–7374), electronics (SIC 3600–3674), and retail (SIC 5200–5961) industries. *Loss* is a dummy variable that equals 1 if the firm reported a loss, and 0 otherwise. *SIZE*, *MB* and *LOSS* are measured at the last quarter preceding the issuance date of management forecast *j*. *EARNVOL* is the standard deviation of quarterly earnings over 12 consecutive quarters ended the last quarter preceding the issuance date of management forecast *j*. White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

7.8 Heckman's Two-Stage Method

Repurchasing firms decide to elect ASRs over OMRs to implement share repurchase programs. As a result, ASR firms are not randomly selected into my sample, which may lead to sample selection bias in the ordinary least squares estimation procedure that I have used. In this section, I use Heckman's two-stage method to correct for the potential sample selection bias.

In the first stage, I estimate the probability of a share repurchase program to be at least partially implemented through an ASR. As discussed in Section 2.4, ASRs differ from OMRs in flexibility, credibility and speed of stock delivery. In contrast to ASRs, OMRs allow firms to retain more flexibility to implement share repurchase programs in response to changes in stock price and cash flow availability. On the other hand, ASRs allow firms to more credibly and quickly to accomplish goals of share repurchase programs. Thus, I model the decision to elect ASRs based on the cost of foregone flexibility and the benefit of enhanced creditability and immediacy.[43]

I consider four determinants of the cost of ASRs resulting from foregone flexibility. First, the cost of foregone flexibility is increasing in the volatility of the firm's stock prices. Greater price volatility increases the value of the flexibility option inherent in OMRs to adjust repurchase amounts and timing. Second, the value of the flexibility option is increasing in the variability of the firm's cash flows. OMRs enable firms with less predictable cash flows to benefit more from the ability to adjust repurchase amounts and timing in response to cash flow availability, while ASRs represent contract commitments and pose higher risks in the event of unforeseeable cash flow shocks. Third, Bargeron et al. (2011) suggest that ASRs are costlier than OMRs for firms with less stock market liquidity. Buying back a large number of shares quickly via ASRs has a larger

[43] Bargeron et al. (2011) give more formal discussions on "the flexibility hypothesis" and "the credibility and immediacy hypothesis".

impact on the price of less liquid stock and increases the average price paid for the share repurchase. Fourth, the percentage of outstanding shares authorized to be repurchased in a program is an indicator of the firm's ex ante flexibility to repurchase shares. Bargeron et al. (2011) suggest that the marginal cost of forgone flexibility of ASRs is lower for larger authorizations because firms that tend to be unfavorably affected by changes in firm characteristics and stock market will refrain from announcing a large authorization in the first place. In sum, I predict that firms with less stock price volatility, less cash flow volatility, greater stock liquidity, and larger repurchase program authorizations are more likely to elect ASRs over OMRs to implement share repurchase programs.

Firms announce share repurchase programs for various motivations as discussed in Section 3.4, such as signaling undervaluation, return of capital to shareholders, improving capital structure, increasing EPS, and takeover defense. In Section 5.2.1, I develop several variables to proxy for these motivations. I expect the benefit of enhanced credibility and immediacy of ASRs to be greater when these motivations are more apparent, so that repurchasing firms can achieve their goals more credibly and quickly. Thus, I predict that firms are more likely to elect ASRs over OMRs to implement share repurchase programs if these programs are more likely to be announced for identified motivations.

Based on the above discussion, I use the following specification in the first-stage probit regression for ASR election:

$$\begin{aligned} ASR_i = {} & \alpha_0 + \alpha_1 RETVOL_i + \alpha_2 OCFVOL_i + \alpha_3 ILLIQUIDITY_i + \alpha_4 REPPCT_i \\ & + \alpha_5 MISVAL_i + \alpha_6 OCFDIFF_i + \alpha_7 MBDIFF_i + \alpha_8 LEVDIFF_i \\ & + \alpha_9 EPSBONUS_i + \alpha_{10} TAKEOVER_i + \alpha_{11} SIZE_i + \varepsilon_i \end{aligned} \tag{27}$$

where *i* is the repurchase program index. The dependent variable, *ASR*, is a dummy variable that equals one if the repurchase program is at least partially implemented through an ASR, and zero if

the repurchase program is entirely implemented through OMRs. The first four independent variables measure the cost of ASRs resulting from foregone flexibility. Specifically, *RETVOL* is the standard deviation of stock returns calculated over the period from trading day −252 to −44. *OCFVOL* is the standard deviation of operating cash flows calculated over 20 quarters ending quarter −1. *ILLIQUIDITY* is the logarithm of the measure of stock illiquidity defined as the average of absolute stock returns per dollar of daily trading volume calculated over the period from trading day −252 to −44 (Amihud 2002; Bargeron et al. 2011). For repurchase programs that are at least partially implemented through an ASR, trading day 0 is the ASR announcement date and quarter −1 is the fiscal quarter for which the earnings were last announced before the ASR announcement date. For OMR-only repurchase programs, trading day 0 is the repurchase program announcement date and quarter −1 is the fiscal quarter for which the earnings were last announced before the repurchase program announcement date. *REPPCT* is the percentage of outstanding shares authorized to be repurchased in the repurchase program. The subsequent six independent variables, *MISVAL*, *OCFDIFF*, *MBDIFF*, *LEVDIFF*, *EPSBONUS* and *TAKEOVER*, are motivation variables that I have defined in Section 5.2.1. I also control for firm size (*SIZE*) defined as the logarithm of the market value of equity. Motivation variables and firm size are measured at quarter −1 defined as above. I include Fama-French 12 industry and year fix effects and use White standard errors adjusted to account for the possible correlation within the firm cluster.

I obtain repurchase program announcements from 2004 to 2013 from Capital IQ Buybacks Database. I match each ASR with the repurchase program that is announced immediately before the ASR announcement. This matching procedure gives me the repurchase programs that are at least partially implemented through an ASR. The remaining repurchase programs are OMR-only programs if the transaction synopsis does not mention tender offers or privately negotiated

repurchases. I remove repurchase programs announced by financial institutions. The data availability for calculating independent variables further reduces the sample size. The final sample contains 1,585 repurchase program announcements.

Table 23 Panel A reports the results of the first-stage probit regression. The coefficients have predicted signs although *OCFVOL* and *MISVAL* do not enter the regression at a conventional level. I report two goodness of fit statistics for the first-stage regression, pseudo R^2 (0.295) and the area under the receiver operating characteristics (ROC) curve (0.857). The latter measures the predictive ability of the probit regression model. Random guessing generates an area under the ROC curve equal to 0.5 and perfect prediction generates one. Hosmer, Lemeshow, and Sturdivant (2013) suggest that a model with an area under the ROC curve of 0.70–0.80 (above 0.8) is acceptable (excellent). By this rule of thumb, the goodness of fit of the first-stage regression is into the excellent range.

In the second stage, I re-run the main regressions related to news management tests (i.e., regressions in Table 5 and Table 9) and earnings management tests (i.e., regressions in Table 6 and Table 10) after including the Inverse-Mills ratio (*IMR*) from the first-stage regression.[44] Table 23 Panel B reports the results of the tests related to news management, and Panel C reports the results of the tests related to earnings management. The results indicate that all result remain qualitatively unchanged. Furthermore, *IMR* does not enter each regression, suggesting that selection bias is not a significant concern in previous tests.

[44] *IMR* is estimated as $\phi(z)/\Phi(z)$, where z is the fitted value of the first-stage probit regression; ϕ is the density function for standard normal distribution, and Φ is the cumulative density function for the standard normal distribution.

Table 23: Heckman's Two-Stage Method for News Management and Earnings Management

Panel A: The First Stage Regression for ASR Election

	Predicted Sign	Coef.	*p*-value
Intercept		-2.592	0.000
RETVOL	−	-35.859	0.000
OCFVOL	−	-0.898	0.335
ILLIQUIDITY	−	-0.150	0.001
REPPCT	+	3.286	0.000
MISVAL	+	0.158	0.162
OCFDIFF	+	3.461	0.001
MBDIFF	−	-0.135	0.007
LEVDIFF	+	0.815	0.081
EPSBONUS	+	0.116	0.099
TAKEOVER	+	0.256	0.028
SIZE		0.032	0.619
Industry fixed effect		Yes	
Year fixed effect		Yes	
Pseudo R^2		0.295	
Area under ROC curve		0.857	
N		1,585	

Panel B: The Second Stage Regressions for News Management

	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.132	0.265	0.077	0.435
NMPRE1	+	0.326	0.002	0.556	0.007
NMDUR1		-0.106	0.234	-0.077	0.628
NMDUR2		0.053	0.555	-0.190	0.179
NMPOST		0.050	0.602	0.080	0.583
PRICEUP				0.033	0.746
EPSBONUS				0.024	0.806
NMPRE1×PRICEUP	−			-0.411	0.026
NMDUR1×PRICEUP				-0.031	0.866
NMDUR2×PRICEUP				0.143	0.433
NMPOST×PRICEUP				-0.157	0.230
NMPRE1×EPSBONUS				-0.131	0.535
NMDUR1×EPSBONUS				-0.050	0.787
NMDUR2×EPSBONUS				0.052	0.510
NMPOST×EPSBONUS				0.097	0.499
IMR		-0.118	0.286	-0.080	0.454
Year fixed effect		Yes		Yes	
Adj. R^2		0.052		0.090	
N		12,203		12,203	

Panel C: The Second Stage Regressions for Earnings Management

	Predicted Sign	Coef.	*p*-value	Coef.	*p*-value
Intercept		0.049	0.082	0.105	0.130
EMPRE1	+	0.222	0.078	0.414	0.041
EMDUR1		-0.162	0.405	-0.341	0.268
EMDUR2		-0.142	0.629	-0.320	0.411
EMPOST		-0.203	0.194	-0.150	0.507
PRICEUP				-0.076	0.767
EPSBONUS				-0.043	0.854
EMPRE1×PRICEUP	−			-0.212	0.317
EMDUR1×PRICEUP				-0.254	0.536
EMDUR2×PRICEUP				0.250	0.689
EMPOST×PRICEUP				0.019	0.940
EMPRE1×EPSBONUS	−			-0.383	0.087
EMDUR1×EPSBONUS				0.087	0.298
EMDUR2×EPSBONUS				0.207	0.771
EMPOST×EPSBONUS				-0.180	0.460
IMR		0.293	0.132	0.284	0.158
Year fixed effect		Yes		Yes	
Adj. R^2		0.091		0.120	
N		2,343		2,343	

Note: Table 23 Panel A reports the results of the first-stage regression for ASR election:

$$ASR_i = \alpha_0 + \alpha_1 RETVOL_i + \alpha_2 OCFVOL_i + \alpha_3 ILLIQUIDITY_i + \alpha_4 REPPCT_i + \alpha_5 MISVAL_i + \alpha_6 OCFDIFF_i + \alpha_7 MBDIFF_i + \alpha_8 LEVDIFF_i + \alpha_9 EPSBONUS_i + \alpha_{10} TAKEOVER_i + \alpha_{11} SIZE_i + \varepsilon_i$$

where *i* is the repurchase program index. *ASR* is a dummy variable that equals 1 if the repurchase program is at least partially implemented through an ASR, and 0 if the repurchase program is entirely implemented through OMRs. *RETVOL* is the standard deviation of stock returns calculated over the period from trading day −252 to −44. *OCFVOL* is the standard deviation of operating cash flows calculated over 20 quarters ending quarter −1. *ILLIQUIDITY* is the logarithm of the measure of stock illiquidity defined as the average of absolute stock returns per dollar of daily trading volume calculated over the period from trading day −252 to −44 (Amihud 2002; Bargeron et al. 2100). For repurchase programs that are at least partially implemented through an ASR, trading day 0 is the ASR announcement date and quarter −1 is the fiscal quarter for which the earnings were last announced before the ASR announcement date. For OMR-only repurchase programs, trading day 0 is the repurchase program announcement date and quarter −1 is the fiscal quarter for which the earnings were last announced before the repurchase program announcement date. *REPPCT* is the percentage of outstanding shares authorized to be repurchased in the repurchase program. *MISVAL* is the firm-specific misvaluation derived from Rhodes-Kropf et al.'s (2005) model. *OCFDIFF* is the difference between the firm-specific operating cash flows (scaled by total assets) and the industry median. *MBDIFF* is the difference between the firm-specific market-to-book ratio and the industry median. *LEVDIFF* is the difference between the firm-specific leverage ratio and the targeted leverage ratio derived from Flannery and Ragan's (2006) model. *EPSBONUS* is a dummy variable that equals 1 if bonuses of top executives are tied to EPS, and 0 otherwise. *TAKEOVER* is a dummy variable that equals 1 if the firm is the target of takeover rumors during the 12-month period before the repurchase program or ASR announcement, and 0 otherwise. *SIZE* is the logarithm of the market value of equity. *MISVAL*, *OCFDIFF*, *MBDIFF*, *LEVDIFF* and *SIZE* are measured at the end of quarter −1 defined as above. Fama-French 12 industry and year fixed effects are included and White robust standard errors are used to control for heteroskedasticity. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Panel B reports the second-stage regression results of news management tests after including the Inverse-Mills ratio (*IMR*) from the first-stage regression:

$$NM_{it} = \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} + \varepsilon_{it}$$

$$\begin{aligned} NM_{it} = {} & \alpha_0 + \alpha_1 NMPRE1_{it} + \alpha_2 NMDUR1_{it} + \alpha_3 NMDUR2_{it} + \alpha_4 NMPOST_{it} \\ & + \alpha_5 PRICEUP_{it} + \alpha_6 EPSUP_{it} \\ & + \alpha_7 NMPRE1_{it} \times PRICEUP_{it} + \alpha_8 NMDUR1_{it} \times PRICEUP_{it} \\ & + \alpha_9 NMDUR2_{it} \times PRICEUP_{it} + \alpha_{10} NMPOST_{it} \times PRICEUP_{it} \\ & + \alpha_{11} NMPRE1_{it} \times EPSBONUS_{it} + \alpha_{12} NMDUR1_{it} \times EPSBONUS_{it} \\ & + \alpha_{13} NMDUR2_{it} \times EPSBONUS_{it} + \alpha_{14} NMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned}$$

where *i* is the ASR firm index and *t* is the week index. *NM* is abnormal negative news in week *t*. Higher values of *NM* represent more price-deflating news management. *NMPRE1* is a dummy variable that equals 1 if week *t* falls in the period from week −5 to week −1 before the ASR initiation date, and 0 otherwise. *NMDUR1* is a dummy variable that equals 1 if week *t* falls in the first 5 weeks of the ASR contract period, and 0 otherwise. *NMDUR2* is a dummy variable that equals 1 if week *t* falls in the period from the 6th week to the last week of the ASR contract period, and 0 otherwise. *NMPOST* is a dummy variable that equals 1 if week *t* falls in the period from week +1 to week +10 after the ASR completion date. *PRICEUP* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase stock prices (either signaling undervaluation or defending against takeover). *EPSBONUS* is a dummy variable that equals 1 if the ASR is likely to be motivated by the desire to increase EPS, that is, bonuses of top executives are directly tie with EPS. Year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

Panel C reports the second-stage regression results of earnings management tests after including the Inverse-Mills ratio (*IMR*) from the first-stage regression:

$$EM_{it} = \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} + \varepsilon_{it}$$

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 EMPRE1_{it} + \beta_2 EMDUR1_{it} + \beta_3 EMDUR2_{it} + \beta_4 EMPOST_{it} \\ & + \beta_5 PRICEUP_{it} + \beta_6 EPSUP_{it} \\ & + \beta_7 EMPRE1_{it} \times PRICEUP_{it} + \beta_8 EMDUR1_{it} \times PRICEUP_{it} \\ & + \beta_9 EMDUR2_{it} \times PRICEUP_{it} + \beta_{10} EMPOST_{it} \times PRICEUP_{it} \\ & + \beta_{11} EMPRE1_{it} \times EPSBONUS_{it} + \beta_{12} MDUR1_{it} \times EPSBONUS_{it} \\ & + \beta_{13} EMDUR2_{it} \times EPSBONUS_{it} + \beta_{14} EMPOST_{it} \times EPSBONUS_{it} + \varepsilon_{it} \end{aligned}$$

where *i* is the ASR firm index and *t* is the quarter index. *EM* is quarterly abnormal current accruals in quarter *t*, multiplied by −1. Higher values of *EM* represent more downward accrual-based earnings management. *EMPRE1* is a dummy variable that equals 1 if quarter *t* is quarter −1 before the ASR initiation date, and 0 otherwise. *EMDUR1* is a dummy variable that equals 1 if quarter *t* is the first quarter during the ASR contract period, and 0 otherwise. *EMDUR2* is a dummy variable that equals 1 if quarter *t* is any other quarter than the first one during the ASR contract period, and 0 otherwise. *EMPOST* is a dummy variable that equals 1 if quarter *t* is quarter +1, +2, or +3 after the ASR completion date. *PRICEUP* and *EPSBONUS* are defined as above. Year fixed effects are included and White standard errors adjusted to account for the possible correlation within the firm cluster are used (Petersen 2009). All coefficients are multiplied by 100 for expositional convenience. *p*-values are one-tail if the sign of coefficient is predicted and two-tail otherwise.

I acknowledge that endogenous sample selection and endogenous treatment assignment are two separate problems in observational data. The endogenous sample selection occurs when

unobservable factors that affect which firms are included in the sample are correlated with the unobservable factors that affect the outcome. The Heckman's two-stage model in this section is used to address the issue of endogenous sample selection. The endogenous treatment assignment occurs when researchers cannot randomly assign a treatment of interest to individuals. In this research, the initiation date of each ASR and thereby the split of pre- and post-initiation period are not randomly assigned. This may cause the issue of endogenous treatment assignment. Using an instrumental variable is one way to address the issue. However, it is difficult, if not impossible, to find an instrument variable that is correlated to the ASR initiation date but is not correlated with the firm's fundamentals. Alternatively, a likely example of endogenous treatment assignment exists when bad operating performance triggers negative news and the decline of the firm's stock price, and the firm initiates an ASR to take advantage of the low stock price. The test in Section 7.2.2.1 indicates that the main results of this research hold in a situation where such endogeneity source is very unlikely. This test alleviates, at least in part, the issue of endogenous treatment assignment.

Chapter 8

Conclusion

This research provides evidence that firms strategically manage corporate news and reported earnings to deflate stock prices prior to ASRs. The purpose of both strategies is to maximize the benefits of ASRs and compensate high opportunity costs associated with ASRs. Specifically, firms alter the flow of firm-generated press releases and shift negative press releases from a short window before the ASR commencement to a short window after the ASR commencement. They also report abnormally low current accruals to deflate earnings in the quarter immediately before the ASR commencement. Furthermore, firms weigh available strategies and use the one that best aligns with ex ante motivations for ASRs. If consequences of news management or earnings management contradict ex ante motivations for ASRs, firms are less likely to use that management strategy.

News management and earnings management appear to be successful at deflating stock prices prior to ASRs. The pre-ASR stock returns are negatively associated with pre-ASR news/earnings management. In addition, the market does not appear to be able to infer pre-ASR news/earnings management and correct for them at the ASR announcement date. As a result, pre-ASR news management and earnings management cannot predict ASR announcement returns. However, because pre-ASR earnings deflation and contemporary stock price deflation result from opportunistic strategies and will eventually be reversed following ASRs, pre-ASR earnings management predicts operating performance and stock price performance for both one-year and two-year horizons following ASRs. In contrast, because firms accelerate the release of negative news into a short window before the ASR commencement and away from a short window after the ASR commencement, reversals of negative news happen quickly following ASRs, and pre-ASR

news management indeed predicts stock price performance in a short window following ASRs. Lastly, the evidence presented in this research is more consistent with managers strategically manger news and earnings prior to ASRs, rather than managers timing ASRs to follow abnormally high levels of negative news and negative accruals.

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