

DO FIRMS SPECIFICALLY MANAGE GROSS  
MARGIN RATIO? EVIDENCE FROM ANALYZING  
LOSERS' EARNINGS MANAGEMENT DECISIONS

A Dissertation

Presented to

The Faculty of the C.T. Bauer College of Business

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

By

Zhenyu Zhang

May, 2014

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## **ABSTRACT**

Earnings management can target specific components of earnings. Evidence suggests that the gross margin ratio (GMR) is more value relevant than other earnings components, especially for firms that miss earnings forecasts (losers), and that firms have some discretion managing cost of goods sold. To the extent that losers intend to cast their financial information in a favorable light without incurring the costs associated with managing earnings from missing to meeting/beating forecasts, the incremental value relevance and discretion create a natural incentive to manage GMR. Using a sample of firms whose earnings and GMR are both forecasted by analysts, I provide evidence suggesting that losers inflate GMR. I also show that the probability of firms missing earnings forecasts and resorting to managing GMR increases in the detection risk and litigation costs associated with managing earnings from missing to meeting/beating forecasts as well as the benefits expected from managing GMR. Finally, I show that losers with better future performance use more production management and discretionary accruals to manage GMR, whereas such an association is not found in firms meeting/beating earnings forecasts (winners).

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## **Chapter 1**

### **INTRODUCTION**

Fundamental research shows that earnings components are heterogeneously value relevant (Lipe, 1986; Ou and Penman, 1989a and 1989b; Lev and Thiagarajan, 1993; Fairfield et al., 1996). To the extent that earnings components have different value relevance and that managers have discretion managing earnings, there should be earnings management decisions that target specific earnings components instead of the level of earnings (Francis, 2001). However, extant earnings management literature mostly, if not exclusively, studies earnings management decisions that target earnings level (Jones, 1991; Burgstahler and Dichev, 1997; Roychowdhury, 2006). One notable exception is the classification shifting literature, which examines earnings management decisions to classification shift expenses from core earnings to transitory income statement items, such as income-decreasing special items and/or discontinued operations (McVay, 2006; Fan et al., 2010; Barua et al., 2010). However, since such transitory items are typically excluded from benchmark earnings, the purpose of classification shifting from core to non-core items is still to improve operating income (McVay, 2006; Fan et al., 2010).

Besides earnings, gross margin ratio (GMR) has been identified as an important indicator of the underlying companies' future performance. There exists ample evidence suggesting that firms manage gross margin ratio. From 2003 to 2005, DHB's executives engage in fraudulent financial reporting to inflate gross margin ratio by overstating fiscal



yearend inventory and recognizing production expenditure under other operating expenses. Fogdog's stock price avalanche following its 1999 financial statement analysis was attributed, at least partially, to its reclassification of the giveaway and shipping costs from marketing expense to COGS, which leads to a 10% off its gross margin ratio (MacDonald, 2000). As per MacDonald (2000), such gross margin ratio boosting is widely adopted by publicly traded companies. Francis (2001) also highlights managers' earnings management decisions that only intend to change certain components of income. However, since any change in gross margin should affect earnings in the same direction, it is difficult to distinguish earnings management decisions that intend to change gross margin ratio from those intend to change earnings. In this study, I identify a setting in which the gross margin ratio, instead of the earnings level is likely to be the target of earnings management. That is, for firms that miss earnings forecasts (hereafter losers).<sup>1</sup> Utilizing this setting, I examine whether losers inflate GMR, which firms are more likely to miss earnings forecasts and resort to managing GMR, and how GMR management communicates losers' private information regarding their future performance.<sup>2</sup>

I am not assuming that firms meeting/beating analysts' earnings forecasts (hereafter winners) do not manage GMR. I conjecture that GMR is more likely to be the target of earnings management for losers because meeting/beating analysts' GMR forecasts is more beneficial for losers (Lopez and Rees, 2002; Bartov et al., 2002; Swanson et al., 2003). Empirically, I find that losers on average experience a 1.16 percent higher market-adjusted return ( $p < 0.01$ ) and are 4.17 percent more likely to incur positive market reaction ( $p < 0.05$ ) if they meet/beat GMR forecasts. Winners, on the other hand, do not experience such

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<sup>1</sup> Since I focus on firms whose earnings are forecasted by analysts, and literature suggests that these firms have strong incentives to meet/beat earnings forecasts (Degeorge et al., 1999), hereafter I refer to the level of earnings as the forecasted earnings.

<sup>2</sup> In this paper, unless specified, managing GMR and managing the forecasted earnings refers to managing GMR and earnings from missing to meeting/beating the respective forecasts.

difference in either market-adjusted return or the probability of incurring positive market reaction in response to meeting/beating GMR forecasts.

Firms are penalized by the market when they miss analysts' earnings forecasts (Skinner and Sloan, 2002; Lopez and Rees, 2002; Bartov et al., 2002). Since firms have strong incentives to avoid such penalty, extant earnings management literature mostly focuses on firms that meet/beat earnings forecasts by managing earnings (Burgstahler and Eames, 2006; Dhaliwal et al., 2004; Bartov et al., 2002; Degeorge and Zeckhauser, 1999). Nevertheless, losers represent a significant portion of capital markets<sup>3</sup> and their accounting information aids predicting their future performance (Bhojraj et al., 2009).

Firms bear market penalty when they miss analyst' earnings forecasts. Therefore, losers have strong incentives to inflate their performance to soften the blow from the market. Since GMR, as a less noisy indicator of future performance, is more value relevant than the other earnings components (Ou and Penman, 1989a and 1989b; Lev and Thiagarajan, 1993; Swanson et al., 2003), and the benefits associated with just reducing the amount by which losers miss earnings forecasts are small (Lopez and Rees, 2002; Bartov et al., 2002), it is likely that losers specifically manage their GMR upward to mitigate the negative market reaction following reporting lower-than-expected earnings. Therefore, I examine whether losers manage their GMR upward by comparing the frequencies of losers just missing *versus* just meeting analysts' GMR forecasts. I find that there are abnormally more (fewer) losers just meeting (missing) analysts' GMR forecasts. These results are robust to sensitivity tests that use the preceding year's GMR as benchmarks. Furthermore, for losers just meeting GMR forecasts, they are more likely to restate their financial statements; whereas for winners, just meeting GMR forecasts is not

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<sup>3</sup> For instance, from 2004 to 2011, approximately 48 percent of I/B/E/S firms miss analysts' earnings forecasts.

significantly associated with restatements. Therefore, my results suggest that GMR is managed upward more frequently by losers than by winners.

I conjecture that firms are more likely to miss earnings forecasts and resort to GMR management when they are more constrained by the detection risk and litigation costs associated with managing earnings. Since the value relevance of GMR is likely to be higher for firms in manufacturing and retail industries and varies between value and growth firms, I also examine whether the probability of firms missing earnings forecasts and resorting to managing GMR is higher for manufacturing and retail firms, and systematically varies between value and growth firms. The results show that firms are more likely to miss earnings forecasts and just meet GMR forecasts if they are in more litigious industries, are audited by Big 4 auditors, and/or belong to either manufacturing or retail industries. I fail to find significant difference in the probability of missing earnings forecasts and just meeting GMR forecasts between value and growth firms.

Despite missing earnings forecasts, losers differ in their future performance. To the extent that the managers have more private information regarding their firms' future performance, losers expecting better future performance should have strong incentives to communicate such information to investors to avoid underpricing, as suggested by the signaling literature (Spence, 1973). To the extent that the costs of overproduction and accounting earnings management (AEM) decrease in losers' future performance, I posit that losers with better future performance adopt overproduction and AEM to a larger extent to manage GMR (Field et al., 2005; Graham et al., 2005; Zang, 2012). Indeed, I find that the association between gross profits and future operating cash flows increases in the magnitude of overproduction and discretionary accruals adopted to manage GMR for losers that just meet analysts' GMR forecasts. I fail to find such association among winners.

This paper contributes to the literature by documenting firms' earnings management decisions that target GMR. Prior literature examines earnings management applied to specific earnings components but argues that the purposes is to affect the earnings level. For example, Altamuro et al. (2005) show that firms prematurely recognize revenue to meet/beat earnings thresholds. Roychowdhury (2006) examines real earnings management decisions that affect different earnings components and argues that they are adopted to meet earnings benchmarks. My study shows that losers manage earnings to meet/beat analysts' GMR forecasts. In addition to that, my study investigates the factors that affects firms' GMR management decisions, namely the litigation costs and detection risk associated managing earnings, and the expected benefits from managing GMR. My research also responds to the call by Francis (2001) for studies on earnings management that intend to change specific earnings components.

The finding that losers inflate their performance contracts with the prior literature that assumes that losers either do not manage earnings, or engage in downward earnings management to create "cookie jar reserves" or to improve the value of their stock-based grants. For example. Burgstahler and Dichev (1997) and Roychowdhury (2006) defines firms that just meet earnings benchmarks as "suspicious" firms, therefore implicitly assume that firms missing earnings forecasts are less likely to manage their earnings. Healy (1986) argues that firms' bonus scheme induces managers to manage earnings downward when the firms are performing poorly. To the contrary, my study shows that firms that miss earnings forecasts inflate their performance by upward managing their GMR. A few related studies examine the information content of losers' financial statements. Rees and Sivaramakrishnan (2007) document that the market penalty for missing earnings forecasts is mitigated if other forecasts are met. Bhojraj et al. (2009) show that losers' with higher accounting quality outperform firms that just meet earnings

benchmarks with low accounting quality. However, the two studies do not examine whether losers' accounting information is managed. McNally et al. (2008) show that managers expecting stock option grants understate earnings to miss earnings benchmarks in order to increase the value of their stock opinions. However, they focus on firms that have granted managers fixed-date options and study downward earnings management. This study complements the earnings management literature by revealing losers' earnings management decisions intended to inflate their performance.

Finally, this study explores the signaling role of GMR management. Prior literature has examined the information role of earnings management that is applied to the level of earnings. For example, Subramanyam (1996) argues that managers use accruals to increase earnings' persistence and predictability, and that discretionary accruals predicts future performance and dividend changes. Altamuro et al. (2005) study a group of firms that prematurely recognize earnings and find that the prematurely recognized earnings predicts future performance. Gunny (2010) shows that firms that use real earnings management to meet earnings benchmarks report higher subsequent performance. My study shows that even for firms that miss earnings forecasts, they can communicate their future performance by adopting higher level of overproduction and discretionary accruals. Therefore, this study adds to the literature on the information role of earnings management. Since my results suggests that losers' future performance varies with the extent to which they use overproduction and discretionary accruals to inflate GMR, it should aid investors' portfolio decisions.

A few caveats are in order. First, I assume that the market cannot fully see through earnings management. Note that this assumption is well supported by the literature. For example, Xie (2001) finds that discretionary accruals are overpriced by the market. Second, the finding that losers with better future performance use more discretionary accruals to

manage GMR is valid only if there exists a positive association between total discretionary accruals and discretionary accruals that are related to gross margin. Nevertheless, this is a valid assumption because the majority of other operating expenses, e.g., selling, general and administrative (SGA) and research and development (R&D) expenses, are mostly required to be recognized at the inception of the cash expenditure and therefore less likely to be affected by accruals earnings management (Roychowdhury, 2006).

I discuss the background and the related literature in Chapter 2. I develop my hypotheses in Chapter 3. I present the research design in Chapter 4. Chapter 5 describes the sample selection procedures. I present and discuss the results in Chapter 6. In Chapter 7, I discuss supplementary tests. Concluding remarks are provided in Chapter 8.

## Chapter 2

### BACKGROUND AND RELATED LITERATURE

#### 2.1 The Importance of Gross Margin Ratio

Gross margin ratio is defined as the ratio of the difference between sales and cost of goods sold (COGS) to sales. Analysts conventionally view GMR as a signal of firms' long-term performance. For example, whether and why firms meet (or miss) GMR forecasts receives considerable attention during earnings announcements.<sup>4</sup> Investors pay specific attention to GMR because it captures firm fundamentals such as the competition in both the input and output markets, and the ability to earn revenue and turn it into profits, making GMR a less noisy indicator of firms' future performance.

Accounting research supports the importance of GMR. Ou and Penman (1989a and 1989b) find a positive association between GMR and the probability of future earnings increase. Lev and Thiagarajan (1993) document a positive association between firm value and change in GMR. Ramesh and Thiagarajan (1993) decompose earnings into permanent and transitory components with GMR included in the former, and examine the earnings-return association using these components. They find that stock return is mostly driven by the permanent components of earnings. Abarbanell and Bushee (1997) examine whether

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<sup>4</sup> GMR performances are often discussed during earnings announcements. The following are two examples. "For the fourth quarter, which ends in September, Apple said it expects sales of \$34 billion to \$37 billion and a gross margin between 36 and 37 percent. Analysts were looking for fourth-quarter revenue of \$37.1 billion and a gross margin of 36.9 percent" (Apple Earnings Tops Estimates on iPhone Sales, Sees a 'Busy Fall' With New Products, Forbes, 7/23/2013). "The big surprising number was the gross margin expansion" (Amazon's Margins Improve, The Wall Street Journal, 01/29/2013).

firms' accounting information predicts future earnings change, analysts' forecast revisions and errors. They find that gross margin significantly explains future earnings change, and for firms that experience bad news, explains analysts' forecasts error. Piotroski (2000) argues that improved GMR signals operational healthiness. Ertimur et al. (2003) argue that higher GMR is perceived to indicate higher efficiency of key operating activities, which results in higher future profits. Consistent with these arguments, The Corporate Executive Board (2009) finds that "*elite cost cutters*", manufacturing firms whose cost cutting strategies are more successful, are those who focus on minimizing COGS to improve GMR rather than cutting other operating expenses, and attribute this to that improved GMR grants firms a competitive advantages that last longer.

## **2.2 Gross Margin Ratio Management**

Prior literature has documented three main methods of earnings management, namely accrual earnings management, real earnings management and classification shifting (Jones, 1991; Roychowdhury, 2006; McVay, 2006). To manage GMR, managers has two affect sales and/or COGS. Therefore, managers are more limited in managing GMR than managing earnings level.

To manage GMR through AEM, firms have to accelerate the recognition of sales, and/or defer recognition of COGS. For example, by underestimating the impairment losses of inventory, firms can inflate gross margin ratio as well as earnings. As will be discussed in a greater detail later, in addition to the detection risk and litigation costs, firms using AEM to inflate GMR would report lower GMR as well as earnings in the next period when accruals reverse.

Managers may also inflate GMR by managing real operating activities (Graham et al., 2005). Roychowdhury (2006) shows that firms inflate earnings by offering larger



sales discount and more lenient credit terms to their customers, overproducing inventory and opportunistically reducing selling, general and administrative expenses and research and development expenses. Of the methods mentioned above, sales manipulation and overproduction are related to GMR.

By offering more lenient credit terms to customers, firms increase their current earnings at the expense of lower future cash flow because such strategy attracts customers with lower ability to pay in the future, therefore damaging future cash flow. Just offering more lenient strategy should not affect GMR because neither sales price nor cost of goods sold per unit should be affected.

Offering larger sales discounts, on the other hand, does affect GMR. Sales per unit decreases in sales discount while cost of goods sold per unit is not affected, resulting in lower GMR. In all, to inflate GMR by changing sales discount, firms have to reduce the sales discounts they offer to their customers towards fiscal yearend, which is rare in reality. Therefore, it is unlikely for firms to increase their GMR by either offering more lenient credit terms or larger sales discounts.

Managers can inflate GMR by overproducing inventory. As more inventory is produced, a larger portion of fixed costs are capitalized as inventory, reducing the cost of goods sold per unit. However, overproduction results in excessive inventory, which incurs higher storage costs and potentially more impairment losses if the inventory becomes obsolete.

A third way to increase GMR is to classification shift expenses from COGS to other items. In essence, firms engage in classification shifting to take advantage of the different value relevance of different income statement line items. Since COGS is more value relevant than other operating expenses, firms have strong incentives to opportunistically recognize expenses that should have been classified as COGS, such

as giveaway and shipping expenses, as other operating expenses, such as marketing expenses. The Securities and Exchange Commission (SEC), in its *Audit Risk Alert to the American Institute of Certified Public Accountants*, singles out the inappropriate classification from COGS to marketing expenses. Empirically, McVay (2006) shows that firms opportunistically classification shift expenses from core expenses (COGS and SGA) to income-decreasing special items.<sup>5</sup> Since classification shifting expenses from COGS to other line items doesn't change net income, or even core earnings, if from COGS to SGA, it is associated with lower risk of detection (McVay, 2006).

### **2.3 Summary**

Extant literature suggests that GMR is a less noisy indicator of firms' future performance and is subject to managerial discretion. Therefore, firms should have incentive to target their earnings management decisions on GMR instead of the earnings level. However, the literature does not provide answers to whether and under what condition GMR is viewed as the target of earnings management.

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<sup>5</sup> McVay (2006) didn't examine whether the expenses are classification shifted from COGS.

## Chapter 3

### HYPOTHESIS DEVELOPMENT

#### 3.1 Losers' Gross Margin Management Decisions

Despite that GMR is more value relevant than other earnings components regardless of firms' performance. Literature suggests that losers should have particular interests in inflating GMR.

GMR is likely to be the target of earnings management for losers for two major reasons. First, from a cost-benefit standpoint, losers have little to gain by managing earnings just to reduce the amount by which they miss earnings forecasts because the associated benefits are very small. Lopez and Rees (2002) and Bartov et al. (2002) show that not only do losers bear the market penalty regardless of the amount by which they miss earnings forecasts, but also their earnings level are not priced as positively as winners'. Consistent with this notion, Reichelt and Wang (2010) argue that the incentive to avoid market penalty from missing earnings forecasts should result in that "*firms that otherwise may have fallen short of their benchmark earnings target*" manage earnings upward. Second, investors are in greater need of forward-looking information other than the earnings level when firms are performing poorly, and GMR, as a superior indicator of firm fundamentals (e.g., intensity of competition, production efficiency, and the relation between fixed and variable expenses), meets such needs (Lev and Thiagarajan, 1993). Consistent with this notion, Abarbanell and Bushee (1997) find that GMR is more

value relevant for underperforming firms. Swanson et al. (2003) argue that investors rely more on GMR and less on earnings level when firms experience negative shocks. For instance, during Peso depreciation, Mexican firms' GMR was priced more positively, and their earnings level lost their value relevance. Anecdotal evidence also suggests that a higher-than-expected GMR help firms to mitigate the adverse market reactions following reporting lower-than-expected earnings. For instance, on July 30th, 2012, Seagate announced its fourth quarter earnings, which were below the earnings per share (EPS) forecasts by 12 cents. With such disappointing news, the company's stock price increased by 1.41 percent upon earnings announcement, largely because its GMR increased by 1.38 percent. Aaron Rakers, an analyst who specializes in the high-tech industry, even raised his earnings forecast and pointed out that his decision was based on the satisfactory GMR. Immediately after announcing its fourth quarter operating results for 2012 with earnings falling short of analysts' forecasts, Amazon experienced a nearly 10 percent after-hours price increase. Business media and analysts mostly refer to the strong performance of Amazon's GMR (24.1 percent vs. the expected 22.7 percent) to interpret such unusual market reaction (The Wall Street Journal, 2013; The New York Times, 2013).

Market's particular interest in GMR is likely to specifically encourage losers to manage their GMR upward to mitigate the negative market reaction. Anecdotal evidence supports this notion. For example, DHB Industries, Inc. purposely inflated its GMR by recognizing production expenditures under other operating expenses from 2003 to 2005. In 2009, SEC accused VeriFone Holdings for managing GMR upward in 2007 to impress financial analysts (Case No. CV 09-4046 RS, SEC V.S. VeriFone Holdings, Inc. and Paul Periolat).

Losers' GMR management may not be clear-cut to auditors and other monitors. Extant regulations still focus on earnings management decision that are applied to

earnings level, especially those changing earnings from missing to meeting beating forecasts (Levitt, 1998). For example, A large body of research has established that managers manage earnings above thresholds, which deteriorates reporting quality (Burgstahler and Eames, 2006; Dhaliwal et al., 2004; Bartov et al., 2002). In addition, evidence suggests that regulators and researchers primarily rely on forecasted earnings to detect earnings management, especially when earnings forecasts are just met due to unusual accounting transactions. For example, Staff Accounting Bulletin (SAB) No.99: *Materiality* recommends that auditors downward adjust materiality estimates should they notice that “*management has a practice of committing to analysts or others that it will achieve unduly aggressive or clearly unrealistic forecasts*”. Auditing Standard No. II: *Consideration of Materiality in Planning and Performing an Audit* states that earnings should be used to determine materiality. Auditing literature often uses the probability of firms marginally beating analysts' earnings forecasts as a proxy of audit quality (Ashbaugh et al., 2003; Lim and Tan, 2008; Ghosh and Moon, 2005). Also note that the detection of earnings management is followed by severe market penalty. For example, Dechow et al. (1995) show that firms' market value decline by as much as 9 percent when the market learns that the firms are under SEC investigation for managing earnings. Third, managing earnings level is associated with higher litigation costs. Regulators clearly state that if earnings are managed from missing to meeting/beating forecasts, no matter how small the amount is, it is deemed material and can subject both the firms and their auditors to SEC sanctions (SAB No. 99). Litigation costs have been further elevated after the enactment of the Sarbanes-Oxley Act of 2002 (Levitt, 1998; Lobo and Zhou, 2006; Ashbaugh-Skaife et al., 2009). Additionally, the benefits associated with managing earnings level have significantly decreased due to the growing use of compensation clawback provisions that allow firms to recoup bonuses from the manager that are

awarded based on the misstated earnings (Chan et al., 2012). However, in my setting, auditors are less likely to detect GMR management or adjust back GMR because losers' earnings still fall short of analysts' forecasts. Nelson et al. (2002) shows that auditors are less likely to require adjustments for earnings management decisions that do not have material impact on earnings level (e.g., meeting earnings benchmarks).

Taken together, GMR is a potential vehicle for losers to guide the market in a desired direction. By upward managing GMR, losers can mitigate the market penalty, or even cast their financial information in a favorable light. Hence, I state my first hypothesis as follows:

**H1:** Losers inflate their GMR.

### **3.2 Determinants of GMR Management Decisions**

There are costs to manage GMR. Besides the risk of detection and the negative cash flow impact of overproduction, investors' expectations for future performance increases in the extent to which GMR is inflated. Therefore, I expect that firms are more likely to manage GMR when the associated benefits are larger (holding the cost constant).

GMR is more likely to be managed by losers because it is more value relevant for underperforming firms (Abarbanell and Bushee, 1997; Swanson et al., 2003). Therefore, Firms that are more constrained in their ability of managing earnings from missing to meeting/beating analysts' earnings forecasts should be more likely to be forced to be losers and resort to managing GMR.

Extant literature suggests that litigation costs associated with managing earnings level systematically vary across industries and constrain the extent to which the level of earnings can be managed. Watts (2003) argues that because the cost associated with over- and under-statement of earnings are asymmetric, firms reduce litigation costs by adopting

more conservative financial reporting. In line with this argument, Lobo and Zhou (2006) show that firms report lower discretionary accruals when they face higher litigation costs. Hope et al. (2013) document that firms in more litigious industries report more conservative earnings. Barron et al. (2001) experimentally show that earnings are less likely to be overstated for firms in more litigious industries. Lim and Tan (2008) document a negative association between industry litigation risk and discretionary accruals.

In sum, literature suggests that firms facing higher litigation costs are more constrained to manage earnings from missing to meeting/beating analysts' forecasts. That is, they are more likely to be forced to be losers. However, since GMR is more value relevant for losers, this in turn creates incentive to inflate GMR. This leads to my next hypothesis:

**H2a:** Firms are more likely to miss earnings forecasts and just meet GMR forecasts if they face higher litigation costs.

Auditors have strong incentives to detect and adjust upward earnings management because the litigation costs associated with audit failure is extremely high. SEC clearly states that if earnings level is materially managed, auditors will be subject to SEC sanctions along with their clients (SAB No. 99, 1999). Empirically, Venkataraman et al. (2008) find that firms report lower discretionary accruals during IPO years and attribute it to the disciplinary roles played by auditors as "*auditing a company as it transitions to public ownership spans a litigation regime change*". Literature suggests that auditors are particularly concerned with earnings management that changes earnings from missing to meeting/beating forecasts (Reichelt and Wang, 2010).

Large auditors, due to their "deeper pockets", are more likely to be involved in class-action lawsuits and are more concerned with the associated reputation loss (Palmrose, 1988; Lys and Watts, 1994; Shu, 2000). As a result, large auditors have stronger incentives to detect and adjust back upward earnings management (Kanagaretnam et al, 2010). In

addition, larger auditors possess more resources to examine if the forecasted earnings level is managed upward and higher bargaining power to adjust back the overstated earnings (DeAngelo, 1981; Craswell et al., 1995). For example, Ashbaugh et al. (2003) and Lim and Tan (2008) show that firms audited by big auditors are less likely to manage earnings upward. Hence, I also expect that firms audited by big auditors are more likely to be forced to keep their loser status and engage in GMR management. Therefore, I formulate my next hypothesis as follows:

**H2b:** Firms are more likely to miss earnings forecasts but just meet GMR forecasts if they are audited by big auditors.

Extant literature shows that the value relevance of GMR varies with firms' industry membership. Other things being equal, losers should be more likely to manage GMR if they are in the industries in which GMR is more value relevant.

Maintaining a healthy GMR is more important for manufacturing firms (CEB, 2009; Hayes, 1981; Kaplan, 1983). This is because GMR measures the efficiency of production activities that is less likely to be mimicked by competitors, thus more likely to last longer (Lev and Thiagarajan, 1993; Ertimur et al., 2003). Hayes (1981) and Schonberger (1982) claim that it is especially critical for manufacturing firms to control GMR. Kaplan (1983) points out that inflating GMR by understating COGS is one of the most popular methods adopted by manufacturing firms to mislead the market. CEB (2009) shows that for manufacturing firms, changes in COGS are more persistent than changes in SGA. For this reason it names manufacturing firms that focus on reducing COGS to increase GMR "*elite cost cutters*".

GMR is also a key performance indicator for retailers. GMR not only captures retailers' ability to earn revenue and turn it into profits, but also captures inventory turnover, an important measure of retailers' performance (Gaur et al., 2005). Netessine and Rudi (2006)



document that higher GMR is strongly associated with higher profitability and operating cash flow for retailers. Randall et al. (2006) argue that retailers largely rely on GMR to identify market opportunities.

Taken together, a satisfactory GMR is more important to manufacturing firms and retailers. Therefore, losers in manufacturing and retail industries are likely to extract higher benefits from managing GMR. Hence, I formulate my next subsidiary hypothesis as follows:

**H2c:** The probability of firms missing earnings forecasts and just meet GMR forecasts is higher for firms in manufacturing or retail industries.

Evidence suggests that GMR is more value relevant for value firms. Piotroski (2000) shows that GMR significantly contributes to predicting future performance for value firms. Ertimur et al. (2003) show that investors are more concerned with value firms' ability to maintain a healthy GMR compared with growth firms. This line of research shows that investors of value firms price firms' ability to effectively control expenses, which is largely captured by GMR, as suggested by Lev and Thiagarajan (1993). Hence, other things equal, value firm losers should be more likely to engage in managing GMR.

However, as mentioned before, losers manage their financial information to mitigate the negative market reaction to their lower-than-expected earnings. Therefore, the probability of firms missing earnings forecasts and resorting to GMR management should increase in such penalties. Because growth firms are penalized more than value firms if they miss market expectation (Skinner and Sloan, 2002; Abarbanell and Lehavy 2003), it is also likely that growth firm losers, *ceteris paribus*, are more likely to engage in GMR management.

In sum, which of growth and value firms are more likely to engage in GMR management as losers remains an empirical question since the former suffers more adverse

market reaction from missing analysts' earnings forecasts and the latter receive larger benefits from managing GMR. Therefore, I develop my next subsidiary hypothesis in the null form:

**H2d:** The probability of missing earnings forecasts but meeting/beating GMR forecasts is not systematically different between value firms and growth firms.

### **3.3 Opportunism *versus* Signaling**

Extant literature shows that financial information can be managed to communicate firms' private information. Spence (1973) argues that the good type communicates its private information by sending signals that is too costly for the bad types to mimic. In accounting literature, Subramanyam (1996) argues that managers use discretionary accruals to improve the persistence of earnings and shows that the managed earnings are more informative of future performance and dividend changes. Altamuro et al. (2005) show that prematurely recognized revenue is informative of future performance. Gunny (2010) finds that firms that use higher level of REM to meet earnings forecasts report higher subsequent performance.

Given that GMR is informative of firms' core activities (Ertimur et al., 2003), investors are more likely to interpret the negative earnings surprises as a temporary setback and expect earnings to recover or even improve in the future, if the firm reports a satisfactory GMR. Therefore, losers that meet/beat GMR forecasts do not necessarily experience as negative market reactions as other losers, and may even be priced favorably. The aforementioned market reactions to earnings announcements of Amazon and Seagate are consistent with this notion.

Market favoritism toward better-than-expected GMR likely motivates all losers to upward manage their GMR. Lacking sufficient information, investors would price-protect

themselves by pricing all the losers together, leading to underpricing of losers with better future performances. Therefore, losers expecting better future performance have strong incentives to distinguish themselves from other losers by communicating their expected future performance to the market (Spence, 1973). To the extent that the expected better future performance affords losers higher capacity to engage in earnings management, earnings management is a potential option for losers to communicate their future performance to investors. Consistent with this notion, Gunny (2010) shows that for firms just meeting earnings forecasts, those with better future performances adopt more REM. Altamuro et al. (2005) find that firms that prematurely recognize revenue reports better future performance.

Note that losers may also choose to convey their private information to investors through voluntary disclosure.<sup>6</sup> Such strategy, however, is unlikely to be successful because inaccurate voluntary disclosure is associated with relatively lower costs, especially when the disclosure is forward-looking. For example, Field et al. (2005) do not find that voluntary disclosure triggers litigation. In addition, the enactment of the Private Securities Litigation Reform Act in 1995 makes it more difficult to file lawsuits for inaccurate voluntary disclosure (Ali and Kallapur, 2001). Therefore, voluntary disclosure is not costly enough to be a credible signal (Spence, 1973). In other words, it can be mimicked by losers with unfavorable prospects.

Earnings can be managed through REM. Among the various means of REM, overproduction specifically pertains to managing GMR. Overproduction refers to firms overproducing finished goods toward fiscal year end to inflate their performance. As more inventory is produced, an increasing portion of fixed costs are allocated to inventory

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<sup>6</sup> Losers may also choose to inflate earnings to communicate their future performance. However, literature suggests that for firms credibly communicate such information, they have to also meet/beat earnings benchmarks (Altamuro et al., 2005; Gunny, 2010).

instead of COGS, which increases GMR as well as earnings. Overproduction is costly because it results in excessive inventory, leading to higher storage costs and potential impairment losses once the inventory becomes obsolete. Nevertheless, such costs vary with losers' future performance. The higher the future performance, the more likely the losers can sell the overproduced inventory, and sell them sooner. Assuming that losers are aware of their future performances, those expecting better future performances would engage in overproduction to a larger extent to manage GMR.<sup>7</sup>

Taken together, losers inflate their GMR by overproducing inventory. Due to the negative impact of overproduction on their future profitability, losers expecting better future performance can afford a higher level of overproduction to distinguish themselves from the others. Therefore I develop my hypothesis as follows:

**H3a:** Losers with better future performance overproduce more to manage GMR.

Besides overproduction, losers can also engage in AEM to manage GMR. One stream of literature shows that AEM and REM are used as substitutes (Badertscher, 2011; Graham et al., 2005). Zang (2012) shows that firms use more (less) AEM to manage earnings when the costs of REM are higher (lower). Cohen et al. (2008) argue that the enactment of SOX should be followed by increases in REM and decreases in AEM because the costs of AEM are elevated. Therefore, if losers using overproduction to a large extent to manage GMR, they may use less AEM.

Note that the papers mentioned above make an important assumption that the total benefits associated with earnings management are fixed. For instance, SOX does not change the total benefits from managing earnings, therefore the demand of total earnings

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<sup>7</sup> Note that, for some firms, "overproduction" is an optimal operating decision if they expect sufficiently big sales increases in the future, which require them to produce more inventory in the current period. However, this does not undermine my argument because for those firms, overproduction is not only not costly, but is beneficial, which afford them to produce even more compare to other losers expecting lower future performance.

management is a constant across the pre- and post-SOX era (Cohen et al., 2008). Relaxing this assumption, total earnings management would increase as the expected benefits from managing earnings increase. For example, Cohen and Zarowin (2010) find that firms use both REM and AEM to a larger extent around seasonal equity offerings. However, if losers use more AEM to manage GMR only because the expected benefits are larger, the information content of their financial statements is likely to marginally decrease in the magnitude of AEM. Ewert and Wagenhofer (2005) analytically show that if REM successfully increases the value relevance of earnings, firms may also engage in AEM because the inflated earnings are likely to be priced higher. In the context of this paper, because investors likely attach higher value relevance to the gross profits of losers who communicate their expected future performance through overproduction, these firms may also adopt more AEM to inflate earnings because the accruals would be priced higher as well.<sup>8</sup>

On the other hand, AEM can also be used by losers to communicate their future performance. Note that AEM is associated with litigation costs and followed by reversal, which will decrease subsequent earnings. Literature suggests that investors are more likely to file lawsuits against firms if firms' subsequent performance falls short of their expectation, and firms are more likely to be held responsible if AEM is identified (Field et al., 2005; Reynolds and Francis, 1999; Stice, 1991). Because GMR is more value relevant than the other earnings components, inflating GMR through AEM is associated with even higher litigation costs because investors expectation of future performance is inflated to a larger extent, and the reversal, which would reduce future GMR is likely to hurt investors even more. Nevertheless, losers expecting higher future performances can adopt more AEM

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<sup>8</sup> Note that Gunny (2010) also studies a setting in which the value relevance of earnings potentially increases, that is, firms managing earnings from missing to meeting/beating analysts' bottom line earnings forecasts. However, she only focuses on REM therefore does not provide insights regarding AEM

because they are more likely to report higher future earnings, therefore less likely to disappoint investors. Hence, to the extent that the litigation costs associated with AEM decrease in losers' future performance, AEM can also communicate losers' future performance.

In sum, if AEM and REM are used as substitutes, losers expecting better future performance would adopt less AEM to manage GMR. Otherwise losers should adopt more AEM to either take advantage of the increased value relevance resulting from overproduction, or to communicate their future performance. Since no literature has revealed whether losers' AEM decisions communicate their future performance, I formulate my next subsidiary hypothesis in the null form:

**H3b:** The extent to which losers adopt AEM to manage GMR does not systematically vary with their future performance.

As previously mentioned, a positive association between the informativeness of losers' gross profits and the magnitude of AEM adopted to manage GMR can result from either losers taking advantage of the increased value relevance of gross profits, or losers using AEM as an additional signal to communicate their future performances to the market. If it is the former (latter) reason, firms future performance should marginally decrease (increase) in the amount of AEM adopted.

Gross margin is more value relevant than the other earnings components for winners as well. Therefore it is possible that winners also manage GMR in a similar way as losers. Literature has examined if AEM and REM are used opportunistically to manage operating income by winners and offers mixed evidence (Bhojraj et al., 2009; Cohen and Zarowin, 2010, Gunny, 2010; Subramanyam, 1996). For example, Bhojraj et al. (2009) and Cohen and Zarowin (2010) show that firms that meet/beat earnings forecasts by engaging in AEM and REM experience subsequent underperformance. Gunny (2010) finds a positive association

between future performance and REM for firms that meet/beat earnings forecasts. However, to the extent that the benefits associated with managing GMR are much larger for losers, it is unlikely that winners would manage GMR as losers (Bartov et al., 2002; Lopez and Rees, 2002). Hence, I formulate my final subsidiary hypothesis as follows:

**H3c:** Losers and winners manage GMR differently.

## Chapter 4

### RESEARCH DESIGN

H1 posits that losers manage their GMR upward to meet analysts' GMR forecasts. Such GMR management decisions are likely to affect the distribution of GMR surprises in the form of unusually high frequencies of 0 and small positive GMR surprises and unusually low frequencies of small negative GMR surprises.<sup>9</sup> I create a histogram illustrating the distribution of GMR surprise for losers. I focus on Interval -1 and Interval 0, which consist of firms missing GMR forecasts by no more than 0.1 percent of sales, and meeting or beating GMR forecasts by less than 0.1 percent of sales, respectively. I expect GMR management to result in unusually more firms falling in Interval 0 and unusually fewer firms falling in Interval -1.

I set the width of each interval to be 0.1 percent of the contemporaneous sales for two reasons. First, analysts' consensus GMR forecasts are as precise as 0.1 percent of sales, making it a natural width of intervals (Degeorge and Zeckhauser, 1999). Second, 0.1 percent of sales have the same order of magnitude as the optimal width of earnings surprise distribution used to capture upward earnings management. Literature suggests that firms meeting/beating EPS forecasts by no more than 1 cent are most likely to have achieved so by engaging in upward earnings management (Degeorge and

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<sup>9</sup> I also refer to these firms as just meeting and just missing analysts' GMR forecasts, respectively.



Zeckhauser, 1999; Reichelt and Wang, 2010; Bhojraj et al., 2009). Untabulated results show that the mean sales of my sample is approximately one order of magnitude above the contemporaneous earnings. Because average EPS has a single digit dollar value, 0.1 percent of sales and 1 cent of EPS on average have the same order of magnitude.

Earnings discontinuity literature conventionally assumes that without earnings management, the difference in the frequencies between firms just missing and just meeting earnings thresholds should be insignificant. However, given the positive association between GMR and earnings level, I expect that without GMR management, losers (winners) are more likely to just miss (meet) GMR forecasts.

Firms that manage their earnings are more likely to restate their financial statements (Richardson et al., 2002; Bergstresser and Philippon, 2006). I also examine that among firms just meeting GMR forecasts, whether losers are more likely to restate their financial statements with the following logistic model:

$$\begin{aligned}
 RES_{i,t} = & \alpha_0 + \alpha_1 LOSE_{i,t} + \alpha_2 MEETGMR_{i,t} + \alpha_3 LOSE_{i,t} * MEETGMR_{i,t} \\
 & + \alpha_4 PRES_{i,t} + \alpha_5 TACCRUAL_{i,t} + \alpha_6 \Delta REC_{i,t} + \alpha_7 \Delta INV_{i,t} \\
 & + \alpha_8 SOFTASSETS_{i,t} + \alpha_9 \Delta CSALES_{i,t} + \alpha_{10} \Delta ROA_{i,t} + \alpha_{11} ISSUANCE_{i,t} \\
 & + \alpha_{12} \Delta EMP_{i,t} + \alpha_{13} LEASE_{i,t} + \epsilon_{i,t}
 \end{aligned} \tag{1}$$

where for firm *i* at year *t*,

$RES_{i,t}$	=	Indicator variable that equals to 1 if the financial statements are restated and 0 otherwise;
$LOSE_{i,t}$	=	Indicator variable that equals to 1 if the firm misses analysts' earnings forecasts and 0 otherwise;
$MEETGMR_{i,t}$	=	Indicator variable that equals to 1 if the firm just meets analysts' GMR forecasts and 0 otherwise;
$PRES_{i,t}$	=	Indicator variable that equals to 1 if the firm's financial statements of the preceding year are restated;
$TACCRUAL_{i,t}$	=	Total accrual;
$\Delta REC_{i,t}$	=	Change in receivables;

$\Delta INV_{i,t}$	=	Change in inventories;
$SOFTASSETS_i$	=	Soft assets (total assets minus net Property, Plant, and Equipment Buildings and Cash and Short-Term Investments) as a percentage of total assets
$\Delta CSALES_{i,t}$	=	Change in cash sales where cash sales is measured as the difference between revenue and change in receivables.
$\Delta ROA_{i,t}$	=	Change in return on assets;
$ISSUANCE_{i,t}$	=	Indicator variable that equals to 1 if the firm issues debt or equity securities;
$\Delta EMP_{i,t}$	=	Abnormal changes in employees numbers, defined as the percentage change in the number of employees minus the percentage change in total assets;
$LEASE_{i,t}$	=	Indicator variable that equals to 1 if the firm has future operating lease obligations and 0 otherwise.

In equation (1), the coefficient of *LOSER* captures whether losers are more likely to restate their financial statements. The coefficient of *MEETGMR* captures whether winners that just meet analysts' GMR forecasts are more likely to restate their financial statements. The variable of interest is *LOSER \* MEETGMR*. If losers indeed are more likely to inflate GMR than losers, then the coefficient  $\alpha_3$  should be positive. Other variables are included to control for the effects of firm and auditor characteristics on the probability of restatements, as informed by the prior literature (Dechow et al., 2011; Lobo and Zhao 2013).

Hypothesis 2 examines the characteristics of firms that are more likely to manage GMR as losers. Specifically, it examines how litigation costs, the size of auditor, industry membership and whether being a growth or value firm affects the probability of firms managing GMR as losers. I design the following logistic regression model to test my hypotheses:

$$GSBEM_{i,t} = \beta_0 + \beta_1 Litigation_{i,t} + \beta_2 Big4_{i,t} + \beta_3 M\&R_{i,t} + \beta_4 ValueFirm_{i,t} + \beta_5 SIZE_{i,t} + \varepsilon_{i,t} \quad (2)$$

where for firm  $i$  in year  $t$ :

$GSBEM_{i,t}$	=	Indicator variable equals to 1 if the firm misses analysts' earnings forecasts and just meet GMR forecasts, and 0 otherwise;
$Litigation_{i,t}$	=	Indicator variable equals to 1 if the firm is in an industry with higher litigation costs and 0 otherwise;
$Big4_{i,t}$	=	Indicator variable that equals to 1 if the firms is audited by one of the Big 4 auditors and 0 otherwise;
$M\&R_{i,t}$	=	Indicator variable equals to 1 if the firm belongs to either manufacturing or retail industries and 0 otherwise;
$ValueFirm_{i,t}$	=	Indicator variable equals to 1 if the firm is a value firm and 0 otherwise;
$SIZE_{i,t}$	=	Natural logarithm of total assets.

Literature shows that firms in biotechnology, computers, electronics or retail industries face higher litigation risk than others (Francis et al., 1994). I expect the coefficient of  $Litigation_{i,t}$  ( $\beta_1$ ) to be positive because these firms have higher litigation costs associated with managing earnings level and are therefore more likely to miss earnings forecasts and resort to GMR management. Because firms audited by Big 4 auditors are less likely to manage earnings above forecasts, I expect a positive association between  $Big4_{i,t}$  and  $GSBEM_{i,t}$  if those firms resort to managing GMR. Following Fama and French (1997), I define firms with two-digit SIC code between 21 and 39 as manufacturing firms and two-digit SIC code between 52 and 59 as retailers. The coefficient of  $M\&R_{i,t}$  ( $\beta_3$ ) is expected to be positive because literature shows that investors perceive manufacturing and retail firms' GMR to be more value relevant, which increases the benefits from managing GMR. I categorize firms with higher-than-median book-to-market ratio as value firms (La Porta et al., 1997). I do not predict the coefficient of  $ValueFirm_{i,t}$  ( $\beta_4$ ) for the reasons previously mentioned.

I include  $SIZE_{i,t}$  as a control variable because prior literature finds that firm size is associated with different ability to manage earnings above forecasts. Davis et al. (2009) posit that larger firms are more likely to meet/beat earnings forecasts and document a positive association between the probability of earnings management and firm size. Because I conjecture that the propensity of GMR management decreases as firms are less constrained in managing the forecasted earnings, the coefficient of  $SIZE$  ( $\beta_5$ ) should be negative.

Hypothesis 3 examines the association between firms' future performance and the extent to which they use overproduction and AEM to manage GMR for losers and winners, respectively, and investigates whether the association varies between the two groups of firms.

Statement of Financial Accounting Concepts No. 1 states that "*financial reporting should provide information to help investors, creditors, and others assess the amounts, timing, and uncertainty of prospective net cash inflows to the related enterprise*". Consistent with this notion, a large body of literature measures the future performance with the next period operating cash flow (Barth et al., 2001; Finger, 1994; Badertscher et al., 2012; Altamuro et al., 2005). Following this line of research, I define firms' future performance as their next period's cash flow from operating activities. The empirical models are presented below.

$$\begin{aligned}
 CFO_{i,t+1} = & \phi_0 + \phi_1 GP_{i,t} + \phi_2 MEETGMR_{i,t} + \phi_3 ABPROD_{i,t} + \phi_4 GP_{i,t} \\
 & * ABPROD_{i,t} + \phi_5 GP_{i,t} * MEETGMR_{i,t} + \phi_6 GP_{i,t} * MEETGMR_{i,t} \\
 & * ABPROD_{i,t} + \phi_7 OEXP_{i,t} + \iota_{i,t}
 \end{aligned} \tag{3}$$

$$\begin{aligned}
 CFO_{i,t+1} = & \rho_0 + \rho_1 GP_{i,t} + \rho_2 MEETGMR_{i,t} + \rho_3 DACCRUAL_{i,t} + \rho_4 GP_{i,t} \\
 & * DACCRUAL_{i,t} + \rho_5 GP_{i,t} * MEETGMR_{i,t} + \rho_6 GP_{i,t} * MEETGMR_{i,t} \\
 & * DACCRUAL_{i,t} + \rho_7 OEXP_{i,t} + \xi_{i,t}
 \end{aligned} \tag{4}$$

where for firm  $i$  in year  $t$ :

$CFO_{i,t+1}$	=	Cash flow from operating activities for the next period;
$GP_{i,t}$	=	Gross profits deflated by beginning total assets;
$ABPROD_{i,t}$	=	Abnormal production expenses derived from Model (5);
$DACCRUAL_{i,t}$	=	Discretionary accruals derived from the modified Jones model, as in Model (6) and (7);
$OEXP_{i,t}$	=	Other expense calculated as the difference between operating income and gross profits.

Other variables are as previously defined.

In Model (3) and (4), the coefficients of  $GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t}$  ( $\phi_6$ ) and  $GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t}$  ( $\rho_6$ ) capture how subsequent cashflow from operating activities varies with the magnitudes of overproduction and discretionary accruals for firms that just meet GMR forecasts with different earnings performance regarding forecasted earnings. Since I posit that losers that engage in overproduction to a larger extent report to meet GMR forecasts report higher future performance,  $\phi_6$  is predicted to be positive for losers. I do not predict the sign of  $\rho_6$  for the reasons previously discussed. A comparison between  $\phi_6$  and  $\rho_6$  reveals whether losers and winners manage GMR differently.

Consistent with Roychowdhury (2006) and Cohen and Zarowin (2010),  $ABPROD_{i,t}$  is measured as the residual value from the following regression model, estimated for each industry and year:

$$PRODUCTION_{i,t} = \tau_0 + \tau_1 SALES_{i,t} + \tau_2 \Delta SALES_{i,t} + \tau_3 \Delta SALES_{i,t-1} + \mu_{i,t} \quad (5)$$

where for firm  $i$  in year  $t$ ,  $PRODUCTION_{i,t}$  is the total production expenditure measured as the sum of COGS and change in inventory.  $SALES_{i,t}$  is the sales revenue.  $\Delta SALES_{i,t}$  and  $\Delta SALES_{i,t-1}$  are the change in sales for current and the preceding years, respectively.

$DACCRUAL_{i,t}$  is derived from the modified Jones model (Dechow et al., 1995). I first estimate the following regression model:

$$TACCRUAL_{i,t} = \lambda_0 + \lambda_1 \Delta SALES_{i,t} + \lambda_2 PPE_{i,t} + \varrho_{i,t} \quad (6)$$

Discretionary accrual ( $DACCRUAL$ ) is calculated as follows:

$$DACCRUAL_{i,t} = TACCRUAL_{i,t} - \widehat{\lambda}_0 - \widehat{\lambda}_1 (\Delta SALES_{i,t} - \Delta REC_{i,t}) - \widehat{\lambda}_2 PPE_{i,t} \quad (7)$$

where  $\lambda_0$ ,  $\lambda_1$  and  $\lambda_2$  are coefficients from estimating Model (6). For firms  $i$  in year  $t$ ,  $PPE_{i,t}$  is the gross balance of property, plant and equipment. Other variables are as previously defined.

As previously discussed, if losers that use more discretionary accruals to manage GMR also report higher future performance, it is necessary to examine whether losers do so to take advantage of the signaling effect of overproduction or due to the litigation concern associated with AEM. If it is the former reason, then after controlling for overproduction, the association between  $CFO_{i,t+1}$  and  $GP_{i,t}$  should marginally decrease in the magnitude of AEM adopted to manage GMR for losers that just meet GMR forecasts. Otherwise it should marginally increase in AEM. Therefore, I use the following equations to “horserace” the two competing explanations:

$$\begin{aligned} CFO_{i,t+1} = & \kappa_0 + \kappa_1 GP_{i,t} + \kappa_2 MEETGMR_{i,t} + \kappa_3 ABPROD_{i,t} + \kappa_4 DACCRUAL_{i,t} \\ & + \kappa_5 GP_{i,t} * MEETGMR_{i,t} + \kappa_6 GP_{i,t} * ABPROD_{i,t} + \kappa_7 GP_{i,t} \\ & * DACCRUAL_{i,t} + \kappa_8 GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t} + \kappa_9 GP_{i,t} \\ & * MEETGMR_{i,t} * DACCRUAL_{i,t} + \kappa_{10} OEXP_{i,t} + \omega_{i,t} \end{aligned} \quad (8)$$

All the variables are as previously defined.

I expect the coefficient of  $GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t}$  ( $\kappa_8$ ) to be positive.

The variable of interest in Model (8) is  $GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t}$ . If losers engage in AEM to take advantage of the enhanced value relevance from signaling through production management, then  $\kappa_9$  should be negative. Whereas if these losers engage in AEM to communicate their future performance,  $\kappa_9$  should be positive.

## **Chapter 5**

### **SAMPLE SELECTION**

Data is obtained for the fiscal years from 2004 to 2012 from I/B/E/S Summary Statistics File and COMPUSTAT Fundamentals Annual File. I/B/E/S starts to provide analysts' GMR forecasts from 2004.<sup>10</sup>

Between 2004 and 2012, 17,158 observations are available, 12 of which belong to fiscal year 2004 and 2005. I delete the 12 observations. However, adding the observations back does not change the results. I require that EPS forecasts data be available for my observations. This requirement further reduces my sample by 22. For the observations missing actual EPS or GMR information, I resort to COMPUSTAT Fundamentals Annual File for the actual EPS and GMR. I am unable to find necessary information to calculate actual EPS and GMR for 1,327 observations. I delete firms in utility and financial industries, further reducing my sample by 972. My sample to test the discontinuity of losers' GMR surprise distribution consists of 14,825 observations belonging to 4,161 different firms. For the test examining the association between GMR management and restatements, I further delete observations with insufficient data to calculate the necessary variables. This requirement reduces my restatement test sample to 13,840 observations from 3,593 different firms.

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<sup>10</sup> As confirmed with Thomson Reuters, forecasts data is complete from 2004.



Testing H2 requires industry membership information, book-to-market ratio, and auditor identify. Therefore I require my sample to have auditor information from Audit Analytics and necessary information from COMPUSTAT to calculate the book-to-market ratio. From the 14,825 observations, I delete 1,183 observations failing to meet the requirements. My sample to test H2 consists of 13,642 observations from 3,617 different firms.

Testing H3 requires my observations to have sufficient information to calculate the magnitude of overproduction and discretionary accruals, and the next year's cash flow from operating activities. I also delete observations with variables at the bottom and top 1 percent of their respective distribution. My final sample for testing H3 consists of 9,525 observations from 2,848 firms.

Detailed sampling procedures are provided in Table 1.

**Table 1**  
**Sample Selection**

	Number of Firms	Number of Observations
<b>GMR Forecasts from I/B/ES</b>	<b>4,808</b>	<b>17,158</b>
<b>Less:</b> Forecasts for fiscal year 2004 and 2005		12
<b>Less:</b> Observations with no EPS forecasts		22
<b>Less:</b> Observations with insufficient COMPUSTAT data to calculate actual EPS and GMR		1,327
<b>Less:</b> Firms in financial or utility industries		972
<b>H1 Sample</b>	<b>4,161</b>	<b>14,825</b>
Less: Observations missing required variables		1,183
<b>H2 Sample</b>	<b>3,617</b>	<b>13,642</b>
<b>Less:</b> Observations with insufficient data to calculate real and accounting earnings management.		289
<b>Less:</b> Observations whose next year income and cash flow information are not available		2,865
<b>Less:</b> Observations missing return data from CRSP		215
<b>Less:</b> Observations whose variables are at either 1% or 99% of the respective distributions		748
<b>H3 Sample</b>	<b>2,848</b>	<b>9,525</b>

1: The final Sample for H3 includes 3,341 observations that miss earnings forecasts, and 6,214 observations that meet/beat earnings forecasts.

## Chapter 6

### ANALYSIS

#### 6.1 Validating the Main Premise

The main premise underlying my hypotheses is that losers are penalized less by the market if they report small positive GMR surprises. While I base this premise on evidence provided in the literature, I nevertheless begin my analysis by validating this premise for my sample.

I run the following regression to examine whether losers reporting small positive GMR surprises incur less negative market return:

$$\begin{aligned}
 CAR_{i,t} = & \gamma_0 + \gamma_1 Surprise_{i,t} + \gamma_2 LOSER_{i,t} + \gamma_3 MEETGMR_{i,t} + \gamma_4 LOSER_{i,t} \\
 & * MEETGMR_{i,t} + \gamma_5 Surprise_{i,t} * LOSER_{i,t} + \gamma_6 Surprise_{i,t} \\
 & * MEETGMR_{i,t} + \gamma_7 Surprise_{i,t} * LOSER_{i,t} * MEETGMR_{i,t} + \eta_{i,t} \quad (9)
 \end{aligned}$$

where for firm  $i$  in year  $t$ ,  $CAR_{i,t}$  is the two-day cumulative market-adjusted returns starting from the financial statement announcement date.  $Surprise_{i,t}$  is the difference between actual and analysts' forecasted EPS. All other variables are as previously defined.

Untabulated results show that the coefficient of  $Surprise_{i,t} * LOSER_{i,t} * MEETGMR_{i,t}$  is positive and significant ( $\gamma_7 = 0.060, p < 0.10$ ), indicating that the market reacts more positively to losers' earnings if they meet/beat GMR forecasts. The results also suggest that the market benefits associated with reporting small positive GMR

surprise is insignificant ( $\gamma_6 = -0.031, p < 0.20$ ) for winners, consistent with the notion that meeting/beating GMR forecasts is more beneficial for losers. Overall, these results are consistent with the prior literature (Lopez and Rees, 2002; Bartov et al., 2002).

## 6.2 Preliminaries

In preparation for the tests, I present the estimation results of Model (5) and (6) in columns 1 and 2, respectively, of Table 2. As previously noted, the models are estimated to derive  $ABPROD_{i,t}$  and  $DACCRUAL_{i,t}$ , respectively. Because I am estimating the coefficients at industry-year level, I present mean coefficient values and their respective significance.

Column 1 shows that production expenses ( $PRODUCTION_{i,t}$ ) increase in sales revenue ( $TACCRUAL_{i,t}$ ), consistent with the notion that the increased demand requires more products to be produced. In both columns, the coefficients of  $SALES_{i,t}$  are positive and significant, indicating that increases in sales are supported by increased production activities and positively associated with more credit sales. Column 1 shows that the preceding year's change in sales is negatively and significantly associated with production expenses. As pointed out by Dechow et al. (1998), this is because firms hold more inventory when they face increasing demand. Total operating accruals ( $TACCRUAL_{i,t}$ ) decrease in property, plant, and equipment ( $PPE_{i,t}$ ) because these assets produce income-decreasing accruals. The coefficients are qualitatively consistent with prior literature (Cohen et al., 2008; Zang, 2012).

I examine the respective distributions of earnings and GMR performance with respect to their respective forecasts, and report the results in Panel A of Table 3. Consistent with the notion that firms manage earnings to meet/beat analysts' forecasts, 62.24 percent of my sample observations meet/beat analysts' earnings forecasts. GMR forecasts, on the

other hand, appear to be more accurate because the numbers of firms missing and meeting/beating GMR forecasts are quite close to each other (50.98% versus 49.02%). Of my sample, 42.52 percent miss either earnings or GMR forecast and meet/beat the other forecast.

## 6.3 Main Results

### 6.3.1 Existence of GMR Management

Panel B of Table 2 shows the numbers of firms reporting small positive and negative GMR surprises conditioned on their contemporaneous earnings performance. Contrary to the results reported in Panel A that losers are less likely to meet/beat GMR forecasts (14.65% versus 23.11%), losers are more likely to report small positive GMR surprises (2.23% versus 1.36%). On the other hand, winners are also more likely to just meet GMR forecasts. However, this is expected given the positive relationship between GMR and earnings.

Figure 1 shows the distribution of losers' GMR surprise. 331 observations fall in Interval 0, which consists of losers that just meet GMR forecasts; whereas 201 observations fall in Interval -1, which consists of losers that just miss GMR forecasts. Note that the number of observations in Interval -1 is not only smaller than that of Interval 0 (331), but also smaller than that of Interval -2, which consists of firms missing GMR forecasts by between 0.1 and 0.2 percent of the contemporaneous sales, by 56, forming a visible "V" shape. This lends support to the hypothesis that losers upward manage GMR, resulting in unusually low frequencies of small negative GMR surprises and unusually high frequencies of small positive GMR surprises. Untabulated results show that the discontinuity between the frequencies of losers that just miss and just meet GMR forecasts is significant at 1 percent significance level.

**Table 2**  
**Estimating Earnings Management**

Model 5:  $PRODUCTION_{i,t} = \tau_0 + \tau_1 SALES_{i,t} + \tau_2 \Delta SALES_{i,t} + \tau_3 \Delta SALES_{i,t-1} + \mu_{i,t}$

Model 6:  $T\_Accrual_{i,t} = \lambda_0 + \lambda_1 \Delta SALES_{i,t} + \lambda_2 PPE_{i,t} + \varrho_{i,t}$

Variables	Mean Estimates (p-value) Model (5)	Mean Estimates (p-value) Model (6)
<i>Intercept</i>	-0.066 (<0.001)	-0.064 (<0.001)
<i>SALES<sub>i,t</sub></i>	0.749 (<0.001)	
<i>ΔSALES<sub>i,t</sub></i>	0.017 (0.003)	0.045 (<0.001)
<i>ΔSALES<sub>i,t-1</sub></i>	-0.013 (0.017)	
<i>PPE<sub>i,t</sub></i>		-0.057 (<0.001)
Mean adjusted R <sup>2</sup>	23.54%	35.31%

1: All regression models are estimated at industry-year level.

2: **Variable Definition:** For firm *i* at time *t*, *Production<sub>i,t</sub>* is production expense defined as the sum of costs of goods sold and change in inventory; *T\_Accrual<sub>i,t</sub>* is total accrual calculated as the difference between operating income and operating cash flow; *SALES<sub>i,t</sub>* is sales revenue; *ΔSALES<sub>i,t</sub>* is the change in sales revenue; *ΔSALES<sub>i,t-1</sub>* is the change in sales revenue of the prior period; *PPE<sub>i,t</sub>* is the gross amount of property, plant and equipment.

3: All variables are deflated by total beginning assets

4: All p-values are two-tailed.

**Table 3**  
**Distribution Analysis**

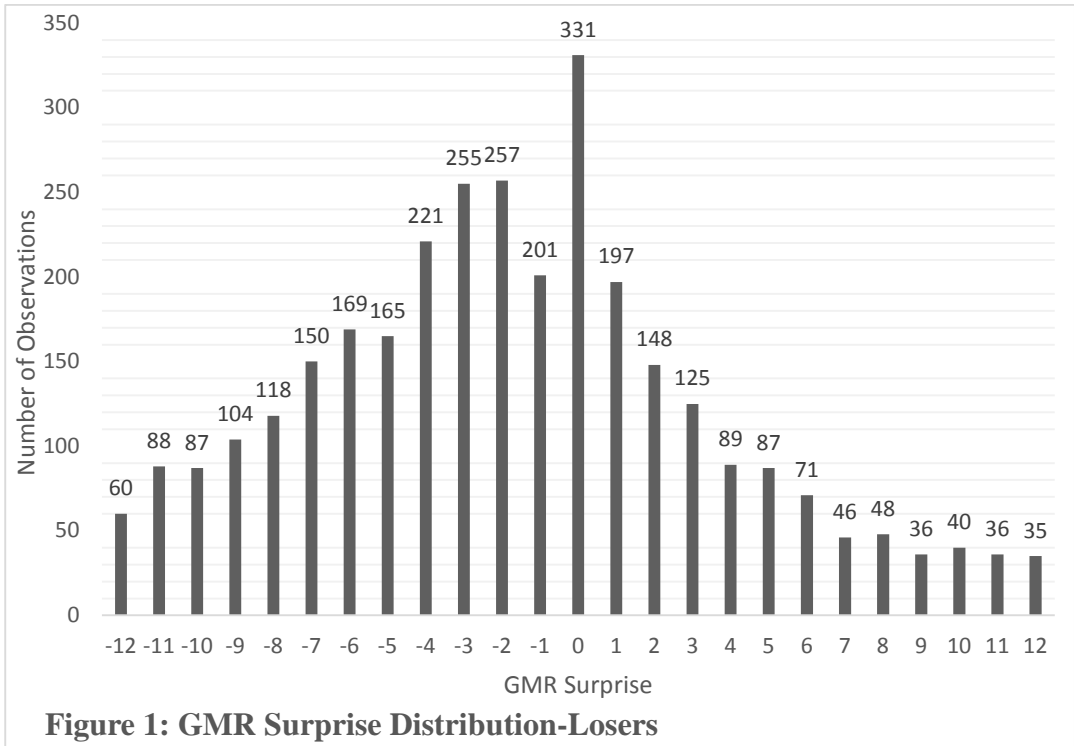
**Panel A**

<b>GMR \ Earnings</b>	<b>Missing</b>	<b>Beating</b>	<b>Total</b>
<b>Missing</b>	3,426/23.11%	4,131/27.87%	7,557/50.98%
<b>Meeting/Beating</b>	2,172/14.65%	5,096/34.37%	7,268/49.02%
<b>Total</b>	5,598/37.76%	9,227/62.24%	14,825/100%

**Panel B**

<b>GMR \ Earnings</b>	<b>Missing</b>	<b>Beating</b>	<b>Total</b>
<b>Just Missing</b>	201/1.36%	539/3.64%	740/4.99%
<b>Just Meeting</b>	331/2.23%	790/5.33%	1,121/7.56%
<b>Total</b>	532/3.59%	1,329/8.97%	1,861/12.55%

- 
- 1: Each cell shows that number/percentage of firms meets the respective criterion.
  - 2: Percentage is calculated as the ratio of number of firms falling each specific cell to the total number of my sample, 14,825.

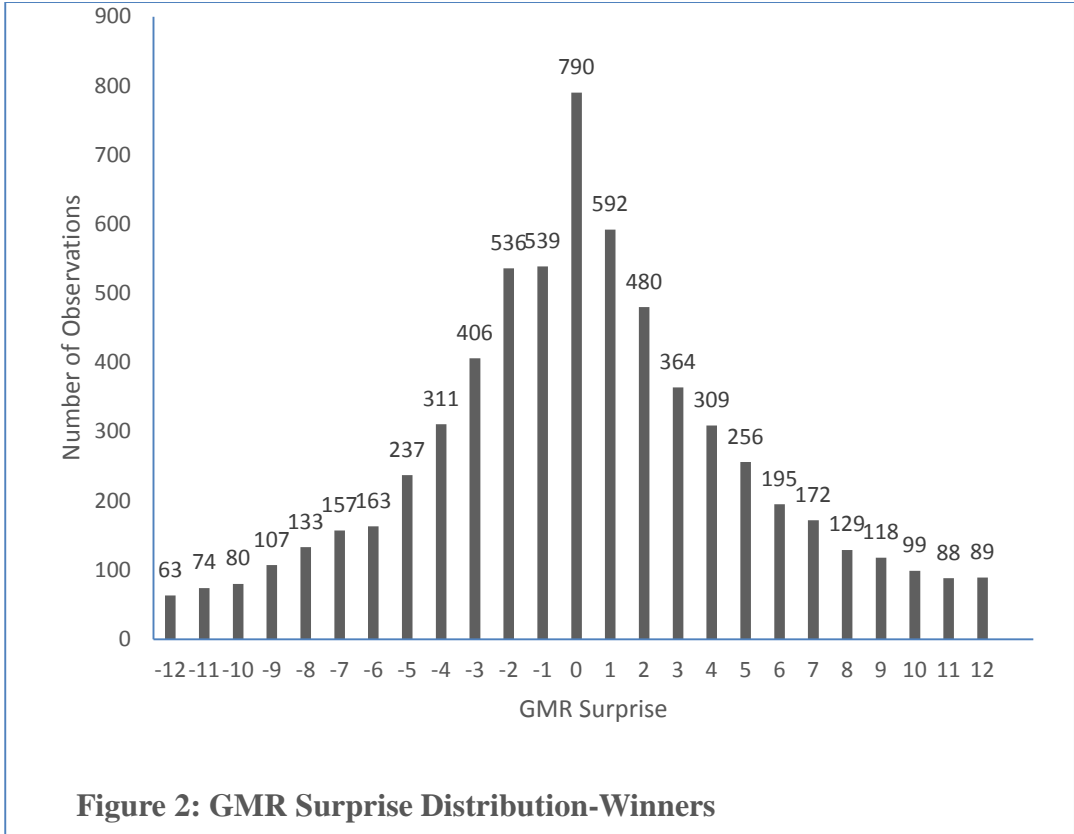




I also examine the GMR surprise distribution for winners and present the results in Figure 2. Interval 0 has 790 observations, not only significantly more than the number of winners that just miss GMR forecasts (539 observations), but also the most among all intervals. However, this is expected since winners are more likely to meet/beat GMR forecasts. More importantly, the “V” shape does not exist among winners.

Table 4 reports the descriptive statistics of the variables used to test the association between GMR management and restatements. 4.4 percent of my sample restate their current financial statements. 3.7 percent restate their financial statements downward. 37.4 percent of the observations are losers. 7.8 percent of my observations just meet GMR forecasts. 2.7 percent restated the financial statements of the preceding year. The mean (median) values of total accrual, change in receivables, soft assets, change in cash sales and change in ROA are -0.081 (-0.058), -0.002 (0.000), 0.549 (0.574), 0.151 (0.093) and -0.001 (0.001), respectively. On average, 94.4 and 89.1 percent of my sample issue new debt or stock and have lease obligations, respectively. The mean (median) change in employee numbers is -7.1 (-3.1) percent.

Table 5 reports the results from examining Model (1). Column 1 reports whether GMR management affects the probability of restatements and focus on losers. On average, losers’ financial statements are not more likely to be restated than winners’ ( $\alpha_1 = 0.064, p = 0.51$ ). The financial statements of winners that just meet GMR forecasts are not significantly associated with the probability of restatements either ( $\alpha_2 = -0.100, p = 0.63$ ). The coefficient of our key variable,  $LOSER_{i,t} * MEETGMR_{i,t}$ , is positive and significant ( $\alpha_3 = 0.479, p < 0.10$ ). This is consistent with the notion that losers are more likely to inflate GMR than winners. Regarding the control variables, firms that restated their financial statements in the preceding year are more likely to restate their financial statements ( $\alpha_4 = 2.983, p < 0.01$ ). The probability of



**Table 4**  
**Descriptive Statistics**

<b>Variable</b>	<b>Mean</b>	<b>STD Dev</b>	<b>Q1</b>	<b>Median</b>	<b>Q3</b>
<i>RES<sub>it</sub></i>	0.044	0.206	0.000	0.000	0.000
<i>DRES<sub>it</sub></i>	0.037	0.189	0.000	0.000	0.000
<i>LOSER<sub>it</sub></i>	0.374	0.484	0.000	0.000	1.000
<i>MEETGMR<sub>it</sub></i>	0.078	0.269	0.000	0.000	0.000
<i>PRES<sub>it</sub></i>	0.027	0.163	0.000	0.000	0.000
<i>TACCRUAL<sub>it</sub></i>	-0.081	0.535	-0.111	-0.058	-0.019
<i>ΔREC<sub>it</sub></i>	-0.002	0.050	-0.015	0.000	0.014
<i>ΔINV<sub>it</sub></i>	0.000	0.037	-0.006	0.000	0.008
<i>SOFTASSETS<sub>i</sub></i>	0.549	0.236	0.375	0.574	0.740
<i>ΔCSALES<sub>it</sub></i>	0.151	0.356	-0.016	0.093	0.235
<i>ΔROA<sub>it</sub></i>	-0.001	0.137	-0.041	0.001	0.034
<i>ISSUANCE<sub>it</sub></i>	0.944	0.230	1.000	1.000	1.000
<i>ΔEMP<sub>it</sub></i>	-0.071	5.397	-0.135	-0.031	0.066
<i>LEASE<sub>it</sub></i>	0.891	0.311	1.000	1.000	1.000

- 1: **Variable Definition:** *RES<sub>it</sub>* is an indicator variable that equals to 1 if the financial statements are restated and 0 otherwise; *DRES<sub>it</sub>* is an indicator variable that equals to 1 if the financial statements are restated downward and 0 otherwise; *LOSER<sub>it</sub>* is an indicator variable that equals to 1 if the firm misses analysts' earnings forecasts and 0 otherwise; *MEETGMR<sub>it</sub>* is an indicator variable that equals to 1 if the firm just meet analysts' GMR forecasts and 0 otherwise; *PRES<sub>it</sub>* is an indicator variable that equals to 1 if the financial statement of the preceding year was restated and 0 otherwise; *TACCRUAL<sub>it</sub>* is total accrual; *ΔREC<sub>it</sub>* is change in receivables; *ΔINV<sub>it</sub>* is change in inventory; *SOFTASSETS<sub>it</sub>* is the ratio of soft assets to total assets; *ΔCSALES<sub>it</sub>* is change in cash sales; *ΔROA<sub>it</sub>* is change in ROA; *ISSUANCE<sub>it</sub>* is an indicator variable that equals to 1 if the firm issues new debt or equity and 0 otherwise; *ΔEMP<sub>it</sub>* is abnormal change in employee number; *LEASE<sub>it</sub>* is an indicator variable that equals to 1 if the firm has operating lease obligations and 0 otherwise.

**Table 5**  
**GMR Management and Restatements**

$$\text{Model (1): } RES_{i,t} = \alpha_0 + \alpha_1 LOSER_{i,t} + \alpha_2 JUSTMEET_{i,t} + \alpha_3 LOSER_{i,t} * MEETGMR_{i,t} + \alpha_4 PRES_{i,t} + \alpha_5 TACCRUAL_{i,t} \\ + \alpha_6 \Delta REC_{i,t} + \alpha_7 \Delta INV_{i,t} + \alpha_8 SOFTASSETS_{i,t} + \alpha_9 \Delta CSALES_{i,t} + \alpha_{10} \Delta ROA_{i,t} + \alpha_{11} ISSUANCE_{i,t} \\ + \alpha_{12} \Delta EMP_{i,t} + \alpha_{13} LEASE_{i,t} + \varepsilon_{i,t}$$

Variable	Predicted Sign	Restatements	Downward Restatements
		Coefficient (P-value)	
<i>Intercept</i>	N/A	-3.738 (<0.001)	-3.836 (<0.001)
<i>LOSER<sub>i,t</sub></i>	N/A	0.064 (0.505)	0.014 (0.897)
<i>MEETGMR<sub>i,t</sub></i>	N/A	-0.100 (0.631)	-0.068 (0.757)
<i>LOSER<sub>i,t</sub> * MEETGMR<sub>i,t</sub></i>	+	0.479 (0.073)	0.490 (0.084)
<i>PRES<sub>i,t</sub></i>	N/A	2.983 (<0.001)	2.866 (<0.001)
<i>TACCRUAL<sub>i,t</sub></i>	N/A	-0.165 (0.072)	-0.163 (0.079)
<i>ΔREC<sub>i,t</sub></i>	N/A	-0.931 (0.332)	-0.642 (0.541)
<i>ΔINV<sub>i,t</sub></i>	N/A	-0.758 (0.543)	-0.642 (0.974)
<i>SOFTASSETS<sub>i,t</sub></i>	N/A	0.261 (0.185)	0.104 (0.622)
<i>ΔCSALE<sub>i,t</sub></i>	N/A	0.000 (0.598)	0.001 (0.847)
<i>ΔROA<sub>i,t</sub></i>	N/A	0.000 (0.979)	0.000 (0.979)
<i>ISSUANCE<sub>i,t</sub></i>	N/A	-0.027 (0.892)	0.088 (0.689)
<i>ΔEMP<sub>i,t</sub></i>	N/A	0.016 (0.020)	0.016 (0.028)
<i>LEASE<sub>i,t</sub></i>	N/A	0.235 (0.157)	0.135 (0.438)
Pseudo R <sup>2</sup>		3.80%	3.04%

1: **Variable Definition:**  $RES_{i,t}$  is an indicator variable that equals to 1 if the financial statements are restated and 0 otherwise;  $DRES_{i,t}$  is an indicator variable that equals to 1 if the financial statements are restated downward and 0 otherwise;  $LOSER_{i,t}$  is an indicator variable that equals to 1 if the firm misses analysts' earnings forecasts and 0 otherwise;  $MEETGMR_{i,t}$  is an indicator variable that equals to 1 if the firm just meet analysts' GMR forecasts and 0 otherwise;  $PRES_{i,t}$  is an indicator variable that equals to 1 if the financial statement of the preceding year was restated and 0 otherwise;  $TACCRUAL_{i,t}$  is total accrual;  $\Delta REC_{i,t}$  is change in receivables;  $\Delta INV_{i,t}$  is change in inventory;  $SOFTASSETS_{i,t}$  is the ratio of soft assets to total assets;  $\Delta CSALES_{i,t}$  is change in cash sales;  $\Delta ROA_{i,t}$  is change in ROA;  $ISSUANCE_{i,t}$  is an indicator variable that equals to 1 if the firm issues new debt or equity and 0 otherwise;  $\Delta EMP_{i,t}$  is abnormal change in employee number;  $LEASE_{i,t}$  is an indicator variable that equals to 1 if the firms has operating lease obligations and 0 otherwise.

2: All p-values are two-tailed except for the ones whose signs are predicted.

restatements also decreases in  $TACCRUAL_{i,t}$  ( $\alpha_5 = -0.165, p < 0.10$ ) and increases in  $\Delta EMP_{i,t}$  ( $\alpha_{12} = 0.016, p < 0.05$ ). The results examining whether GMR management is associated with downward restatements are presented in Column 2. The results are qualitatively consistent with those reported in Column 1. I also perform the tests with only  $LOSER_{i,t}$ ,  $MEETGMR_{i,t}$  and  $LOSER_{i,t} * MEETGMR_{i,t}$  included as independent variables and the results are qualitatively consistent.

### 6.3.2 Determinants of GMR Management

H2 posits that the probability of firms missing earnings forecasts and resorting to GMR management varies with the litigation costs, size of the auditor, industry membership, and investigates whether such probability is different between value and growth firms. In my sample, 2.22 percent of observations report small positive GMR surprises as losers, as reported in Panel A of Table 6. 37.1 percent and 74.5 percent are in industries featured with high litigation costs, and audited by big 4 auditors, respectively. 54.1 percent of my observations belong to either manufacturing or retail industries, and 54.1 percent are value firms. The average size of my sample is 6.610.

Panel B of Table 6 reports the correlations between the variables used to examine H2.  $GSBEM_{i,t}$  is positively correlated with  $Litigation_{i,t}$  and  $M\&R_{i,t}$ , both significant at 1 percent significant level. This is consistent with the argument that firms with higher litigation costs associated with managing earnings and/or are in either manufacturing or retail industry are more constrained in managing earnings level and therefore are likely to resort to managing GMR. The correlation between  $GSBEM_{i,t}$  and  $SIZE_{i,t}$  is negative and significant.  $GSBEM_{i,t}$  is positively and negatively correlated with  $Big4_{i,t}$  and  $ValueFirm_{i,t}$ , respectively, yet both insignificant. Firms that are in more litigious industries are more likely to be audited by big 4 auditors, belong to either

**Table 6**  
**H2: Statistical Properties**

**Panel A: Descriptive Statistics**

Variable	Mean	Std Dev
$GSBEM_{i,t}$	0.022	0.148
$Litigation_{i,t}$	0.371	0.483
$Big4_{i,t}$	0.745	0.436
$M\&R_{i,t}$	0.541	0.498
$ValueFirm_{i,t}$	0.541	0.498
$SIZE_{i,t}$	6.610	1.905

**Panel B: Pearson/Spearman Correlation**

	$GSBEM_{i,t}$	$Litigation_{i,t}$	$Big4_{i,t}$	$M\&R_{i,t}$	$ValueFirm_{i,t}$	$SIZE_{i,t}$
$GSBEM_{i,t}$	1	0.035***	0.008	0.023***	-0.002	-0.024***
$Litigation_{i,t}$	0.035***	1	0.111***	0.235***	-0.145***	-0.179***
$Big4_{i,t}$	0.008	0.111***	1	0.166***	-0.192***	0.443***
$M\&R_{i,t}$	0.023***	0.235***	0.166***	1	-0.062***	-0.094***
$ValueFirm_{i,t}$	-0.002	-0.145***	-0.192***	-0.067***	1	-0.018**
$SIZE_{i,t}$	-0.023***	-0.166***	0.434***	-0.084***	-0.019**	1

1: **Variables Definition:** For Firm  $i$  at time  $t$ ,  $GSBEM_{i,t}$  is an indicator variable that equals to 1 if the firm misses earnings forecasts but reports small positive GMR surprise, and 0 otherwise;  $Litigation_{i,t}$  is an indicator variable that equals to 1 if the firm is in biotechnology, computers, electronics or retail industries, and 0 otherwise;  $Big4_{i,t}$  is an indicator variable that equals to 1 if the firm is audited by one of the big 4 auditors, and 0 otherwise;  $M\&R_{i,t}$  is an indicator variable is the firm is in manufacturing or retail industries, and 0 otherwise;  $ValueFirm_{i,t}$  is an indicator variable that equals to 1 if the firm is a value firm, and 0 otherwise;  $SIZE_{i,t}$  is the natural log of the total assets.

2: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

manufacturing or retail industries, less likely to be value firms and smaller in size.  $Big4_{i,t}$  is positively and significantly associated with  $M\&R_{i,t}$  and  $SIZE_{i,t}$ , and negatively and significantly correlated with  $ValueFirm_{i,t}$ . Finally, the correlations among  $M\&R_{i,t}$ ,  $ValueFirm_{i,t}$  and  $SIZE_{i,t}$  are all significantly negative.

The results from estimating Model (2) are reported in Table 7. Consistent with my prediction that higher litigation costs constrains firms' ability to meet earnings forecasts and therefore force these firms to be losers and manage GMR, the coefficient of  $Litigation_{i,t}$  is positive and significant ( $\beta_1 = 0.398, p < 0.01$ ).  $GSBEM_{i,t}$  increases in  $Big4_{i,t}$  ( $\beta_2 = 0.323, p < 0.10$ ), suggesting that losers that just meet GMR forecasts are more likely to be audited by one of the big 4 auditors. This is consistent with the notion that clients of big 4 auditors are more constrained in managing earnings to meet earnings forecasts, and therefore resort to managing GMR. The probability of missing earnings forecasts and just meeting GMR forecasts is also higher for firms in either manufacturing or retail industries ( $\beta_3 = 0.265, p < 0.05$ ). As explained before, this is because firms in the two industries expect higher benefits from inflating GMR as losers. The coefficient of  $ValueFirm_{i,t}$  is insignificantly different from 0 at conventional significance level ( $\beta_4 = 0.019, p = 0.872$ ). However, this is not surprising for the reasons mentioned before. Note that the probability of missing earnings forecast and just meeting GMR forecasts is lower for larger firms ( $\beta_5 = -0.088, p < 0.05$ ). This is likely due to that larger firms have more flexibility in managing earnings to meet forecasts, therefore less likely to manage GMR as meeting GMR forecasts is less beneficial for winners (Davis et al., 2009).

In sum, the results indicate that when firms are in more litigious industries, and/or are audited by one of the big 4 auditors, they are more likely to just meet GMR as losers since they are more constrained in their ability to manage earnings upward, therefore

**Table 7**  
**Determinants of Losers' GMR Management**

$$\text{Model (2): } GSBEM_{i,t} = \beta_0 + \beta_1 Litigation_{i,t} + \beta_2 Big4_{i,t} + \beta_3 M\&R_{i,t} + \beta_4 ValueFirm_{i,t} + \beta_5 SIZE_{i,t} + \varepsilon_{i,t}$$

Variable	Predicted Sign	Coefficient	p-value
Intercept	+/-	-3.818	<0.001
<i>Litigation</i> <sub><i>i,t</i></sub>	+	0.398	<0.001
<i>Big4</i> <sub><i>i,t</i></sub>	+	0.323	0.058
<i>M&amp;R</i> <sub><i>i,t</i></sub>	+	0.265	0.034
<i>ValueFirm</i> <sub><i>i,t</i></sub>	+/-	0.019	0.872
<i>SIZE</i> <sub><i>i,t</i></sub>	+/-	-0.088	0.011
Likelihood Ratio		30.879	
p-value		(<0.001)	

1: **Variables Definition:** For Firm *i* at time *t*, *GSBEM*<sub>*i,t*</sub> is an indicator variable that equals to 1 if the firm misses earnings forecasts but report small positive GMR surprise, and 0 otherwise; *Litigation*<sub>*i,t*</sub> is an indicator variable that equals to 1 if the firm is in biotechnology, computers, electronics or retail industries, and 0 otherwise; *Big4*<sub>*i,t*</sub> is an indicator variable that equals to 1 if the firms is audited by one of the big 4 auditors, and 0 otherwise; *M&R*<sub>*i,t*</sub> is an indicator variable is the firm is in manufacturing or retail industries, and 0 otherwise; *ValueFirm*<sub>*i,t*</sub> is an indicator variable that equals to 1 if the firm is a value firm, and 0 otherwise; *SIZE*<sub>*i,t*</sub> is the natural log of the total assets.

2: All p-values are two-tailed.



more likely to be losers, which incentivize them to manage GMR. The results also suggest that firms that are in either manufacturing or retail industries are more likely to manage GMR as losers because GMR is more value relevant for firms in the two industries.

### 6.3.3 Informative versus Opportunistic GMR Management

Panel A of Table 8 reports the descriptive statistics of the variables used to examine my third hypothesis. Mean (median) values of  $CFO_{i,t+1}$  and  $GP_{i,t}$  are 0.107 (0.108), and 0.421 (0.375), respectively. 7.9 percent of my sample just meet analysts' GMR forecasts. Mean (median) values of  $ABPROD_{i,t}$  and  $DACCRUAL_{i,t}$  are -0.039 (-0.018), and 0.031 (0.034), consistent with results reported by prior literature (Cohen et al., 2008; Zang, 2012). Note that the mean values of  $ABPROD_{i,t}$  is not zero because I delete the observations at the top and bottom 1 percent to avoid extreme observations due to noisy estimation. The mean (median) value of  $OEXP_{i,t}$  is -0.396 (-0.339).

Panel B of Table 8 reports the correlation between the variables.  $ABPROD_{i,t}$  is significantly and negatively correlated with  $CFO_{i,t+1}$ , consistent with the notion that overproduction has negative impact on firms' future cash flow. The correlation between  $ABPROD_{i,t}$  and  $GP_{i,t}$  is significantly negative, indicating that firms that have lower gross profits overproduce to a larger extent. The correlation between  $CFO_{i,t+1}$  and  $DACCRUAL_{i,t}$  is positive and significant. Firms that report higher gross profits also report higher level of discretionary accruals and other operating expenses. Note that  $ABPROD_{i,t}$  and  $MEETGMR_{i,t}$  are significantly and positively correlated despite the significantly negative association between  $ABPROD_{i,t}$  and  $GP_{i,t}$ . This is consistent with the notion that firms overproduce to meet GMR forecasts. However, I fail to find

**Table 8**  
**H3: Statistical Properties**

**Panel A: Descriptive Statistics**

	Mean	Std Dev	Q1	Median	Q3
$CFO_{i,t+1}$	0.107	0.147	0.050	0.108	0.177
$GP_{i,t}$	0.421	0.302	0.245	0.375	0.550
$MEETGMR_{i,t}$	0.079	0.270	0.000	0.000	0.000
$ABPROD_{i,t}$	-0.039	0.246	-0.124	-0.018	0.050
$DACCRUAL_{i,t}$	0.031	6.895	-0.074	0.034	0.180
$OEXP_{i,t}$	-0.396	0.279	-0.507	-0.339	-0.217

**Panel B: Pearson/Spearman Correlation**

	$CFO_{i,t+1}$	$GP_{i,t}$	$MEETGMR_{i,t}$	$ABPROD_{i,t}$	$DACCRUAL_{i,t}$	$OEXP_{i,t}$
$CFO_{i,t+1}$	1	0.603***	-0.007	-0.206***	0.050***	-0.138***
$GP_{i,t}$	0.420***	1	0.026**	-0.186***	0.161***	-0.839***
$MEETGMR_{i,t}$	-0.029***	0.002	1	0.034***	-0.002	-0.003
$ABPROD_{i,t}$	-0.144***	-0.118***	0.031***	1	-0.076*	0.366***
$DACCRUAL_{i,t}$	0.005	-0.002	-0.001	-0.028***	1	0.067***
$OEXP_{i,t}$	-0.110***	-0.868***	-0.004	0.312***	-0.005	1

1: **Variable Definition:** For firm  $i$  at time  $t$ ,  $CFO_{i,t+1}$  is cash flow from operating activities of the next period;  $GP_{i,t}$  is gross profits;  $MEETGMR_{i,t}$  is an indicator variable if the firm reports small positive GMR surprise and 0 otherwise;  $ABPROD_{i,t}$  is abnormal production expenditure;  $DACCRUAL_{i,t}$  is discretionary accrual;  $OEXP_{i,t}$  is other operating expense calculated as the difference between operating income and gross profits.

2: All variables are scaled by beginning total assets.

3: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

significant correlation between  $DACCRUAL_{i,t}$  and  $MEETGMR_{i,t}$ . For my full sample,  $ABPROD_{i,t}$  and  $DACCRUAL_{i,t}$  are significantly and negatively correlated. This is consistent with the prior literature that argues that REM and AEM substitute each other (Cohen et al, 2008). Firms that just meet GMR forecasts do not appear to have higher cash flow from operating activities in the subsequent year. But they do report higher gross profits in the current year.

Panel A of Table 9 reports the results from estimating Model (3) for both losers and winners. The coefficient of  $GP_{i,t}$  is positive and significant for both losers ( $\phi_1 = 0.622, p < 0.01$ ) and winners ( $\phi_1 = 0.629, p < 0.01$ ), suggesting that firms with higher gross profits have higher cash flow from operating activities in the subsequent year. The coefficient of  $MEETGMR_{i,t}$  is significantly negative for losers ( $\phi_2 = -0.047, p < 0.05$ ) and insignificantly different from 0 for winners; and the difference in the coefficients is significant at 5 percent significance level. This indicates that losers that just meet GMR forecasts are likely to report lower operating cash flow in the subsequent period; whereas for winners, the next period operating cash flow of those that just meet GMR forecasts is not significantly different from the others. Our interested variable is  $GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t}$ , the coefficient of which captures whether firms that just meet GMR forecasts engage in overproduction to a larger extent if they have higher cash flow from operating activities in the subsequent year. As expected, the coefficients are positive and significant ( $\phi_6 = 0.117, p < 0.01$ ) for losers and insignificantly different from 0 for winners ( $\phi_6 = 0.005, p = 0.85$ ). Note that the difference in  $\phi_6$  between losers and winners is positive and significant ( $p < 0.05$ ). Therefore, the results not only suggest that losers that with better subsequent performance indeed engage in overproduction to a larger extent to meet GMR forecasts, but also indicates that losers and winners manage GMR differently.

**Table 9**  
**Information Role of GMR Management**

**Panel A: Role of Production Management**

Model (3):  $CFO_{i,t+1} = \phi_0 + \phi_1 GP_{i,t} + \phi_2 MEETGMR_{i,t} + \phi_3 ABPROD_{i,t} + \phi_4 GP_{i,t} * ABPROD_{i,t} + \phi_5 GP_{i,t} * MEETGMR_{i,t} + \phi_6 GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t} + \phi_7 OEXP_{i,t} + \epsilon_{i,t}$

Variables	Losers Coefficient (p-value)	Winners Coefficient (p-value)	Difference in Coefficients (p-value)
<i>Intercept</i>	0.062 (0.001)	0.052 (0.004)	0.010 (0.020)
<i>GP<sub>i,t</sub></i>	0.622 (<0.001)	0.629 (<0.001)	-0.007 (0.284)
<i>MEETGMR<sub>i,t</sub></i>	-0.047 (0.064)	-0.012 (0.505)	-0.036 (0.010)
<i>ABPROD<sub>i,t</sub></i>	0.016 (0.325)	-0.027 (0.190)	0.043 (0.010)
<i>GP<sub>i,t</sub> * ABPROD<sub>i,t</sub></i>	-0.036 (0.215)	0.016 (0.587)	-0.052 (0.019)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub></i>	0.070 (0.101)	+0.000 (0.994)	0.070 (0.013)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub> * ABPROD<sub>i,t</sub></i>	0.117 (0.014)	0.005 (0.846)	0.112 (0.024)
<i>OEXP<sub>i,t</sub></i>	0.565 (<0.001)	0.519 (<0.001)	0.046 (0.007)
Adjusted R <sup>2</sup>	44.96%	42.41%	

- 1: **Variable Definition:** For firm *i* at time *t*, *CFO<sub>i,t+1</sub>* is cash flow from operating activities of the next period; *GP<sub>i,t</sub>* is gross profits; *MEETGMR<sub>i,t</sub>* is an indicator variable if the firm reports small positive GMR surprise and 0 otherwise; *ABPROD<sub>i,t</sub>* is abnormal production expenditure; *OEXP<sub>i,t</sub>* is other operating expense calculated as the difference between operating income and gross profits.
- 2: Except for the indicator variables, all other variables are scaled by beginning total assets.
- 3: All p-values are based on two-way adjusted standard errors, and are two-tailed.

Results from examining Model (4) are presented in Panel B of Table 9. The coefficient of  $GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t}$  is positive and significant ( $\rho_6 = 0.017, p < 0.01$ ) for losers, indicating that losers with better subsequent performance use more discretionary accruals to manage GMR; whereas for winners, the coefficient is significantly negative ( $\rho_6 = -0.001, p < 0.05$ ), suggesting that on average, winners with better future performance use less discretionary accruals to manage GMR. Note that the difference in the coefficients is positive and significant ( $p < 0.05$ ), suggesting that losers and winners also use AEM differently when managing GMR. Regarding the other variables, the coefficient of  $DACCRUAL_{i,t}$  is insignificantly different from 0 for losers ( $\rho_3 = +0.000, p = 0.66$ ) and significantly positive for winners ( $\rho_3 = 0.001, p < 0.01$ ). The coefficient of  $GP_{i,t} * DACCRUAL_{i,t}$  is significantly negative for winners ( $\rho_4 = 0.001, p < 0.01$ ), suggesting that on average, the informativeness of losers' gross profits decreases in the magnitude of discretionary accruals. However, this should be interpreted with caution for the reasons to be discussed later.

As discussed before, since the results of Panel B suggest that losers with higher future performance use more discretionary accruals to manage GMR, I further examine the role of discretionary accruals for losers using Model (8) and report the results in Panel C of Table 9.  $CFO_{i,t+1}$  increases in  $GP_{i,t}$  ( $\kappa_1 = 0.626, p < 0.01$ ) and decreases in  $MEETGMR_{i,t}$  ( $\kappa_2 = -0.044, p < 0.10$ ). Consistent with the results reported in Panel A of Table 9, the coefficient of  $GP_{i,t} * MEETGMR_{i,t} * ABPROD_{i,t}$  is significantly positive ( $\kappa_8 = 0.098, p < 0.10$ ), consistent with the notion that losers with better future performance use more overproduction to manage their GMR. More importantly, the results show that even after controlling for overproduction, the coefficient of  $GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t}$  is still significantly positive ( $\kappa_9 = 0.015, p < 0.05$ ). As discussed, this rules out the explanation that losers with better future performance adopt more

**Table 9**  
**Information Role of GMR Management**

**Panel B: Role of Accrual Earnings Management**

$$\text{Model (4): } CFO_{i,t+1} = \rho_0 + \rho_1 GP_{i,t} + \rho_2 MEETGMR_{i,t} + \rho_3 DACCRUAL_{i,t} + \rho_4 GP_{i,t} * DACCRUAL_{i,t} + \rho_5 GP_{i,t} * MEETGMR_{i,t} + \rho_6 GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t} + \rho_7 OEXP_{i,t} + \zeta_{i,t}$$

Variables	Losers Coefficient (p-value)	Winners Coefficient (p-value)	Difference in Coefficients (p-value)
<i>Intercept</i>	0.060 (0.001)	0.052 (0.003)	0.008 (0.058)
<i>GP<sub>i,t</sub></i>	0.626 (<0.001)	0.636 (<0.001)	-0.011 (0.092)
<i>MEETGMR<sub>i,t</sub></i>	-0.039 (0.187)	-0.012 (0.512)	-0.027 (0.050)
<i>DACCRUAL<sub>i,t</sub></i>	+0.000 (0.661)	0.001 (0.001)	-0.001 (0.405)
<i>GP<sub>i,t</sub> * DACCRUAL<sub>i,t</sub></i>	0.000 (0.943)	-0.002 (<0.001)	0.002 (0.309)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub></i>	0.029 (0.530)	-0.001 (0.974)	0.031 (0.228)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub> * DACCRUAL<sub>i,t</sub></i>	0.017 (0.001)	-0.001 (0.004)	0.018 (0.031)
<i>OEXP<sub>i,t</sub></i>	0.559 (<0.001)	0.525 (<0.001)	0.034 (0.034)
Adjusted R <sup>2</sup>	44.59%	42.61%	

1: Variable Definition: For firm *i* at time *t*, *CFO<sub>i,t+1</sub>* is cash flow from operating activities of the next period; *GP<sub>i,t</sub>* is gross profits; *MEETGMR<sub>i,t</sub>* is an indicator variable if the firm reports small positive GMR surprise and 0 otherwise; *DACCRUAL<sub>i,t</sub>* is discretionary accrual; *OEXP<sub>i,t</sub>* is other operating expense calculated as the difference between operating income and gross profits.

2: Except for the indicator variables, all other variables are scaled by beginning total assets.

3: All p-values are based on two-way adjusted standard errors, and are two-tailed.

**Table 8**  
**Information Role of GMR Management**

**Panel C: Role of Accrual Earnings Management**

$$\text{Model (8): } CFO_{i,t+1} = K_0 + K_1 GP_{i,t} + K_2 MEETGMR_{i,t} + K_3 ABPROD_{i,t} + K_4 DACCRUAL_{i,t} + K_5 GP_{i,t} \\ * ABPROD_{i,t} + K_6 GP_{i,t} * DACCRUAL_{i,t} + K_7 GP_{i,t} * MEETGMR_{i,t} + K_8 GP_{i,t} * MEETGMR_{i,t} \\ * ABPROD_{i,t} + K_9 GP_{i,t} * MEETGMR_{i,t} * DACCRUAL_{i,t} + K_{10} OEXP_{i,t} + \omega_{i,t}$$

Variables	Coefficient	p-value
<i>Intercept</i>	0.061	0.001
<i>GP<sub>i,t</sub></i>	0.626	<0.001
<i>MEETGMR<sub>i,t</sub></i>	-0.044	0.092
<i>ABPROD<sub>i,t</sub></i>	0.014	0.408
<i>DACCRUAL<sub>i,t</sub></i>	+0.000	0.444
<i>GP<sub>i,t</sub> * ABPROD<sub>i,t</sub></i>	-0.025	0.518
<i>GP<sub>i,t</sub> * DACCRUAL<sub>i,t</sub></i>	-0.000	0.839
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub></i>	0.058	0.151
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub> * ABPROD<sub>i,t</sub></i>	0.098	0.061
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub> * DACCRUAL<sub>i,t</sub></i>	0.015	0.032
<i>OEXP<sub>i,t</sub></i>	0.564	<0.001
Adjusted R <sup>2</sup>	45.22%	

- 1: **Variable Definition:** For firm *i* at time *t*,  $CFO_{i,t+1}$  is cash flow from operating activities of the next period;  $GP_{i,t}$  is gross profits;  $MEETGMR_{i,t}$  is an indicator variable if the firm reports small positive GMR surprise and 0 otherwise;  $ABPROD_{i,t}$  is abnormal production expenditure;  $DACCRUAL_{i,t}$  is discretionary accrual;  $OEXP_{i,t}$  is other operating expense calculated as the difference between operating income and gross profits.
- 2: Except for the indicator variables, all other variables are scaled by beginning total assets.
- 3: All p-values are based on two-way adjusted standard errors, and are two-tailed.

discretionary accruals to inflate gross profits in order to take advantage of the signaling effect of overproduction.

Collectively, results in Table 9 document a complementary relationship between AEM and overproduction for losers that just meet analysts' GMR forecasts. More importantly, the results suggest that AEM and REM both communicate losers' future performance, and that the mechanism underlying GMR management is different between losers and winners.



## Chapter 7

### SUPPLEMENTARY ANALYSIS

#### 7.1 Endogeneity

Despite being more timely and accurate, using analysts' GMR forecasts to surrogate market's expectation may cause endogeneity issues for the following reasons: (1) analysts' expectation may be guided by firms (Richardson et al., 2004). If losers' successfully walk down analysts' GMR estimates instead of inflate GMR, there should also be unusually more (fewer) firms just meeting (missing) GMR forecasts; and (2) analysts select the firms for which they forecast GMR. If analysts only forecast GMR for those that are more likely to be accurate, then the GMR management observed in the paper may only exist among those firms. The second problem does not hurt the internal validity of my results, but does however limit the generalizability of the results.

Extant literature shows that the preceding year's performance are viewed as a benchmark by the market (Matsunaga and Park, 2001). Compared with analysts' forecasts, preceding year's GMR cannot be guided because it has been released to the public already. Using preceding year's GMR as GMR benchmarks significantly also increases the generalizability of the results. The inferences can be applied to the firms whose GMR are not forecasted by the analysts. If firms indeed manage GMR to meet GMR benchmarks, then there should be more losers reporting small GMR increase than GMR decrease. Therefore I examine the distribution of losers' GMR change and present the histogram in

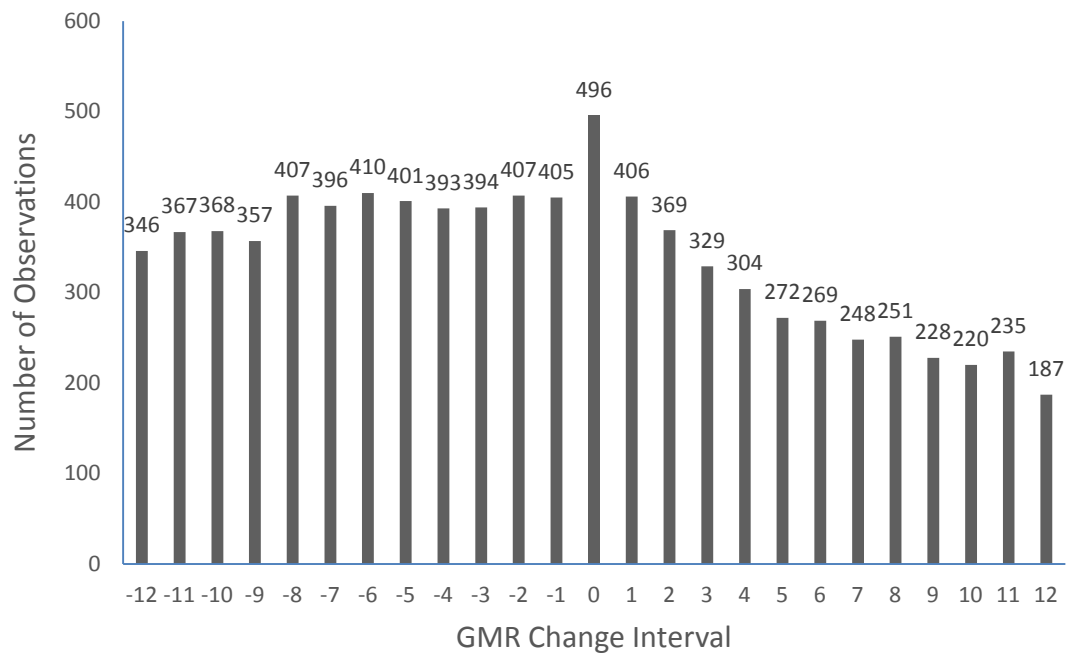


Figure 3-GMR Change Distribution- Losers

Figure 3. Figure 3 shows unusually high frequencies of losers reporting small GMR increases (496) and unusually low frequencies of losers reporting small GMR decreases (405). Untabulated results indicate that the discontinuity is also significant. As discussed, this suggests that losers manage their GMR upward to report small GMR increase.

## 7.2 AEM Capacity

Barton and Simko (2002) empirically find that firms' ability to engage in AEM is constrained by the level of overstatement of net operating assets resulting from AEM of the prior periods. To the extent that losers with worse future performance are likely to have worse performance in the prior periods, these losers are likely to have overstated their performance in the past and as a result, their ability to engage in AEM is lower in the current period. Therefore, the finding that losers with better (worse) future performance engage in AEM to a higher (lower) degree to manage GMR is also consistent with the notion that losers with better (worse) future performance have higher (lower) AEM capacity. Therefore, I use the following model to examine whether losers' future performance varies with the magnitude of AEM used to manage GMR:

$$\begin{aligned}
 CFO_{i,t+1} = & v_0 + v_1 GP_{i,t} + v_2 MEETGMR_{i,t} + v_3 SSNOA_{i,t} + v_4 GP_{i,t} * SSNOA_{i,t} \\
 & + v_5 GP_{i,t} * MEETGMR_{i,t} + v_6 GP_{i,t} * MEETGMR_{i,t} * SSNOA_{i,t} \\
 & + v_7 OEXP_{i,t} + o_{i,t}
 \end{aligned} \tag{10}$$

For firm  $i$  in year  $t$ ,  $SSNOA_{i,t}$  is beginning net operating assets scaled by sales for year  $t-1$ . Other variables are as previously defined.  $SSNOA_{i,t}$  is an inverse measure of accrual capacity. Therefore, if losers with better future performance indeed are less constrained in using AEM to inflate GMR, the coefficient of  $GP_{i,t} * MEETGMR_{i,t} * SSNOA_{i,t}$  should be negative

The results from examining Model (10) are reported in Table 10.  $v_6$  is negative, yet insignificantly different from 0 ( $v_6 = -0.002, p = 0.17$ ). Therefore, I fail to find any

**Table 10**  
**Accrual Capacity**

$$\text{Model 11: } CFO_{i,t+1} = v_0 + v_1 GP_{i,t} + v_2 MEETGMR_{i,t} + v_3 SSNOA_{i,t} + v_4 GP_{i,t} * SSNOA_{i,t} + v_5 GP_{i,t} * MEEGGMR_{i,t} + v_6 GP_{i,t} * MEETGMR_{i,t} * SSNOA_{i,t} + v_7 OEXP_{i,t} + o_{i,t}$$

Variables	Coefficient	(P-value)
<i>INTERCEPT</i>	0.061	(0.001)
<i>GP<sub>i,t</sub></i>	0.621	(<0.001)
<i>MEETGMR<sub>i,t</sub></i>	-0.040	(0.185)
<i>SSNOA<sub>i,t</sub></i>	0.000	(0.738)
<i>GP<sub>i,t</sub> * SSNOA<sub>i,t</sub></i>	0.002	(0.128)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub></i>	0.036	(0.486)
<i>GP<sub>i,t</sub> * MEETGMR<sub>i,t</sub> * SSNOA<sub>i,t</sub></i>	-0.002	(0.166)
<i>OEXP<sub>i,t</sub></i>	0.558	(<0.001)
<b>Adjusted R<sup>2</sup></b>	44.49%	

- 1: Variable Definition: For firm *i* at time *t*, *CFO<sub>i,t+1</sub>* is cash flow from operating activities of the next period; *GP<sub>i,t</sub>* is gross profits; *EPMS<sub>i,t</sub>* is an indicator variable if the firm misses bottom line earnings forecasts, and 0 otherwise; *GMRSB<sub>i,t</sub>* is an indicator variable if the firm reports small positive GMR surprise and 0 otherwise; *SSNOA<sub>i,t</sub>* is the beginning net operating assets deflated by sales revenue; *OEXP<sub>i,t</sub>* is other operating expense calculated as the difference between operating income and gross profits.
- 2: Except for the indicator variables, all other variables are scaled by beginning total assets.
- 3: All p-values are based on two-way adjusted standard errors, and are two-tailed.



evidence suggesting that losers with different future performance are differently constrained in their AEM abilities.

## Chapter 8

### CONCLUSION

#### 8.1 Summary

Evidence suggests that gross margin ratio is more value relevant than other earnings components, especially for firms that miss earnings forecasts. Bhojraj et al. (2009) show that losers' accounting information reveals their future profitability. Abarbanell and Bushee (1997) and Swanson et al. (2003) show that GMR is even more value relevant for underperforming firms. More interestingly, Abarbanell and Bushee (1997) shows that GMR performance explains analysts' forecast errors for underperforming firms. Additionally, earnings management literature suggests that GMR is indeed subject to managerial discretion. For example, GMR can be inflated by engaging in overproduction and underestimating inventory impairments. In light of these evidence, it is likely that losers seeking to cast a favorable light on their financial information have strong incentives to inflate GMR.

Following the spirit of earnings discontinuity studies, I examine the distribution of losers' GMR surprises by focusing on those just missing *versus* just meeting GMR forecasts, among a sample of firms whose GMR and earnings are both forecasted by analysts. Indeed, I find that losers are significantly more likely to report small positive rather than small negative GMR surprises. The discontinuity in the GMR surprise

distribution for losers is so significant that I observe a "V" shape centered on the group of firms just missing GMR forecasts. Untabulated tests confirm that discontinuity is statistically significant. More importantly, while tests reject that winners just meeting GMR forecasts are more likely to restate their financial statements, losers, on the other hand, are more likely to restate their financial statements if they just meet GMR forecasts.

To the extent that GMR is more value relevant for losers than for winners, the probability of firms just meeting GMR forecasts as losers should increase in the difficulty associated with managing earnings from missing to meeting earnings forecasts. Specifically, I find that firm that are in more litigious industries and/or audited by big 4 auditors are more likely to just meet GMR forecasts and miss earnings forecasts. I also predict that firms that expect higher benefits from inflating GMR should be more likely to manage GMR as losers. Indeed, I find that firms in manufacturing and retail industries are more likely to manage GMR as losers. However, I failed to find significant difference in the probability of just meeting GMR as losers between value and growth firms.

To further explore the market implication of losers' GMR management decisions, I examine whether the magnitude of earnings management varies with firms' future performance for losers that just meet GMR forecasts. Specifically, I conjecture that losers whose private information indicates better future performances use more overproduction and accrual management to inflate the reported GMR to distinguish themselves from losers expecting worse future performances, since literature suggests that the magnitude of overproduction and AEM are decreasing functions of future performance. The results confirm my predictions, and are robust to a battery of supplementary tests that are intended to examine a few alternative explanations for the findings. I also find that the mechanism of losers' GMR management is different from winners.



## **8.2 Limitations**

### *8.2.1 Generalizability*

Since this study examines firms' GMR management decisions by examining a sample of firms whose GMR and earnings are both forecasted by analysts, one concern of the findings is the generalizability. However, note that the purpose of this study is to show that firms, under certain circumstances, indeed direct their managerial discretion to certain earnings components instead of the level, and using analysts' forecasted GMR increases the power of the tests. In addition to that, the discontinuity in the distribution of GMR change shows that losers inflate their GMR to report small GMR increase.

Additionally, of the loser sample that is studied, 2.23 percent (331/14,825) observations just meet GMR forecasts. This is comparable to the sample composition in the literature of earnings discontinuity research. For example, Roychowdhury (2006) show that 2.31 percent of his sample just meet earnings expectation.

### *8.2.2 Accrual Earnings Management*

In the study I measure AEM using the modified Jones Model (Dechow et al., 1995). One shortcoming of this model is that it measures abnormal accruals that are applied to the whole earnings instead of just gross margin. This may introduce measurement errors or even bias to my tests involving AEM.

Nevertheless, as mentioned before, using discretionary accruals derived using modified Jones Model should not hurt the internal validity of my results because 1) most accruals are applied to the components of GMR. For my sample, COGS consists 58.9 percent of the total expense. SGA and R&D expense consist 31.6 percent of the total expense, the second largest of the expense components. However, most of SGA and R&D expenses are required to be recognized at the inception of the cash expenditure and

therefore are not likely to be significantly affected by accrual earnings management, and; 2) to the extent that the discretionary accruals applied to GMR increases in total discretionary accruals, using total accruals in my tests should not significantly affect the sign and the significance of the coefficients of my interested variables.

### **8.3 Future Research Topics**

I believe that the topic of this paper has implications for future research. To the extent that GMR captures companies' future profitability, it is interesting to examine why analysts choose to forecast GMR for certain companies. Are the other expenses of these firms more difficult to predict? Or is GMR more value relevant for these companies? Do analysts issue GMR forecasts in addition to earnings forecasts to show their superior forecasting ability? Or do analysts forecast GMR because they are not confident enough in their earnings forecasts? These are interesting questions.

The findings of paper is related to the literature that examines analyst' optimism. For example, literature fails to find positive association between implied cost of capital (ICC) measure that is based on analysts' forecasts and future return (Easton and Monahan, 2005). Easton and Sommers (2007) and Hou et al (2012) argue that this bias can be attributed to analysts' optimism. As analysts' optimism leads to upward biased cost of capital estimates, this mechanically creates a negative association between ICC estimates based on analysts' forecasts and firms' future return. However, the results of this study indicates that analysts' may be misled by firms' GMR management decisions instead of being optimistic. Therefore, future research in this area can potentially take GMR management into consideration to improve analysts' forecasts based ICC estimates.

## REFERENCE

- Abarbanell, J. S., and R. Lehavy (2003). Biased forecasts or biased earnings? The role of reported earnings in explaining apparent bias and over/underreaction in analysts' earnings forecasts. *Journal of Accounting and Economics* 36 (1-3), 105-146.
- Abarbanell, J. S., and B. J. Bushee (1997). Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research* 35 (1), 1-24.
- Ali, A., and S. Kallapur (2001). Securities price consequences of the private securities litigation reform act of 1995 and related events. *The Accounting Review* 76 (3), 431-460.
- Altamuro, J., A. L. B. and J. Weber (2005). The effects of accelerated revenue recognition on earnings management and earnings informativeness: Evidence from SEC staff accounting bulletin NO. 101. *The Accounting Review* 80 (2), 373-401.
- Ashbaugh, H., R. LaFond, and B. W. Mayhew (2003). Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review* 78(3), 611-639.
- Ashbaugh-Skaife, H., D. W. Collins, and R. LaFond (2009). The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research* 47 (1), 1-43.
- Badertscher, B. A. (2011). Overvaluation and the choice of alternative earnings management mechanisms. *The Accounting Review* 86 (5), 1491-1518.
- Badertscher, B. A., D. W. Collins, and T. Z. Lys (2012). Discretionary accounting choices and the predictive ability of accruals with respect to future cash flows. *Journal of Accounting and Economics* 53 (1), 330-352.
- Barron, O., J. Pratt, and J. D. Stice (2001). Misstatement direction, litigation risk, and planned audit investment. *Journal of Accounting Research* 39 (3), 449-462.
- Barth, M. E., D. P. Cram, and K. K. Nelson (2001). Accruals and the prediction of future cash flows. *The Accounting Review* 76(1), 27-58.
- Barton, J., and P. J. Simko (2002). The balance sheet as an earnings management constraint. *The accounting review* 77 (S1): 1-27.
- Bartov, E., D. Givoly, and C. Hayn (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33 (2), 173-204.
- Barua, A., S. Lin, and A. M. Sbaraglia (2010). Earnings management using discontinued operations. *The Accounting Review* 85 (5): 1485-1509.
- Bergstresser, D., and T. Philippon (2006). CEO incentives and earnings management. *Journal of Financial Economics* 80 (2): 511-529.
- Bhojraj S., P. Hribar, M. Picconi, and J. McInnis (2009). Making sense of cents: An examination of firms that marginally miss or beat analyst forecasts. *The Journal of Finance* 64 (5), 2361-2388.

- Burgstahler, D., and I. Dichev (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24 (1): 99-126.
- Burgstahler, D., and M. Eames (2006). Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises. *Journal of Business Finance & Accounting* 33 (5-6), 633-652.
- Chan, L. H., K. C.W. Chen, T. T. Chen, and Y. Yu (2012). The effects of firm-initiated clawback provisions on earnings quality and auditor behavior. *Journal of Accounting and Economics* 54 (2), 180-196.
- Cohen, D. A., A. Dey, and T. Z. Lys (2008). Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review* 83 (3): 757-787.
- Cohen, D. A., and P. Zarowin (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics* 50 (1): 2-19.
- Corporate Executive Board (2009). The secret to making cost savings stick. *Bloomberg Businessweek*.
- Craswell, A. T., J. R. Francis. and S. L. Taylor (1995). Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics* 20 (3), 297-322.
- Davis, L. R., B. S. Soo, and G. M. Trompeter (2009). Auditor tenure and the ability to meet or beat earnings forecasts. *Contemporary Accounting Research* 26 (2), 517-548.
- DeAngelo, L. H. (1981). Auditor size and audit quality. *Journal of Accounting and Economics* 3 (3), 183-199.
- Dechow, P. M., R. G. Sloan, and A. Sweeney (1995). Detecting earnings management. *The Accounting Review* 70 (April), 193-225.
- Dechow, P. M., S. P. Kothari, and R. L. Watts (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics* 25 (2): 133-168.
- Dechow, P. M., W. Ge, C. R. Larson, and R. G. Sloan (2011). Predicting material accounting misstatements. *Contemporary Accounting Research* 28(1), 17-82.
- DeGeorge, F., J. P. and R. Zeckhauser (1999). Earnings management to exceed thresholds. *The Journal of Business* 72 (1), 1-33.
- Dhaliwal, D. S., C. A. Gleason, and L. F. Mills (2004). Last-chance earnings management: Using the tax expense to meet analysts' forecasts. *Contemporary Accounting Research* 21(2), 431-459.
- Durtschi, C. and P. Easton (2005). Earnings management? The shapes of the frequency distributions of earnings metrics are not evidence ipso facto. *Journal of Accounting Research* 43(4), 557-592.
- Easton, P. D., and G. A. Sommers (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts." *Journal of Accounting Research* 45 (5), 983-1015.
- Easton, P. D., and S. J. Monahan (2005). An evaluation of accounting-based measures of expected returns. *The Accounting Review* 80 (2): 501-538.
- Ertimur, Y., J. Livnat, and M. Martikainen (2003). Differential market reactions to revenue and expense surprises. *Review of Accounting Studies* 8(2), 185-211.
- Ewert, R. and A. Wagenhofer (2005). Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review* 80 (4), 1101-1124.

- Fairfield, P. M., J. S. Whisenant, and T. L. Yohn (2003). Accrued earnings and growth: Implications for future profitability and market mispricing. *The Accounting Review* 78 (1): 353-371.
- Fama, E. F. and K. R. French (1997). Industry costs of equity. *Journal of Financial Economics* 43 (2), 153-193.
- Fan, Y., A. Barua, W. M. Cready, and W. B. Thomas (2010). Managing earnings using classification shifting: Evidence from quarterly special items. *The Accounting Review* 85 (4): 1303-1323.
- Field, L., M. Lowry, and S. Shu (2005). Does disclosure deter or trigger litigation? *Journal of Accounting and Economics* 39(3), 487-507.
- Finger, C. A. (1994). The ability of earnings to predict future earnings and cash flow. *Journal of Accounting Research* 32(2), 210-223.
- Francis, J., D. Philbrick, and K. Schipper (1994). Shareholder litigation and corporate disclosures. *Journal of Accounting Research* 32, 137-164.
- Francis, J. (2001). Discussion of empirical research on accounting choice. *Journal of Accounting and Economics* 31, 309-319.
- Gaur, V., M. L. Fisher, and A. Raman (2005). An econometric analysis of inventory turnover performance in retail services. *Management Science* 51(2), 181-194.
- Ghosh, A. and D. Moon (2005). Audit tenure and perceptions of audit quality. *The Accounting Review* 80 (2), 585-612.
- Graham, J., C. R. Harvey, and S. Rajgopal (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40 (1), 3-73.
- Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27 (3), 855-888.
- Hayes, R. (1981). Why Japanese factories work. *Harvard Business Review*.
- Healy, P. M (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7 (1), 85-107.
- Hope, O., W. B. Thomas, and D. Vyas (2013). Financial reporting quality of US private and public firms. *The Accounting Review* 88 (5), 1715-1742.
- Hou, K., M. A. Van Dijk, and Y. Zhang (2012). The implied cost of capital: A new approach. *Journal of Accounting and Economics* 53 (3): 504-526.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of accounting research* 29 (2), 193-228.
- Kaplan, R. S. (1983). Measuring manufacturing performance: a new challenge for managerial accounting research. *The Accounting Review* 58 (4), 686-705.
- Kanagaretnam, K., G. V. Krishnan, and G. J. Lobo (2010). An empirical analysis of auditor independence in the banking industry." *The Accounting Review* 85 (6): 2011-2046.
- Kesavan, S., V. Gaur, and A. Raman (2010). Do inventory and gross margin data improve sales forecasts for us public retailers? *Management Science* 56(9), 1519-1533.
- La Porta, R., J. Lakonishok, A. Shleifer, and R. Vishny (1997). Good news for value stocks: Further evidence on market efficiency. *The Journal of Finance* 52 (2), 859-874.
- Lev, B., and S. Thiagarajan (1993). Fundamental information analysis. *Journal of Accounting*

*research* 31 (2), 190-215.

- Levitt, A. (1998). The numbers game. In Speech delivered at NYU Center for Law and Business New York.
- Lim, C. Y., and H. T. Tan (2008). Non-audit service fees and audit quality: The impact of auditor specialization. *Journal of Accounting Research* 46(1), 199-246.
- Lipe, R. C. (1986). The information contained in the components of earnings. *Journal of Accounting Research* 24 (Supplement), 37-64.
- Lobo, G. J., and Y. Zhao (2013). Relation between audit effort and financial report misstatements: Evidence from quarterly and annual restatements. *The Accounting Review* 88 (4), 1385-1412.
- Lobo, G. J., and J. Zhou (2006). Did conservatism in financial reporting increase after the Sarbanes-Oxley act? Initial evidence. *Accounting Horizons* 20 (1), 57-73.
- Lopez, T., and L. Rees (2002). The effect of beating and missing analysts' forecasts on the information content of unexpected earnings. *Journal of Accounting, Auditing and Finance* 17 (2), 155-184.
- Lys, T. and R. L. Watts (1994). Lawsuits against auditors. *Journal of Accounting Research* 32, 65-93.
- MacDonald, E. (2000). Fess-Up Time. *Forbes* 80, 84.
- Matsunaga, S. R. and C. W. Park (2001). The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review* 76 (3), 313-332.
- McAnally, M. L., A. Srivastava, and C. D. Weaver (2008). Executive stock options, missed earnings targets, and earnings management. *The Accounting Review* 83 (1), 185-216.
- McVay, S. E. (2006). Earnings management using classification shifting: An examination of core earnings and special items. *The Accounting Review* 81 (3): 501-531.
- Nelson, M. W., J. A. Elliott, and R. L. Tarpley (2002). Evidence from auditors about managers' and auditors' earnings management decisions. *The Accounting Review* 77, (S1): 175-202.
- Netessine, S., and N. Rudi (2006). Supply chain choice on the internet. *Management Science* 52(6), 844-864.
- Ou, J., and S. Penman (1989a). Accounting measurement, price-earnings ratio, and the information content of security prices. *Journal of Accounting Research* 27 (Supplement), 111-144.
- Ou, J. and S. Penman (1989b). Financial statement analysis and the prediction of stock returns. *Journal of Accounting and Economics* 11(4), 295-329.
- Palmrose, Z. V. (1988). 1987 competitive manuscript co-winner: An analysis of auditor litigation and audit service quality. *The Accounting Review* 63 (1), 55-73.
- Piotroski, J. D. (2000). Value investing: The use of historical financial statement information to separate winners from losers. *Journal of Accounting Research* 38 (Supplement), 1-41.
- Ramesh, K. and S. R. Thiagarajan (1993). Estimating the permanent component of accounting earnings using the unobservable components model: Implications for price-earnings research. *Journal of Accounting Auditing and Finance* 8 (4), 399-425.
- Randall, T., S. Netessine, and N. Rudi (2006). "An empirical examination of the decision to invest in fulfillment capabilities: A study of Internet retailers." *Management Science*

- 52 (5): 567-580.
- Rees, L., and K. Sivaramakrishnan (2007). The effect of meeting or beating revenue forecasts on the association between quarterly returns and earnings forecast errors. *Contemporary Accounting Research* 24(1), 259-290.
- Reichelt, K. J., and D. Wang (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48 (3), 647-686.
- Reynolds, J. K., and J. R. Francis (2000). Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30(3), 375-400.
- Richardson, S., I. Tuna, and M Wu (2002). Predicting earnings management: The case of earnings restatements. *Social Science Research Network Working Paper Series*.
- Richardson, S., S. H. Teoh, and P. D. Wysocki (2004). The Walk-down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives. *Contemporary Accounting Research* 21 (4): 885-924.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42 (3), 335-370.
- Schonberger, R. (1982). Japanese manufacturing techniques: Nine hidden lessons in simplicity. *Free Press*.
- Securities and Exchange Commission (1999). Staff Accounting Bulletin 99: Materiality. Washington, DC, SEC.
- Shu, S. Z. (2000). Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics* 29 (2), 173-205.
- Skinner, D. J., and R. G. Sloan (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies* 7 (2-3), 289-312.
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics* 87, 355-379.
- Stice, J. D. (1991). Using financial and market information to identify pre-engagement factors associated with lawsuits against auditors. *The Accounting Review* 66 (3): 516-533.
- Subramanyam, K. (1996). Uncertain precision and price reactions to information. *The Accounting Review* 71 (2), 207-220.
- Swanson, E. P., L. Rees, and L. F. Juarez-Valdes (2003). The contribution of fundamental analysis after a currency devaluation. *The Accounting Review* 78 (3), 875-902.
- Venkataraman, R., J. P. Weber, and M. Willenborg (2008). Litigation risk, audit quality, and audit fees: Evidence from initial public offerings. *The Accounting Review* 83 (5), 1315-1345.
- Watts, R. (2003). Conservatism in accounting part ii: Evidence and research opportunities. *Accounting Horizons* 17 (4), 287-301.
- Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review* 76 (3), 357-373.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87 (2), 675-703.