

PILOT-CEOS AND REAL EARNINGS MANAGEMENT

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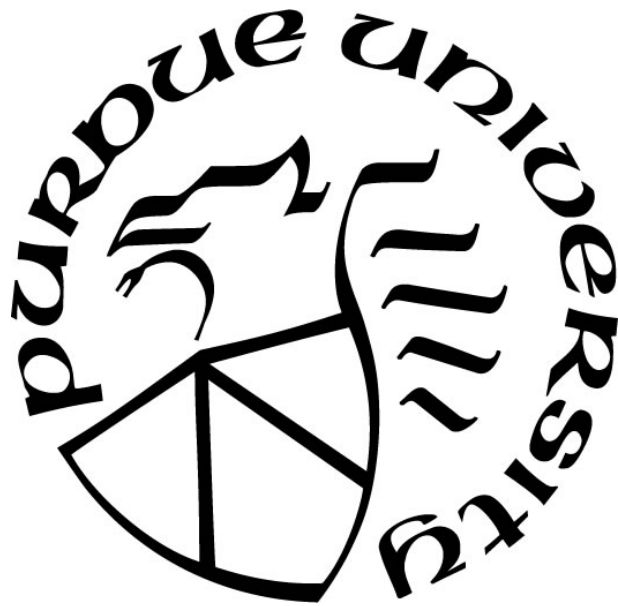
Ali Alyakoob

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THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF COMMITTEE APPROVAL

Dr. Mark Bagnoli, Co-Chair

Krannert School of Management

Dr. Susan Watts, Co-Chair

Krannert School of Management

Dr. Rahul Menon

Krannert School of Management

Dr. Thomas Godwin

Krannert School of Management

Approved by:

Dr. Yanjun Li

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ABSTRACT

The purpose of this study is to examine the relationship between a CEO's personal risk preferences and real earnings management. Using the possession of a pilot's license as a proxy for a CEO's preference to bear a higher level of risk (Pilot-CEOs), I find that Pilot-CEOs are not likely to take a reckless risk and engage in real earnings management because it destroys shareholder value. However, they recognize the negative long-term consequences of missing earnings benchmarks and are willing to take a strategic risk and use real earnings management to meet or beat earnings benchmarks. As a result, these firms have stronger operating performance in the periods following the use of real earnings management. This is evidence that firms with Pilot-CEOs are most likely using real earnings management for non-opportunistic reasons such as avoiding debt covenant violations or signaling managerial competence. On the other hand, I find that overconfident CEOs that use real earnings management to meet or beat earnings benchmarks have poor operating performance in periods following the use of real earnings management. This is evidence that overconfident CEOs are most likely using real earnings management for opportunistic reasons such as job security or gaining bonuses. These results are robust to using alternative measures of operating performance and alternative methods of identifying real earnings management.

CHAPTER 1. INTRODUCTION

Do a CEO's personal characteristics affect corporate actions? Prior literature suggests that behavioral traits such as overconfidence, optimism, narcissism, and risk aversion have a significant impact on corporate policies. For example, Malmendier et al. (2011) find that firms with overconfident managers prefer internal financing to external financing. Graham et al. (2012) find that firms with optimistic CEOs are more likely to have more short-term debt. Olsen et al. (2014) find that firms with narcissistic CEOs use real earnings management to increase earnings per share.

A CEO's individual risk preferences is one the most fundamental characteristics of interest to researchers. Yet, until recently, the effect of managerial risk preferences on firm behavior has not been examined due to the difficulty in measuring a manager's revealed risk preference. Cain and Mckeon (2016) introduce a measure for a manager's personal risk preferences by examining the activities CEOs participate in outside the firm. They identify a CEO's possession of a pilot's license as a proxy for a CEO's preference to bear a higher level of risk. They show that pilot-CEOs are associated with riskier firms and that they are more acquisitive than non-Pilot-CEOs. They also show that firms with Pilot-CEOs are highly likely to take on value-adding acquisitions¹.

In this paper, I study the relationship between Pilot-CEOs and real earnings management. I examine this relationship for the following reasons. First, CEOs prefer to manage earnings through real activities manipulation (Graham et al., 2005). Second, real activities manipulation affects firms in various ways such as financial reporting quality, cost of capital, and future performance (e.g., Kim and Sohn, 2013; Gunny, 2005; Gunny, 2010). Therefore, real earnings management provides a sensible setting to examine how risk-taking CEOs affect firm behavior.

I predict and find evidence that, on average, firms led by Pilot-CEOs are less like to engage in real activities manipulation. Prior literature suggests that real activities manipulation destroys firm value (Gunny 2005; Kim and Sohn 2013; Cohen and Zarowin 2008). Thus, my finding suggests

¹ Sunder et al. (2017) examine Pilot-CEOs further and find that firms with Pilot-CEOs are more innovative. Chen et al. (2018) find that Pilot-CEOs have a greater level of situational awareness that develops because of their aviation training. They find that firms led by Pilot-CEOs have higher corporate cash holdings in response to increased liquidity risk due to their preference to plan ahead.

that Pilot-CEOs are more willing to accept the risks associated with not using real earnings management to avoid the subsequent value destruction².

I also hypothesize and find evidence that firms led by Pilot-CEOs are likely to engage in real earnings management if short-term (ie. current quarter) risks are sufficiently great. I also find that these firms who engage in real earnings management have *better* future operating performance. Gunny (2010) states that only managers aware of their firm's superior future performance are more willing to take the risk and bear the adverse consequences of real earnings management. Hence, my findings are consistent with Pilot-CEOs who use real earnings management to meet/beat current earnings benchmarks being aware of the negative long-term consequences of missing earnings benchmarks and willing to take the risk that leads to the better operating performance found in Gunny (2010).

This study contributes to three streams of literature. First, it adds to the literature that examines the effects of personal characteristics on managerial style by documenting a relationship between a CEOs personal revealed risk preferences and real earnings management. Additionally, it lends further support to the argument that Pilot-CEOs represent risk-taking CEOs rather than risk-seeking CEOs.

Second, it adds to the earnings management literature. Prior literature has examined the relationship between personal characteristics such as narcissism and overconfidence with earnings management. However, this is the first study to examine the relationship between a CEO's personal risk preferences and real earnings management.

Third, prior literature provides conflicting evidence regarding the use of real earnings management around earnings benchmarks and future performance. Some studies state these firms have better future performance because they use real earnings management for non- opportunistic reasons. Other studies state that these firms have worse future performance. One factor that could, in part, explain this discrepancy is a CEO's personal characteristics. My study provides evidence that risk-

² Risk-taking is a characteristic that reduces risk-aversion; however, it is not meant to induce risk-seeking behavior, which leads to value destroying actions. If this proxy represents risk-seeking behavior, then Pilot-CEOs should be highly likely to engage in real activities manipulation.

taking CEOs use real earnings management for non-opportunistic reasons whereas overconfident CEOs use real earnings management for opportunistic reasons.

The rest of this dissertation is organized as follows. Section 2 provides the literature review. Section 3 provides the hypothesis development. Section 4 shows the research design. Section 5 presents the data and sample selection. Section 6 provides the results. And section 7 provides the conclusion.

CHAPTER 2. PRIOR LITERATURE

2.1 Pilot-CEOs and Shareholder Value

Risk averse CEOs inflict agency costs on shareholders because they avoid some risk even if it results in the creation of shareholder value. For example, risk averse CEOs are likely to forgo positive net present value (NPV) projects that are riskier (Malmendier and Tate 2008). Risk-Seeking CEOs on the other hand are likely to destroy shareholder value due to their propensity towards taking excessive risk. For example, they are likely to take on risky projects with negative returns (Malmendier and Tate 2008). “Risk neutral CEOs [however], use first-best investment rules and the market should react positively to their merger bids” (Malmendier and Tate 2008).

Cain and McKeon (2016) are the first to develop a measure that represents less risk-averse CEOs. They use a CEO’s possession of a Pilot’s license as a proxy for risk-taking behavior³. They find that Pilot-CEOs are associated with riskier firms and that firms with Pilot-CEOs take on more acquisitions, have higher stock return volatility, and higher levels of leverage. Cain and McKeon (2016) lean on the psychology literature to support the notion that the desire to fly reflects a preference toward risk-taking. Zuckerman (1971) finds that one of the most essential elements for predicting the thrill and adventure-seeking component of sensation seeking personalities is the desire to fly an airplane, and in a later article finds that risk-taking behavior is highly correlated with the genetic personality trait of sensation seeking (Zuckerman 2007).

Sunder et al. (2017) further examine Pilot-CEOs, but they use it to relate CEO risk-taking to innovation. They find that firms with Pilot-CEOs have more diverse and original patents and have

³ It is important to note that Cain and McKeon’s (2016) measure represents risk-taking behavior rather than risk seeking behavior. In order to differentiate their measure, they examine acquisitions. Graham et al. (2015) state that CEOs play a major role in mergers and acquisitions. Furthermore, Malmendier and Tate (2008) state that overconfident and risk-seeking CEOs are likely to take on value destroying acquisitions. Therefore, it presents an appropriate setting to examine whether their measure signifies risk-taking rather than risk-seeking behavior. Cain and McKeon (2016) find that Pilot-CEOs have higher returns on the acquisitions they make creating shareholder value. Overall, their evidence supports the notion that their measure represents risk-taking behavior.

more citations on those patents. They also find that Pilot-CEOs improve innovation by enhancing R&D productivity rather than increasing investment in observable R&D⁴.

Although Sunder et al. (2017) focus on innovation, prior literature shows a strong relationship between risk-taking behavior and innovation success. Dyer et al. (2011) state that “Breakthrough innovations require risk taking to make them happen”. They also state that innovators understand the importance of taking the smart risk. Sunder et al. (2017) themselves state that risk-taking is a requirement to achieve innovation success. Therefore, it is clear that risk-taking is an intrinsic characteristic that is required to achieve a higher level of innovation. The results of their study provide further evidence that Pilot-CEOs take on actions that create shareholder value rather than destroy it.

Chen et al. (2018) use Pilot-CEOs as a measure for situational awareness. They argue that Pilot-CEOs have a greater level of situational awareness due to their aviation training. Chen et al. (2018) use the aviation psychology literature to support their claim. For example, Horne (1997) states that pilots are trained to develop situational awareness to be able to recognize and react to potential risks. An “expert [pilot’s] ability to organize information into meaningful units appears to facilitate future flight state projections, and projection failures appear to result from situation- rather than mental-model failures” (Doane et. al 2015).

Chen et al. (2018) examine the relationship between Pilot-CEOs and corporate cash holdings and find that firms with Pilot-CEOs have higher cash holdings. They also find that the value of cash holdings is higher for firms with Pilot-CEOs⁵. Thus, their results also provide additional evidence supporting the notion the Pilot-CEOs take on actions that create shareholder value.

Taken together, this evidence supports the notion that Pilot-CEOs are individuals that have a higher tolerance for risk. They are able to assess situations and take calculated risks that help them achieve long-term success, but they are not individuals who take a negative expected utility risk. Therefore,

⁴ If Pilot-CEOs were risk-seekers, then they would likely attempt to achieve innovation success through increased investment in observable R&D. This, however, would not lead higher returns on investment because their risk-seeking tendencies would result in the investment in high-risk projects.

⁵ Interestingly, they also state that if Pilot-CEOs were risk-seekers as opposed to risk-takers, then the value of cash holdings would be lower for firms led by Pilot-CEOs. This is because their attraction to excessive risk would lead to highly uncertain projects which would result in negative returns.

the evidence suggests that Pilot-CEOs are less risk averse (risk-takers) and not risk-seekers. This study provides further evidence supporting the notion that Pilot-CEOs are risk-takers by examining their relationship with real earnings management.

2.2 Pilot-CEOs and Financial Reporting Quality

A recent study, Lobo et al. (2018), examines the relationship between Pilot-CEOs and financial reporting quality. Lobo et al. (2018) use a CEO's possession of a pilot's license as a proxy for sensation seeking and find that firms with Pilot-CEOs have lower financial reporting quality. They find that these firms are more likely to engage in accruals management, have higher information opacity, have internal control deficiencies, and are more likely to commit fraud.

Lobo et al. (2018) differs from my study in several ways. Firstly, they use Pilot-CEOs as a proxy for sensation seeking whereas I build on prior research (Cain and Mckeon 2016) and use Pilot-CEOs as a proxy for risk-taking behavior. Secondly, their study focuses on financial reporting quality, whereas my study focuses on real earnings management and its effect on future performance. Contrary to their main results, Lobo et al. (2018) state that they find that firms with Pilot-CEOs are more likely to engage in real earnings management. However, real earnings management is not the focus of their study and they make this claim in a footnote without tabulating their results. A potential explanation for differences in Pilot-CEO choices of accrual versus real earnings management may be related to differences in the real costs of these activities. For example, the use of accruals management may result in added attention from auditors and regulators (Roychowdhury 2006). Finally, my study contributes beyond their study by examining the relationship between Pilot-CEO firms and real earnings management around earnings benchmarks and how this affects a firm's future performance. Lobo et al. (2012) make no mention of real earnings management around earnings benchmarks and its effect on a firm's future performance.

2.3 CEO Characteristics and Earnings Management

Prior literature examines the relationship between different CEO personal characteristics and earnings management. Hribar and Yang (2010) examine the effect of CEO overconfidence on earnings management using a press-based measure of overconfidence developed by Malmendier

and Tate (2008). CEOs are classified as overconfident if the press describes them as optimistic or overconfident more than they describe them as conservative. They find that the optimistic bias in voluntary forecasts increases with overconfident CEOs. This leads to a greater likelihood of missing management forecasts, which in turn leads to a greater likelihood of using income-increasing abnormal accruals to meet/beat management forecasts. Hsieh, Bedard and Johnstone (2014) examine the effect of CEO overconfidence on earnings management before and after the Sarbanes Oxley Act of 2002 (SOX). Their classification of overconfidence is based on Malemender and Tate's (2005) options-based measure. CEOs are classified as overconfident if they have a tendency to hold onto in-the-money stock options. They show that firms with overconfident CEOs are more likely to manage earnings with real activities manipulation. They also show that after SOX, firms with overconfident CEOs are more likely to manage earnings through both accruals management and real activities manipulation.

Olsen, Dworkis, and Young (2014) find that narcissistic CEOs are more likely to increase reported earnings per share through real and operational activities rather than accrual-based manipulation. Their measure of narcissism is based on the existence of a CEO's picture in the company's annual report and the "prominence" of the CEO's picture in the report. Frino, Lim, Mollica and Palumbo (2015) on the other hand find that narcissistic CEOs are more likely to manipulate earnings through accruals management. Their measure of CEO narcissism is based on the "ratio of first-person singular pronouns to total first person pronouns in the Question and Answer Session of analyst conferences held during earnings announcements" (Frino, Lim, Mollica and Palumbo, 2015).

Prior literature also examines how a firm creates incentives for a CEO to take risks through stock option compensation, which in turn affects earnings management. Firms can incentivize managerial risk-taking using executive stock options because the value of the options increases as the stock return volatility increases (Haugen and Senbat, 1981; Smith and Stulz, 1985). Baker, Collins, and Reitenga (2003) find that income-decreasing discretionary accruals are associated with high option compensation leading up to option awards dates. Bergstresser and Phillippon (2006) show that firms with CEOs whose potential compensation is more closely tied to the value of stock and option holdings are more likely to manipulate earnings through the use of discretionary accruals.

Despite this prior work, there are no studies that carefully examine the impact of a CEO's personal risk preferences on earnings management. This study fills that gap.

2.4 Real Earnings Management

There are a number of studies in the literature that examine the relationship between managerial intervention and earnings management through real activities manipulation. Healy and Wahlen (1999), and Dechow and Skinner (2000) both show that managers can accelerate sales, reduce research and development (R&D) expenditures, and reduce maintenance expenditures to increase short-term earnings. Roychowdhury (2006) finds evidence that managers attempt to avoid annual reporting losses by using the following three real activities manipulation methods:

- 1) Price discounts to increase short-term sales (Abnormal Cash flows from Operations).
- 2) Overproduction to reduce cost of goods sold (Abnormal Production Costs).
- 3) Cutting discretionary expenditures to improve margins (Abnormal Discretionary Expenditures).

The literature provides consistent evidence regarding the detriment to shareholder value that real earnings management causes. For example, in their 2005-survey paper, Graham et al. find that firms are willing to use real activities manipulation despite the reduction in firm value caused by these activities. Gunny (2005) finds that real earnings management has a significant negative impact on a firm's future performance. Kim and Sohn (2013) find that real earnings management impairs a firm's financial reporting quality that causes an increase in the cost of capital. Cohen and Zarowin (2008) show that firms are likely to underinvest in the years following real earnings management.

However, there a subset of situations in which real activities manipulation benefits shareholders. For example, Zhao et al. (2012) state that firms that engage in real activities manipulation in general destroy shareholder value and have poor future performance. However, they also state that firms that engage in real activities manipulation to meet/beat earnings benchmarks to signal strong future performance have better future performance. I discuss further the benefits of real activities manipulation around earnings benchmarks in the next section.

2.5 Real Earnings Management, Earnings Benchmarks, and Future Performance

Gunny (2010) states that there two conflicting theories regarding the use of real earnings to meet/beat earnings benchmarks. Managers could use real earnings management to meet/beat earnings benchmarks for opportunistic reasons. For example, Matsunaga and Park (2001) state that managers use real earnings management to gain bonuses, increase stock price, and job security. This leads to the destruction of shareholder value. Roychowdhury (2006) states that real activities manipulation has a negative effect on firm value because short-term actions taken to increase earnings immediately could have a negative effect on earnings in the future. If managers use real earnings management for opportunistic reasons, then there should be a negative impact on the firm's future performance.

Alternatively, Gunny (2010) states there are two reasons how the use of real earnings management around earnings benchmarks could benefit shareholders. First, it could provide benefits that help the firm's future performance. For example, Titman (1988) states that firms use real earnings management to reduce the cost of debt. Firms could manage earnings to avoid debt covenant violations (Bartov 1993). The rewards of meeting/beating earnings benchmarks include higher quarterly returns, increased management credibility, and reduced litigation risk (Bartov et al. 2002). In these situations, Gunny (2010) states that real earnings management increases shareholder value when the long-term benefits exceed the immediate costs.

Second, managers could use real earnings management to signal managerial competence or strong future performance (Bartov et al. 2002; Lev 2003). Using real earnings management to meet/beat earnings benchmarks can improve a firm's credibility with stakeholders or convey future growth (Bartov et al. 2002; Burgsthaler and Dichev 1997). In these cases, Gunny (2010) states that real earnings management increases shareholder value when the firm's long-term performance outweighs the costs incurred from managing earnings. She also states that if managers use real earnings management for non-opportunistic reasons then the firm should have stronger future performance.

Gunny (2010) finds that firms that engage in real earnings management to meet/beat earnings benchmarks do, in fact, have better future operating performance, consistent with their using it in a non-opportunistic fashion. On the other hand, some studies suggest that firms that beat earnings

benchmarks using real earning management have poor future performance (Degeorge and Zeckhauser 1999; Leggett et. al 2009; Tabassum et al. 2017). This evidence supports the notion that managers use real earnings management to meet/beat earnings benchmarks for opportunistic reasons.

The literature provides conflicting evidence regarding the value of real earnings management around earnings benchmarks. Some studies argue that it adds shareholder value and some studies argue that it destroys shareholder value. There are no studies however, that attempt to bridge the gap between the conflicting arguments. This study attempts to fill that gap by examining one possible explanation for this discrepancy, a CEO's risk-taking behavior.

CHAPTER 3. HYPOTHESIS DEVELOPMENT

Prior literature states that CEOs prefer to manage earnings through real earnings management rather than accruals management. For example, Jiang et al. (2010) find that the occurrence of accruals management is more sensitive to the equity incentives of the CFO rather than the CEO. Graham et al. (2005) also find that CEOs prefer to manage earnings using real earnings management. This is because accruals management may result in increased scrutiny from auditors and regulators as well as an increased likelihood of restatements. Therefore, CEOs play a direct role in a firm's decision to use real earnings management. Prior literature also shows that personal characteristics such as overconfidence and narcissism affect a CEO's decision regarding real earnings management. Therefore, it is highly likely that a CEO's personal risk preferences have an impact on their decision regarding real earnings management.

Pilot-CEOs take strategic risks that create shareholder value⁶. As noted earlier, Cain and McKeon (2016) find that firms with pilot-CEOs have higher acquisition returns when compared to firms with non-pilot-CEOs. Sunder et al. (2017) find that firms with Pilot-CEOs have greater innovation success. Chen et al. (2018) find that the value of corporate cash holdings is higher for firms led by Pilot-CEOs. Taken together this evidence indicates that Pilot-CEOs are not likely to take risks that destroy shareholder value. Given that real activities manipulation results in the destruction of shareholder value in most cases (Graham et al. 2005, Roychowdhury 2006, Gunny 2006), it is plausible to argue that firms with pilot-CEOs on average are less likely to take on real activities manipulation.

H1: On average, there is a negative association between firms led by Pilot-CEOs and real earnings management.

The literature examining Pilot-CEOs shows that they are less risk-averse individuals who develop a degree of situational awareness that allows them to take calculated risks that help achieve a

⁶ The literature examining Pilot-CEOs provides evidence supporting the notion that Pilot-CEOs are risk-takers rather than risk-seekers. If they were risk-seekers, then they would likely take actions that destroy shareholder value (Cain and McKeon 2016, Sunder et al. 2017, Chen et al. 2017).

greater level of innovation (Cain and Mckeen 2016; Sunder et. al 2017; Chen et. al 2018). It also shows that they take actions that create long-term value for shareholders such as higher acquisition returns, greater innovation success, and higher value to corporate cash holdings (Cain and Mckeen 2016; Sunder et. al 2017; Chen et. al 2018). Pilot-CEOs' higher situational awareness should help them assess the potential negative outcomes related to missing earnings benchmarks and its effect on the firm's long-term success. Additionally, their situational awareness and ability to take calculated risks should help them take strategic actions to maintain the long-term success of their firms. For example, a Pilot-CEO should be better equipped to assess the negative effect that missing earnings benchmarks has on the firm's future performance, future acquisitions, or innovation success. A Pilot-CEO's risk-taking characteristic should allow them to identify when incurring the costs related to real earnings management are outweighed by the long-term benefits of beating earnings benchmarks. Therefore, it is likely that Pilot-CEOs use real earnings management to meet/beat earnings benchmarks.

H2: There is a positive association between meet/beat firms led by Pilot-CEOs and real earnings management.

As discussed previously, the literature provides conflicting evidence regarding the use of real earnings management to meet/beat earnings benchmarks. Gunny's (2010) evidence supports the notion that managers use real earnings management to meet/beat earnings benchmarks for non-opportunistic reasons. In contrast, other studies support the notion that managers use real earnings management for opportunistic reasons (Degeorge and Zeckhauser 1999; Leggett et. al 2009; Tabassum et al. 2017).

It is unlikely that all managers use real earnings management for opportunistic reasons. It is more likely, that some managers use it for opportunistic reasons and others use it for non-opportunistic reasons. Some managers may be concerned about job security and use real earnings management to meet/beat earnings benchmarks as a result, whereas, other managers may be confident about the firm's future performance and are therefore, willing to bear the costs of real earnings management.

There are various reasons that could explain a CEO's use of real earnings management to meet/beat earnings benchmarks. One reason is a CEO's intrinsic characteristics such as risk preferences, overconfidence, or narcissism. Pilot-CEOs are individuals who are less risk-averse, and thus are

willing to take on strategic risks to help create long-term value for shareholders. Therefore, firms with Pilot-CEOs that use real earnings management to meet/beat earnings benchmarks should have stronger future performance on average. This is because they are aware that missing earnings benchmarks will hinder their ability to take actions that create long-term shareholder value (e.g. acquisitions, R&D projects, etc.). Therefore, they are willing to bear the costs of real earnings management to maintain the long-term success of the firm. This suggests that Pilot-CEOs use real earnings management to meet/beat earnings benchmarks for non- opportunistic reasons and their firms' future performance should be stronger.

H3: There is a positive association between firms led by Pilot-CEOs that use real earnings management and future performance.

CHAPTER 4. RESEARCH DESIGN

4.1 Designs for H1

“Real activities manipulation is defined as management actions that deviate from normal business practices, undertaken with the primary objective of meet/beating certain earnings thresholds” Roychowdhury (2006). I rely on prior literature (e.g., Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010) to calculate the proxies that measure real activities manipulation.

The first measure of real activities manipulation I use is abnormal cash flow from operations. Following Roychowdhury (2006), I estimate normal cash flow from operations as follows:

$$CFO_t/A_{t-1} = \alpha_0 + \alpha_1 + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1}) + \varepsilon_t \quad (1)$$

where:

- CFO_t is cash flow from operations in year t .
- A is total assets.
- S is net sales.
- ΔS is the change in net sales from the prior year.
- Abnormal cash flow from operations is the residual of the previous industry-year regression.⁷

For a full list of variables and their definitions, please see Appendix A.

The second measure of real activities manipulation I use is abnormal production costs.

Following Roychowdhury (2006), I estimate normal production costs as follows:

$$Prod_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1}) + \beta_3(\Delta S_{t-1}/A_{t-1}) + \varepsilon_t \quad (2)$$

⁷ For the sake of simplicity, I multiply the measure by (-1) so that positive values indicate an increase in real earnings management.

where:

- $Prod_t$, production costs in year t , is the sum of Cost of Goods Sold (COGS) and the change in inventory during the year.
- Abnormal production costs is the residual of the previous regression

The third measure of real activities manipulation I use is abnormal discretionary expenditures. Following Roychowdhury (2006), I estimate normal discretionary expenditures as follows:

$$Disexpt/At-1 = \alpha_0 + \alpha_1(1/At-1) + \beta_1(\Delta St-1/At-1) + \varepsilon_t \quad (3)$$

Where:

- $Disexp_t$, discretionary expenditures in year t , is the sum of R&D, Advertising, and SG&A expenses.
- Abnormal discretionary expenditures is the residual of the previous regression.⁸

To examine the relationship between pilot-CEOs and real activities manipulation, I estimate the following four models:

$$RM \text{ Measure} = \beta_0 + \beta_1 PilotCEO + \beta_2 Size + \beta_3 MTB + \beta_4 Lev + \beta_5 ROA + \beta_6 SalesGrowth + \beta_7 Confident + \beta_8 HighPerformancePay + \beta_9 AgeDummy40 + \beta_{10} AgeDummy50 + \beta_{11} AgeDummy60 + \varepsilon \quad (4)$$

$$REM = \beta_0 + \beta_1 PilotCEO + \beta_2 Size + \beta_3 MTB + \beta_4 Lev + \beta_5 ROA + \beta_6 SalesGrowth + \beta_7 Confident + \beta_8 HighPerformancePay + \beta_9 AgeDummy40 + \beta_{10} AgeDummy50 + \beta_{11} AgeDummy60 + \varepsilon \quad (5)$$

where:

- RM Measure is either abnormal cash flows from operations, abnormal production costs, or abnormal discretionary expenditures.

⁸ For the sake of simplicity, I multiply the measure by (-1) so that positive values indicate an increase in real earnings management.

- REM is a combined measure of real earnings management calculated by first multiplying Abnormal production costs by negative 1 and then taking the sum of all 3 measures.⁹
- PilotCEO is equal to 1 if a given CEO has a pilot's license and 0 otherwise.

A negative and significant coefficient on β_1 would support H1 and indicate a negative relationship between firms led by Pilot-CEOs and the use of real earnings management. I control for various firm and CEO characteristics such as size, leverage, ROA, CEO tenure, CEO overconfidence, and risk-rewarding compensation contracts among others.

4.2 Designs for H2

Gunny (2010) identifies firms that are likely to engage in real earnings management to meet/beat certain earnings benchmarks as those firms whose net income scaled by total assets is between 0 and 0.01 or whose change in net income scaled by total assets is between 0 and 0.01. I examine the relationship between real activities manipulation and pilot-CEOs in meet/beat firms using the following four models:

$$\begin{aligned} \text{RM Measure} = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{PilotCEO} * \text{Meet/beat} \\ & + \beta_5 \text{Size} + \beta_6 \text{MTB} + \beta_7 \text{Lev} + \beta_8 \text{ROA} + \beta_9 \text{SalesGrowth} + \beta_{10} \text{Confident} \\ & + \beta_{11} \text{HighPerformancePay} + \beta_{12} \text{AgeDummy40} + \beta_{13} \text{AgeDummy50} + \beta_{14} \text{AgeDummy60} + \varepsilon \end{aligned} \quad (6)$$

$$\begin{aligned} \text{REM} = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{PilotCEO} * \text{Meet/beat} + \beta_5 \\ & \text{Size} + \beta_6 \text{MTB} + \beta_7 \text{Lev} + \beta_8 \text{ROA} + \beta_9 \text{SalesGrowth} + \beta_{10} \text{Confident} + \\ & \beta_{11} \text{HighPerformancePay} + \beta_{12} \text{AgeDummy40} + \beta_{13} \text{AgeDummy50} + \beta_{14} \text{AgeDummy60} + \varepsilon \end{aligned} \quad (7)$$

where:

- JustMiss is a variable equal to 1 if a firm's net income scaled by total assets is between 0 and -0.01 or if the change in net income scaled by total assets is between 0 and -0.01 and 0 otherwise.

⁹ For the sake of simplicity, I multiply the measure by (-1) so that positive values indicate an increase in real earnings management.

- Meet/Beat is a variable equal to 1 if a firm's net income scaled by total assets is between 0 and 0.01 or the change in net income scaled by total assets is between 0 and 0.01 and 0 otherwise.
- PilotCEO*Meet/Beat is a variable equal to 1 if a pilot-CEO is in a meet/beat firm and 0 otherwise.¹⁰

A positive and significant coefficient on β_3 would support H2 and indicate a positive relationship between meet/beat firms led by Pilot-CEOs and real earnings management. All other variables are as defined previously. I control for various firm and CEO characteristics such as size, leverage, ROA, CEO overconfidence, and risk-rewarding compensation contracts among others.

4.3 Designs for H3

Gunny (2010) finds that firms that use real earnings management to meet/beat earnings benchmarks have stronger future performance. Her evidence supports the notion that managers use real earnings management for non-opportunistic reasons (e.g., Increasing management's credibility, signaling managerial competence, avoiding litigation, etc.). Therefore, if Pilot-CEOs use real earnings management for non-opportunistic reasons then they should have strong future performance.

Gunny (2010) differentiates between firms that meet/beat earnings benchmarks without using real earnings management and firms that meet/beat earnings benchmarks using real earnings management. Gunny (2010) does this by using an indicator variable that is equal to 1 if the residual of a given real earnings management measure is in the highest quintile and 0 otherwise. This is because extreme values are more indicative of a firm's engagement in real earnings management. The distributions of each real earnings management measure exhibit positive excessive kurtosis indicating heavier tails than a normal distribution (un-tabulated). This, according to Gunny (2010), is indicative of firms moving into the tails and engaging in real earnings management.

¹⁰ To mitigate concerns regarding the orthogonality of Meet/Beat and PilotCEO, I run a logit regression to examine the probability that Pilot-CEOs are in Meet/Beat firms. The results are negative and insignificant which help mitigate this concern

Prior literature shows that on average firms use real earnings management to meet/beat earnings benchmarks. However, not all firms that barely meet/beat earnings benchmarks do so using real earnings management. For example, firms may offer discounts or cut R&D for reasons other than real earnings management, which may result in having positive values for abnormal level of cash flows or discretionary expenditures. I use the same method as Gunny (2010) to differentiate between firms that engage in real earnings management to meet/beat earnings benchmarks and firms that meet/beat earnings benchmarks without the use of real earnings management.

Following Gunny (2010), I examine the relationship between Pilot-CEOs that use real earnings management and future performance. To examine this relationship, I use the following model:

$$\begin{aligned} \text{AdjROA}_{t+i} (\text{AdjCFO}_{t+i}) = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \\ & \text{RM/indicator} + \beta_5 \text{PilotCEO} * \text{Meet/beat} * \text{RM/indicator} + \beta_6 \text{Meet/Beat} * \text{RM/indicator} + \\ & \beta_7 \text{Meet/Beat} * \text{PilotCEO} + \beta_8 \text{PilotCEO} * \text{RM/indicator} + \beta_9 \text{Size} + \beta_{10} \text{MTB} + \beta_{11} \text{Lev} \\ & + \beta_{12} \text{ROA(CFO)} + \beta_{13} \text{SalesGrowth} + \beta_{14} \text{Confident} + \beta_{15} \text{HighPerformancePay} + \\ & \beta_{16} \text{AgeDummy40} + \beta_{17} \text{AgeDummy50} + \beta_{18} \text{AgeDummy60} + \varepsilon \end{aligned} \quad (8)$$

where:

- $i = 1, 2, 3$
- AdjROA is the difference between firm-specific ROA and the median ROA for the same year and industry (two-digit SIC).
- AdjCFO is the difference between firm-specific Cash Flow from Operations (CFO) and the median CFO for the same year and industry (two-digit SIC)
- PilotCEO*Meet/beat*RM/Indicator is an indicator variable equal to 1 if a firm with a PilotCEO uses 1 of the 4 measures of real earnings management to meet/beat earnings benchmarks and 0 otherwise.

Where RM/Indicator:

- RM/Abcash is an indicator variable equal to 1 if the residual from the abnormal cash flows model is in the highest quantile and 0 otherwise.
- RM/Abprod is an indicator variable equal to 1 if the residual from the abnormal production costs model is in the highest quantile and 0 otherwise.

- RM/Abdisc is an indicator variable equal to 1 if the residual from the abnormal discretionary expenditures model is in the highest quantile and 0 otherwise.
- RM/REM is an indicator variable equal to 1 if the combined measure is in the highest quantile and 0 otherwise.

A positive and significant coefficient on β_5 would support H3 and indicate a positive relationship between firms led by Pilot-CEOs that use real earnings management and future performance. All other variables are as defined previously. I control for various firm and CEO characteristics such as size, leverage, ROA, CEO overconfidence, and risk-rewarding compensation contracts among others.

4.4 Sample and Data

Similar to Cain and McKeon (2016) I start with a sample of 26,998 CEOs from the Compustat Executive Compensation (ExecuComp) database starting January 1, 1991 and ending January 1, 2009¹¹. I then match the sample with the FAA's Airmen Certification database using the CEO's first name, middle initial, and last name. Names with a match are coded as pilots and names without a match are coded as non-pilots. Following Roychowdhury (2006) I remove all firms in regulated industries (SIC codes between 4400 and 5000) as well as banks and financial institutions (SIC codes between 6000 and 6500). The resulting sample consists of 255 pilot-CEOs and 3,935 non-pilot-CEOs. I then merge the CEO dataset to the Compustat Fundamentals Annual database to obtain a final sample consisting of 1,038 CEO-pilot firm-years and 18,455 CEO-non-pilot firm-years. All variables are winsorized at the 1% and 99% levels.

Table 1 reports the concentration of firms with Pilot-CEOs within each industry by each industry's 2-digit Standard Industrial Classification (SIC) code. Firms headed by pilot-CEOs appear to be distributed among a wide variety of industries. The industries with the most concentration of Pilot-CEOs appear to be Industrial and Commercial Machinery and Computer Equipment (12.16%), Business Services (11.76%), and Electronic and other Electrical Equipment and Components (8.63%).

¹¹ I end the sample in 2009 due to the sparsity of CEO data in the ExecuComp database after the year 2009.

Panel A of Table 2 provides descriptive statistics related to firms headed by pilot-CEOs and firms headed by non-pilot-CEOs. As predicted, firms with Pilot-CEOs have higher R&D spending (significant at the 5% level). Firms headed by pilot-CEOs appear to have significantly higher Return on Equity and asset tangibility. Panel B of Table 2 provides descriptive statistics related to both pilot-CEOs and non-pilot-CEOs. The average age of pilot-CEOs is around 54 years old and 26% percent of pilot-CEOs are overconfident according to Hirshleifer, Low, and Teoh's (2012) classification of overconfident CEOs.

Table 1: Industry Distribution of Pilot-CEOs. This table presents descriptive statistics related to the industry distribution of Pilot-CEOs

SIC	N	Percent
Industrial Machinery & Equipment	31	12.16%
Business Services	30	11.76%
Electronics	22	8.63%
Instruments and Related Products	18	7.06%
Oil & Gas Extraction	11	4.31%
Food & Kindred Products	10	3.92%
Chemical & Allied Products	9	3.53%
Paper & Allied Products	7	2.75%
Transportation Equipment	7	2.75%
General Merchandise Stores	7	2.75%
Apparel and Accessory Stores	7	2.75%
Holding & other Investment Offices	7	2.75%
Health Services	7	2.75%
Wholesale Trade-Nondurable Goods	6	2.35%
Food Stores	6	2.35%
Miscellaneous Retail	6	2.35%
Other	64	25%

Table 2: Descriptive Statistics. This table presents descriptive statistics related to firm and CEO characteristics.

Panel A:	Pilot-CEO Firms		Non-Pilot-CEO Firms		
<u>Firm Characteristics</u>	<u>N</u>	<u>Mean (Med)</u>	<u>N</u>	<u>Mean (Med)</u>	<u>P-Value</u>
Size	1,038	7.12(6.98)	18,451	7.05(6.92)	0.9
Market to Book Ratio	1,035	3.41(2.29)	18,346	3.99(2.33)	0.39
Leverage	1,038	0.23(0.21)	18,376	0.22(0.20)	0.31
ROA	1,038	0.035(0.05)	18,446	0.033(0.05)	0.32
R&D	908	0.04(0.01)	16,289	0.036(.004)	0.04
ROE	900	0.17(0.16)	16,008	0.16(0.15)	0.01
Sales Growth	908	1.12(1.08)	16,279	1.13(1.08)	0.33
Asset Tangibility	1,029	0.29(0.24)	18,155	0.28(0.22)	0.03
Panel B:					
<u>CEO Characteristics</u>	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>	<u>P-Value</u>
Executive Age	996	54	17,397	55	0
Confident	1,038	26%	18,455	27%	0.25
High_performance_pay	1,038	32%	18,455	32%	0.45

Table 3 presents the Pearson Correlation matrix. Pilot-CEOs appear to have a significant positive correlation with leverage which is consistent with the findings of Cain and Mckain (2016). As predicted, Pilot-CEOs have a significant negative correlation with the three individual measures of real earnings management. Overconfident CEOs, however, appear to have a significant positive correlation with the three individual measures of real earnings management indicating a likelihood that overconfident CEOs are likely to engage in real earnings management. Consistent with Gunny (2010) Meet/Beat firms appear to have a significant positive correlation with the three individual measures of real earnings management.

Table 3: Pearson Correlation Matrix. This table presents the Pearson Correlation Matrix. P-values are in parenthesis.

	Size	ROA	CFO	Lev	MTB	Meet/Beat	JustMiss	sales_~h	PilotCEO	Confident	high_p~y	Abcash	Abprod	Disc
Size	1													
ROA	0.1964 (0.00)	1												
CFO	0.1709 (0.00)	0.5295 (0.00)	1											
Lev	0.1806 (0.00)	-0.2137 (0.00)	-0.1917 (0.00)	1										
MTB	-0.0013 (0.00)	0.0051 (0.00)	0.0088 (0.00)	0.0182 (0.03)	1									
Meet/Beat	0.0891 (0.00)	0.0456 (0.00)	0.0238 (0.00)	0.0126 (0.00)	-0.0031 (0.00)	1								
JustMiss	0.0679 (0.00)	0.037 (0.00)	-0.0154 (0.00)	0.0175 (0.00)	-0.0027 (0.00)		1							
Sales_~h	0.0485 (0.00)	0.1894 (0.00)	0.1939 (0.00)	-0.0259 (0.00)	0.0234 (0.01)	-0.0215 (0.00)	-0.0216 (0.00)	1						
PilotCEO	0.0179 (0.00)	0.001 (0.00)	0.0053 (0.00)	0.0087 (0.01)	-0.001 (0.04)	-0.0156 (0.00)	0.0004 (0.04)	0.0127 (0.00)	1					
Confident	-0.1483 (0.00)	-0.2238 (0.00)	-0.1884 (0.00)	0.0703 (0.00)	-0.0195 (0.03)	-0.0262 (0.00)	-0.0319 (0.00)	-0.1402 (0.00)	-0.0157 (0.17)	1				
High_P~y	-0.3518 (0.00)	-0.1129 (0.00)	-0.1442 (0.00)	0.012 (0.00)	-0.0031 (0.00)	-0.0034 (0.01)	0.0017 (0.00)	-0.0751 (0.00)	-0.0084 (0.26)	0.1897 (0.00)	1			
Abcash	0.0163 (0.00)	-0.4596 (0.00)	-0.9542 (0.00)	0.2242 (0.00)	-0.0079 (0.04)	0.0083 (0.00)	-0.0308 (0.00)	-0.0839 (0.01)	-0.012 (0.00)	0.147 (0.00)	0.0855 (0.00)	1		
Abprod	0.0828 (0.00)	-0.2828 (0.00)	-0.3657 (0.00)	0.1793 (0.00)	-0.0218 (0.01)	0.0376 (0.00)	0.006 (0.16)	-0.0847 (0.00)	-0.0196 (0.00)	0.1062 (0.00)	0.0561 (0.00)	-0.4042 (0.00)	1	
Disc	0.0024 (0.00)	-0.0423 (0.00)	-0.1196 (0.00)	0.1474 (0.00)	-0.0243 (0.00)	0.0385 (0.00)	-0.0098 (0.00)	-0.1407 (0.00)	-0.0276 (0.01)	0.0665 (0.00)	0.0789 (0.00)	-0.0871 (0.00)	0.8011 (0.00)	1

CHAPTER 5. RESULTS

5.1 Real Activities Manipulation and Pilot-CEOs

Table 4 reports the average of each real activities manipulation measure for both firms headed by pilot-CEOs and firms headed by non-pilot-CEOs. When compared to firms with non- pilot-CEOs, the average abnormal production costs of pilot-CEO-firms are significantly lower (p- value <0.01). When compared to non- pilot-CEO-firms, the average abnormal discretionary expenditures of firms headed by pilot-CEOs are significantly lower (p-value < 0.01). Abnormal cash flows are lower in firms with pilot-CEOs, but not at a significantly meaningful level. At first glance, this evidence implies that firms with pilot-CEOs are less likely to engage real activities manipulation and destroy shareholder value. However, without controlling for other influencing factors, inferences cannot be made.

Table 4: Average Real Activities Manipulation: Pilot-CEOs Vs. Non-Pilot-CEOs. This table presents the mean for each real activities manipulation measure for firms headed by pilot- CEOs and firms headed by non-pilot-CEOs. Significant differences in the means of pilot-CEO firms and non-pilot- CEO firms are evaluated based on the t-test. Variable definitions can be found in appendix A.

<u>Measure</u>	<u>Pilot-CEOs</u>			<u>Non-Pilot-CEOs</u>			<u>T-test P-value</u>
	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	
Abnormal Cash Flows	907	-0.001	0.004	16,206	0	0.006	0.37
Abnormal Production Costs	726	-0.027	0.005	13,050	0.002	0.027	0.002
Abnormal Discretionary Expenditures	862	-0.023	0.033	15,064	0.001	0.043	0.006
REM Combined	705	-0.063	0.013	12,235	-0.015	0.061	0.006

Table 5 reports the results for estimating equations (4) and (5) which examine the relationship between each real activities manipulation and pilot-CEOs¹². The coefficient of interest, PilotCEO, has a negative and significant relationship with abnormal cash flows (p- value<0.05), abnormal

¹² I also examine whether a CEO change resulting in the appointment of a Pilot-CEO has an effect on real earnings management, but I find no significant results.

production costs (p-value<0.01) abnormal discretionary expenditures (p-value<0.05), and the combined REM measure (p-value<0.05). This evidence supports Hypothesis 1, which predicts a negative relationship between pilot-CEOs and real activities manipulation. Taken together, tables 3 and 4 provide further evidence that Pilot-CEOs are less likely to take reckless risks that destroy shareholder value.

Table 5: The Association between Pilot-CEOs and Real Activities Manipulation. This table presents the results for estimating models (4), (5), (6), and (7). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p- values are in parentheses. Standard errors are clustered by firm. Both industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	Abcash	Abprod	Disc	REM
PilotCEO	-0.008** (0.039)	-0.037*** (0.000)	-0.026*** (0.001)	-0.059*** (0.000)
Size	0.003*** (0.002)	-0.002 (0.379)	0.013*** (0.000)	0.006 (0.116)
MTB	-0.000** (0.036)	-0.000 (0.231)	-0.000 (0.269)	0.000 (0.267)
Lev	0.060*** (0.000)	0.021 (0.126)	0.037*** (0.001)	0.107*** (0.000)
ROA	-0.266*** (0.000)	-0.351*** (0.000)	0.014 (0.494)	-0.606*** (0.000)
Sales_Growth	0.025 (0.234)	-0.047*** (0.000)	-0.152*** (0.000)	-0.198*** (0.000)
Confident	0.006*** (0.003)	0.008* (0.051)	0.011*** (0.006)	0.040*** (0.000)
High_Performance_Pay	0.009*** (0.000)	0.018*** (0.000)	0.023*** (0.000)	0.059*** (0.000)
Age_40_49	0.019* (0.052)	0.025 (0.276)	-0.003 (0.898)	0.026 (0.579)
Age_50_59	0.021** (0.027)	0.025 (0.271)	-0.009 (0.680)	0.021 (0.648)
Greater_60	0.019** (0.043)	0.016 (0.474)	-0.005 (0.804)	0.017 (0.719)
Constant	-0.070** (0.021)	0.075** (0.050)	0.280*** (0.000)	0.229*** (0.005)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	13,885	13,718	15,843	12,883
Adjusted R-squared	0.363	0.483	0.483	0.528

A major concern when testing the impact of CEO risk-taking is that the results are simply capturing CEO overconfidence instead of CEO risk-taking. This is probably not the case here due to the fact that sensation seeking (which is highly correlated with risk-taking) is not correlated with overconfidence (Grinblatt and Keloharju, 2009). However, to further mitigate this concern, I directly control for CEO overconfidence using an indicator variable equal to 1 if a CEO is classified as overconfident using Hirshleifer, Low, and Teoh's (2012) classification of overconfident CEOs¹³. As table 5 shows, the relationship between pilot-CEOs and real activities manipulation remains negative even when controlling for overconfidence. Additionally, the coefficient for Confident is negative and significant for abnormal cash flows and abnormal discretionary expenditures and positive and significant for abnormal production costs. This indicates that overconfident CEOs are likely to engage in real activities manipulation. Taken together, this evidence shows that my results for Pilot-CEOs represent risk-taking and not overconfidence.

The results from tables 4 and 5 provide evidence that Pilot-CEOs are not likely to take risks that destroy shareholder value and engage in real earnings management. However, in order to determine whether Pilot-CEOs take calculated risks that create shareholder value, it is imperative to examine the relationship between Pilot-CEOs, real earnings management around earnings benchmarks, and future performance.

5.2 Pilot-CEOs, Real Earnings Management, and Earnings Benchmarks

Table 6 reports the average of each real activities manipulation measure for pilot-CEOs in meet/beat firms and non-meet/beat firms. The average abnormal production costs for meet/beat firms are marginally higher (p-value<0.10) than non-meet/beat firms. The average abnormal discretionary expenditures for meet/beat firms are higher (p-value<0.01) than non-meet/beat firms. There does not appear to be any significant difference in abnormal cash flows between meet/beat firms and non-meet/beat firms. Additionally, the average combined REM measure for meet/beat

¹³ Following Hirshleifer et al. (2012), Confident is a binary variable equal to 1 if a CEO's options exceed 100% moneyness in the current period or any prior period. Moneyness is defined by ExecuComp as $[\text{PRCC_F} - (\text{OPT_UNEX_EXER_EST_VAL}/\text{OPT_UNEX_EXER_NUM})]/[\text{OPT_UNEX_EXER_EST_VAL}/\text{OPT_UNEX_EXER_NUM}]$.

firms is significantly higher ($p\text{-value} < 0.05$). The significant increase in the mean of each real earnings management measure around earnings benchmarks indicates the likelihood that firms with Pilot-CEOs are more likely to engage in real earnings management when faced with the possibility of missing earnings benchmarks.

Table 6: Average Real Activities Manipulation for Pilot-CEOs: Meet/beat Vs. Non-Meet/Beat Firms. This table presents the mean for each real activities manipulation measure for Pilot-CEOs in meet/beat firms and non-meet/beat firms. Significant differences in the means of meet/beat firms and non-meet/beat firms are evaluated based on the t-test. Variable definitions can be found in appendix A.

<u>Measure</u>	<u>Meet/Beat Firms</u>			<u>Non-Meet/Beat Firms</u>			<u>T-test P-value</u>
	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	
Abnormal Cash Flows	123	0.001	0	784	-0.001	0.004	0.53
Abnormal Production Costs	108	0.043	0.065	618	-0.033	0	0.05
Abnormal Discretionary Expenditures	115	0.076	0.096	747	-0.029	0.025	0.0049
REM ¹⁴	105	0.11	0.12	600	-0.123	-0.009	0.02

Table 7 reports the average of each real activities manipulation measure for meet/beat firms with pilot-CEOs and just miss firms with Non-Pilot-CEOs. With the exception of abnormal cash flows, meet/beat firms with Pilot-CEOs have higher averages for each real activities manipulation measure when compared to just miss firms with Non-Pilot-CEOs. The significant difference in real earnings management between just miss firms with Non-Pilot-CEOs and meet/beat firms with Pilot-CEOs indicates a likelihood that Pilot-CEOs use real earnings management to avoid missing earnings benchmarks.

Table 8 reports the average of each real activities manipulation measure for Pilot-CEO meet/beat firms and Non-Pilot-CEO meet/beat firms. With the exception of abnormal cash flows it appears that meet/beat firms with Pilot-CEOs are not significantly more likely to engage in real activities manipulation than are meet/beat firms with Non-Pilot-CEOs. Prior literature has shown that firms

¹⁴ Missing values in the calculation of each real earnings management measure results in a different N for each Measure.

are likely to engage in real earnings management to meet/beat earnings benchmarks (Roychowdhury 2006; Gunny 2010, however table 8 shows that firms with pilot-CEOs are generally as likely to engage in real earnings management to meet earnings benchmarks even when compared to other firms around those earnings benchmarks.

Table 7: Average Real Activities Manipulation for Meet/Beat Pilot-CEO Firms Vs. Just Miss Non-Pilot-CEO Firms. This table presents the mean for each real activities manipulation measure for meet/beat firms with Pilot-CEOs and just miss firms with non-Pilot-CEOs. Significant differences in the means of meet/beat firms and non-meet/beat firms are evaluated based on the t-test. Variable definitions can be found in appendix A.

<u>Measure</u>	<u>Meet/Beat Pilot-CEO Firms</u>			<u>Just Miss Non-Pilot-CEO Firms</u>			<u>T-test</u>
	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>P-value</u>
Abnormal Cash Flows	123	0.001	0.000	1,089	0.009	-0.002	0.73
Abnormal Production Costs	108	0.043	0.065	1,001	0.014	0.054	0.16
Abnormal Discretionary Expenditures	115	0.076	0.096	987	0.020	0.06	0.02
REM	105	0.11	0.12	912	0.017	0.09	0.006

Table 8: Average Real Activities Manipulation for Meet/Beat Pilot-CEO Firms Vs. Meet/Beat Non-Pilot-CEO Firms. This table presents the mean for each real activities manipulation measure for meet/beat firms with Pilot-CEOs and meet/beat firms with non-Pilot-CEOs. Significant differences in the means of meet/beat firms and non-meet/beat firms are evaluated based on the t-test. Variable definitions can be found in appendix A.

<u>Measure</u>	<u>Meet/Beat Pilot-CEO Firms</u>			<u>Meet/BEAT Non-Pilot-CEO Firms</u>			<u>T-test</u>
	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>P-value</u>
Abnormal Cash Flows	123	0.001	0.000	1,209	0.015	-0.002	0.8
Abnormal Production Costs	108	0.043	0.065	1,127	0.031	0.054	0.35
Abnormal Discretionary Expenditures	115	0.076	0.096	1,130	0.035	0.06	0.059
REM	105	0.11	0.12	1,007	0.05	0.09	0.15

At first glance, the evidence from tables (6), (7) and (8) imply that meet/beat firms with pilot-CEOs are likely to take a strategic risk and engage real activities manipulation to meet/beat

earnings benchmarks. Confidence in these inferences, however, requires controlling for other influencing factors.

Table 9 presents the results for estimating equations (6) and (7) which examine the relationship between Pilot-CEOs in meet/beat firms and real activities manipulation. The coefficient on Meet/Beat is positive and significant for all the measures of real earnings management. This indicates that firms without Pilot-CEOs are highly likely to engage in real earnings management to meet/beat earnings benchmarks. The coefficient on JustMiss is not significant for any of the real earnings management measures meaning firms that barely miss earnings benchmarks are not likely to engage in real earnings management. This follows prior literature given that it finds that firms use real earnings management to meet/beat earnings benchmarks. The coefficient of interest, PilotCEO*Meet/Beat, presents the likelihood that Pilot-CEO firms use real earnings management to meet/beat earnings benchmarks. The results show a significant and positive association between Pilot-CEOs in meet/beat firms and two of the three individual real earnings management measures (abnormal production costs and abnormal discretionary expenditures, $p\text{-value} < 0.05$). However, I find no relationship between Pilot-CEOs in meet/beat firms and abnormal cash flows from operations. I use the aggregated measure (REM) because firms may use more than one type of real earnings management method to meet/beat earnings benchmarks. The coefficient on PilotCEO*Meet/Beat is positive and significant ($p\text{-value} < 0.01$) for the combined REM measure indicating a high likelihood for real activities manipulation.

Table 9 shows that meet/beat firms with Pilot-CEOs are likely to engage in real activities manipulation using abnormal production costs and abnormal discretionary expenditures. Although I do not find a significant relationship with abnormal cash flows from operations, these findings are supported by prior literature. Roychowdhury (2006) finds that firms around earnings benchmarks with higher level of debts are likely to engage in real activities manipulation using abnormal production costs and abnormal discretionary expenditures. Cain and McKeon (2016) find that firms with Pilot-CEOs have higher levels of debt. Therefore, meet/beat firms with Pilot-CEOs should be likely to engage in real activities manipulation using abnormal production costs and abnormal discretionary expenditures. Taken together, this evidence suggests that Pilot-CEOs are likely to take a risk and engage in real activities manipulation to meet/beat earnings benchmarks

regardless of the negative short-term consequences. However, in order to determine if it is a strategic risk that adds long-term shareholder value, future performance must be examined.

Table 9: The Association between Pilot-CEOs in Meet/Beat Firms and Real Activities Manipulation. This table presents the results for estimating models (8), (9), (10), and (11). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are clustered by firm. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	Abcash	Abprod	Disc	REM
PilotCEO	-0.001 (0.910)	-0.028* (0.073)	-0.027* (0.090)	-0.055* (0.090)
JustMiss	0.001 (0.624)	0.004 (0.554)	0.006 (0.458)	0.010 (0.635)
Meet/Beat	0.015*** (0.000)	0.015*** (0.006)	0.014* (0.056)	0.042* (0.066)
PilotCEO*Meet/Beat	0.001 (0.867)	0.048** (0.012)	0.054** (0.013)	0.107*** (0.009)
Size	0.004*** (0.002)	0.005 (0.147)	-0.009** (0.014)	0.005 (0.484)
MTB	-0.000 (0.367)	-0.000 (0.169)	-0.000 (0.189)	-0.000 (0.218)
Lev	0.056*** (0.000)	0.055** (0.017)	0.106*** (0.000)	0.200*** (0.000)
ROA	-0.308*** (0.000)	-0.386*** (0.000)	0.017 (0.561)	-0.646*** (0.000)
Sales_Growth	0.019 (0.283)	-0.040*** (0.005)	-0.155*** (0.000)	-0.196*** (0.000)
Confident	0.004* (0.065)	0.010 (0.113)	0.012* (0.066)	0.043*** (0.002)
High_Performance_Pay	0.009*** (0.000)	0.033*** (0.000)	0.037*** (0.000)	0.093*** (0.000)
Age_40_49	0.023* (0.051)	0.039 (0.258)	0.025 (0.498)	0.092 (0.188)
Age_50_59	0.024** (0.044)	0.046 (0.188)	0.033 (0.385)	0.107 (0.134)
Greater_60	0.025** (0.034)	0.041 (0.232)	0.037 (0.333)	0.107 (0.128)
Constant	-0.095*** (0.000)	-0.129*** (0.007)	0.121** (0.019)	-0.134 (0.189)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	13,885	13,718	15,843	12,883
Adjusted R-squared	0.328	0.307	0.296	0.322

5.3 Pilot-CEOs, Real Earnings Management, and Future Performance

Table 10 presents the average performance for the different categories of firms for years $t+1$, $t+2$, and $t+3$. Meet/Beat*RM/REM represents firms that use real earnings management to meet/beat earnings benchmarks. As predicted by Gunny (2010) these firms perform better than firms that meet/beat earnings benchmarks without the use of real earnings management (Meet/Beat firms). Furthermore, Meet/Beat firms (not using REM) perform better than firms that barely miss earnings benchmarks (JustMiss Firms). Although table 10 shows stronger subsequent performance for these firms, inferences cannot be made without controlling for other influencing factors.

Table 10: The Average Adjusted ROA for Pilot-CEO Firms that use Real Earnings Management to Meet/Beat Earnings Benchmarks. Table 10 presents the average adjusted ROA (in millions) for the different categories of firms in year $t+1$, $t+2$, and $t+3$. Variables definitions can be found in Appendix A.

Sample	Adjroa $t+1$	Adjroa $t+2$	Adjroa $t+3$
JustMiss	-1.00	-1.20	-1.70
Meet/Beat	-0.90	-1.00	-1.44
PilotCEO*Meet/Beat	0	-0.30	-1.20
Meet/Beat*RM/REM	2.70	2.20	2.70
PilotCEO*Meet/Beat*RM/REM ¹⁵	10.9	15.4	9.90

Table 11 presents the results for estimating equation (8) which examines the relationship between Pilot-CEO firms that use real earnings management to meet/beat earnings benchmarks and future performance using ROA as a measure of future performance. The coefficient of interest, PilotCEO*Meet/Beat*RM/Indicator, represents the performance of Pilot-CEO firms that meet/beat earnings benchmarks using real earnings management. The results indicate that these firms have significantly stronger performance the year following the use of real earnings management. These results are robust to using AdjROA $t+2$ and AdjROA $t+3$. Pilot-CEO firms that use abnormal cash flows do not have significantly stronger performance the following year.

¹⁵ For the sake of conciseness, I only use the combined measure of real earnings management in this table. However, the findings are consistent with all the measures of real earnings management.

However, they do have significantly stronger performance when using AdjROAt+2 and AdjROAt+3.

The second column of table 11 presents the results for the abnormal production costs sample. The coefficient on Meet/Beat*RM/Abprod represents the performance of non-Pilot-CEO firms that use real earnings management to meet/beat earnings benchmarks. On average, these firms perform 4.2% better the subsequent year. The coefficient on Meet/Beat represents the performance of non-pilot-CEO firms that barely meet or beat earnings benchmarks without the use of real earnings management. On average, the performance of these firms is 1% better. The coefficient on JustMiss represents the performance of firms that do not use real earnings management and barely miss earnings benchmarks. On average, these firms perform 0.04% better the subsequent year. These findings fall in line with the findings of Gunny (2010). More importantly however, Pilot-CEO firms that use real earnings management to meet/beat earnings benchmarks perform 7.4% better on average. As predicted, these results indicate that Pilot-CEO firms perform better than all of the previously mentioned firms.

The third and fourth columns of table 11 present the results for the abnormal discretionary expenditures sample and the combined measure sample. Consistent with the abnormal production costs sample, firms with Pilot-CEOs that use real earnings management to meet or beat earnings benchmarks perform better than JustMiss firms and meet/beat firms. They also perform better than Non-Pilot-CEO firms that use real earnings management to meet or beat earnings benchmarks. In the abnormal cash flows sample (presented in column 1) however, it does not appear that Pilot-CEO firms have significantly stronger performance the year after using real earnings management. It also appears that both JustMiss firms and Meet/Beat firms perform better than firms with Pilot-CEOs. Pilot-CEO firms also perform worse than Non-Pilot-CEO firms that use real earnings management to meet or beat earnings benchmarks.

Table 11: The Association between Pilot-CEOs in Meet/Beat Firms, Real Activities Manipulation, and Future Performance (ROA). This table presents the results for estimating model (8). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjROAt+1	AdjROAt+1	AdjROAt+1	AdjROAt+1
PilotCEO	0.006 (0.335)	0.005 (0.385)	0.005 (0.395)	0.005 (0.457)
JustMiss	0.005** (0.042)	0.004* (0.092)	0.002 (0.284)	0.004* (0.081)
Meet/Beat	0.009*** (0.001)	0.010*** (0.000)	0.008*** (0.000)	0.010*** (0.000)
RM/Abcash	-0.110*** (0.000)			
PilotCEO*Meet/Beat*RM/Abcash	0.001 (0.442)			
RM/Abprod		-0.032*** (0.000)		
PilotCEO*Meet/Beat*RM/Abprod		0.074*** (0.000)		
RM/Disc			0.005 (0.22)	
PilotCEO*Meet/Beat*RM/Disc			0.084*** (0.000)	
RM/REM				-0.019*** (0.000)
PilotCEO*Meet/Beat*RM/REM				0.043*** (0.000)
Meet/Beat*RM/indicator	0.057*** (0.000)	0.042*** (0.002)	0.049*** (0.000)	0.020*** (0.000)
Meet/Beat*PilotCEO	0.002 (0.377)	0.036*** (0.000)	0.047*** (0.000)	0.031*** (0.000)
PilotCEO*RM/indicator	0.006 (0.786)	-0.021 (0.459)	0.000 (0.998)	0.038** (0.010)
Size	0.009*** (0.000)	0.007*** (0.000)	0.007*** (0.000)	0.007*** (0.000)
MTB	-0.000* (0.077)	-0.000 (0.113)	-0.000 (0.206)	-0.000 (0.128)
Lev	-0.020*** (0.008)	-0.024** (0.024)	-0.012 (0.204)	-0.041*** (0.001)
AdjROA	0.294*** (0.000)	0.304*** (0.000)	0.316*** (0.000)	0.307*** (0.000)
Sales_Growth	-0.039*** (0.000)	-0.037*** (0.000)	-0.036*** (0.000)	-0.037*** (0.000)
Confident	-0.016*** (0.000)	-0.014*** (0.000)	-0.011*** (0.000)	-0.014*** (0.000)
High_Performance_Pay	0.001 (0.658)	0.001 (0.721)	0.000 (0.902)	0.001 (0.760)
Constant	-0.024 (0.336)	-0.006 (0.810)	-0.006 (0.810)	-0.004 (0.867)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	13,431	12,894	13,125	11,678
Adjusted R-squared	0.178	0.176	0.172	0.175

Table 12 presents the results for estimating equation (8) using adjusted cash flows from operations as an alternative measure of future performance¹⁶. The results are consistent with my previous findings from table 11. As predicted firms with Pilot-CEOs that use real earnings management to meet/beat earnings benchmarks have significantly stronger performance in the future. Additionally, they perform better than firms that meet/beat earnings benchmarks without the use of real earnings management and firms that barely miss earnings benchmarks. These findings show that my results are robust to using alternative measures for future performance.

These results suggest that Pilot-CEOs use real earnings management for non-opportunistic reasons. They are aware of the negative long-term consequences of missing earnings benchmarks and are willing to take a strategic risk and use real earnings management to meet/beat those benchmarks. As a result, these firms have stronger operating performance in the future. If Pilot-CEOs were using real earnings management for opportunistic reasons, it would have a negative impact on the firm's future performance.

¹⁶ I also attempt to use multiple cost of capital measures as alternatives for future performance, but I find no significant results. This is most probably due to the fact that I lose a large number of observations when I merge my data with data from CRSP and I/B/E/S, especially since I am examining firms around earnings benchmarks.

Table 12: The Association between Pilot-CEOs in Meet/Beat Firms, Real Activities Manipulation, and Future Performance (CFO). This table presents the results for estimating model (8). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjCFO _{t+1}	AdjCFO _{t+1}	AdjCFO _{t+1}	AdjCFO _{t+1}
PilotCEO	0.002 (0.653)	0.002 (0.703)	0.002 (0.732)	-0.002 (0.480)
JustMiss	0.004 (0.179)	0.004 (0.159)	0.004 (0.140)	0.002 (0.269)
Meet/Beat	0.014*** (0.007)	0.014*** (0.005)	0.015*** (0.004)	0.009*** (0.005)
RM/Abcash	0.002 (0.788)			
PilotCEO*Meet/Beat*RM/Abcash	0.045*** (0.000)			
RM/Abprod		0.024*** (0.000)		
PilotCEO*Meet/Beat*RM/Abprod		0.029*** (0.002)		
RM/Disc			0.013***	
PilotCEO*Meet/Beat*RM/Disc			0.037*** (0.000)	
RM/REM				0.014*** (0.000)
PilotCEO*Meet/Beat*RM/REM				0.060*** (0.000)
Meet/Beat*RM/indicator	0.070*** (0.002)	0.026** (0.017)	-0.010 (0.331)	0.013 (0.296)
Meet/Beat*PilotCEO	-0.002 (0.809)	-0.010 (0.430)	-0.009 (0.456)	-0.007 (0.559)
PilotCEO*RM/Indicator	-0.017 (0.255)	0.015 (0.353)	0.009 (0.578)	0.009 (0.534)
Size	0.007*** (0.000)	0.007*** (0.000)	0.007*** (0.000)	0.005*** (0.000)
MTB	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000 (0.569)

Table 12 continued

VARIABLES	AdjCFO _{t+1}	AdjCFO _{t+1}	AdjCFO _{t+1}	AdjCFO _{t+1}
Lev	0.001 (0.903)	0.005 (0.646)	0.003 (0.753)	-0.018** (0.016)
CFO	0.478*** (0.000)	0.464*** (0.000)	0.477*** (0.000)	0.607*** (0.000)
Sales_Growth	-0.011** (0.011)	-0.011*** (0.008)	-0.013*** (0.004)	-0.008** (0.036)
Confident	-0.002 (0.382)	-0.003 (0.337)	-0.002 (0.364)	-0.008*** (0.000)
High_Performance_Pay	0.002 (0.480)	0.002 (0.339)	0.002 (0.390)	0.002 (0.330)
Age_40_49	-0.023 (0.151)	-0.023 (0.148)	-0.024 (0.145)	-0.016 (0.110)
Age_50_59	-0.020 (0.204)	-0.020 (0.204)	-0.020 (0.200)	-0.011 (0.246)
Greater_60	-0.019 (0.236)	-0.019 (0.239)	-0.019 (0.233)	-0.010 (0.290)
Constant	-0.064*** (0.002)	-0.063*** (0.002)	-0.065*** (0.002)	-0.075*** (0.000)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	11,790	11,790	11,790	11,790
Adjusted R-squared	0.285	0.290	0.286	0.444

CHAPTER 6. ROBUSTNESS TESTS

6.1 CEO Overconfidence, Real Earnings Management, and Future Performance

Prior literature suggests that overconfident CEOs manage earnings to meet/beat earnings benchmarks for opportunistic reasons (Hribar and Yang 2010; Hsieh and Bedard 2014). Prior literature also suggests that overconfident CEOs are also highly likely to take value-destroying actions (Malmendier and Tate 2008). This evidence suggests that overconfident CEOs should use real earnings management to meet/beat earnings benchmarks for opportunistic reasons, which should lead to poor future performance. Hence, if both firms with Pilot-CEOs and overconfident CEOs have superior performance after using real earnings management to meet/beat earnings benchmarks then my results would simply replicate the findings of Gunny (2010). To examine the relationship between overconfident CEOs, real earnings management, and future performance I use the following model:

$$\begin{aligned} \text{AdjROA}_{t+i} = & \beta_0 + \beta_1 \text{Confident} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{RM/indicator} + \\ & \beta_5 \text{Confident*Meet/beat*RM/indicator} + \beta_6 \text{Meet/Beat*RM/indicator} + \\ & \beta_7 \text{Meet/Beat*Confident} + \beta_8 \text{Confident*RM/indicator} + \beta_9 \text{Size} + \beta_{10} \text{MTB} + \beta_{11} \text{Lev} + \\ & \beta_{12} \text{ROA} + \beta_{13} \text{SalesGrowth} + \beta_{14} \text{PilotCEO} + \beta_{15} \text{HighPerformancePay} + \\ & \beta_{16} \text{AgeDummy40} + \beta_{17} \text{AgeDummy50} + \beta_{18} \text{AgeDummy60} + \varepsilon \end{aligned} \quad (9)$$

where:

- $t = 1, 2, 3$
- **Confident** is an indicator variable equal to 1 if a CEO is classified as overconfident according to Hirshleifer et al. (2012) and 0 otherwise.
- **Confident*Meet/beat*RM/Indicator** is an indicator variable equal to 1 if a firm with an overconfident CEO uses 1 of the 4 measures of real earnings management to meet/beat earnings benchmarks and 0 otherwise.

All other variables are as defined previously. I control for various firm and CEO characteristics such as size, leverage, ROA, CEO tenure, and risk-rewarding compensation contracts among others.

Table 13 presents results for estimating equation (9) which examines the relationship between overconfident CEOs who use real earnings management to meet/beat earnings benchmarks and future performance. The coefficient of interest, $\text{Confident} * \text{Meet/Beat} * \text{RM/Indicator}$, represents the performance firms with overconfident CEOs that meet/beat earnings benchmarks using real earnings management. The results indicate that these firms have significantly weaker performance the year following the use of real earnings management. Furthermore, it appears that firms with overconfident CEOs who use real earnings management perform worse than meet/beat firms that don't use real earnings management and firms that barely miss earnings benchmarks. These results are robust to using $\text{AdjROAt}+2$ and $\text{AdjROAt}+3$ and they are also robust to using adjusted cash flows from operations as an alternative measure of future performance (un-tabulated). This indicates that my findings are not simply a replication of Gunny's (2010) findings and suggests that overconfident CEOs use real earnings management for opportunistic reasons whereas risk-taking CEOs use real earnings management for non-opportunistic reasons.

Table 13: The Association between Overconfident CEOs in Meet/Beat Firms, Real Activities Manipulation, and Future Performance. This table presents the results for estimating model (9). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjROAt+1	AdjROAt+1	AdjROAt+1	AdjROAt+1
Confident	-0.011*** (0.000)	-0.011*** (0.000)	-0.012*** (0.000)	-0.012*** (0.000)
JustMiss	0.007*** (0.003)	0.004 (0.112)	0.003 (0.147)	0.004* (0.079)
Meet/Beat	0.005*** (0.002)	0.006** (0.032)	0.007** (0.048)	0.008*** (0.000)
RM/Abcash	-0.058*** (0.000)			
Confident*Meet/Beat*RM/Abcash	-0.009 (0.409)			
RM/Abprod		-0.043*** (0.000)		
Confident*Meet/Beat*RM/Abprod		-0.018** (0.039)		
RM/Disc			-0.012*** (0.001)	
Confident*Meet/Beat*RM/Disc			-0.026** (0.043)	
RM/REM				-0.041*** (0.000)
Confident*Meet/Beat*RM/REM				-0.014* (0.079)
Meet/Beat*RM/indicator	0.025** (0.015)	0.058*** (0.000)	-0.014 (0.120)	0.004 (0.661)
Meet/Beat*Confident	0.017** (0.024)	0.013*** (0.000)	0.022*** (0.005)	-0.028 (0.244)
Confident*RM/Indicator	-0.009 (0.492)	0.000 (0.969)	-0.011 (0.260)	-0.004 (0.642)
MTB	0.000 (0.917)	0.000 (0.948)	0.000 (0.649)	0.000 (0.908)

Table 13 continued

VARIABLES	AdjROAt+1	AdjROAt+1	AdjROAt+1	AdjROAt+1
Lev	-0.088*** (0.000)	-0.098*** (0.000)	-0.104*** (0.000)	-0.098*** (0.000)
JustMiss	-0.179*** (0.000)	-0.186*** (0.000)	-0.190*** (0.000)	-0.187*** (0.000)
Sales_Growth	-0.018*** (0.000)	-0.023*** (0.000)	-0.023*** (0.000)	-0.023*** (0.000)
PilotCEO	0.002 (0.622)	0.002 (0.707)	0.002 (0.681)	0.001 (0.858)
High_Performance_Pay	0.005 (0.103)	0.004 (0.186)	0.003 (0.344)	0.004 (0.213)
Age_40_49	0.015 (0.296)	0.008 (0.570)	0.006 (0.666)	0.007 (0.643)
Age_50_59	0.021 (0.115)	0.016 (0.263)	0.014 (0.326)	0.015 (0.305)
Greater_60	0.015 (0.273)	0.009 (0.536)	0.007 (0.632)	0.008 (0.599)
Constant	0.023*** (0.000)	0.015* (0.057)	0.012** (0.045)	0.031* (0.076)
Industry FE Year FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	14368	12713	14234	11506
Adjusted R-squared	0.378	0.366	0.357	0.364

6.2 Pilot-CEOs, Real Earnings Management, and Investment Efficiency

As a robustness test, I examine the relationship between Pilot-CEOs that use real earnings management to meet/beat earnings benchmarks and investment efficiency. Fazzari et al. (1988) states that a firm's cash flows play a significant role in its investment level. Furthermore, Richardson (2006) states that firms with high levels of free cash flows are likely to overinvest and firms with low levels of free cash flows are likely to underinvest. Based on this evidence a firm's cash flows play a significant role in its investment efficiency.

Prior literature suggests that the use of real earnings management results in underinvestment the following year (Kim and Sohn 2013; Cohen and Zarowin 2008). Given the importance of cash

flows in investment efficiency, one explanation for this is that firms that use real earnings management for opportunistic reasons have poor future cash flows from operations (Gunny 2010). However, Pilot-CEOs do not use real earnings management for opportunistic reasons and have strong future cash flows from operations. Furthermore, Pilot-CEOs are less likely to forego positive NPV projects due to their willingness to take higher levels of risk. Therefore, it is unlikely that firms with Pilot-CEOs underinvest in periods following real earnings management.

Following Biddle et al. (2009), first I estimate a firm-specific model of investment as a function of sales growth, which measures growth opportunities. The residuals from this model represent deviations from expected investment. The industry-year model is as follows:

$$\text{Investment}_{t+1} = \beta_0 + \beta_1 \text{SalesGrowth} + \epsilon_{i,t+1} \quad (10)$$

Where:

- Investment_{t+1} is total investment is defined by Compustat as [(XRD+CAPX+AQC-SPPE)*100]/AT_{t-1}.
- SalesGrowth is the percentage change in sales from year t-1 to t.

I divide the residuals into quartiles and classify firms in the top quartile as over-investing and firms in bottom quartile as under-investing. I use these two groups as dependent variables and run a multinomial logit model that predicts the likelihood that Pilot-CEOs who use real earnings management to meet/beat earnings benchmarks over or under invest. The model is as follows:

$$\begin{aligned} \text{InvestLevel}_{t+1} = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{PilotCEO*Meet/Beat*RM/REM} + \beta_3 \\ & \text{RM/REM} + \beta_4 \text{Meet/beat} + \beta_5 \text{Meet/Beat*RM/REM} + \beta_6 \text{Meet/Beat*PilotCEO} \\ & \beta_7 \text{PilotCEO*RM/REM} + \beta_8 \text{Confident} + \beta_9 \text{Size} + \beta_{10} \text{ROA} + \beta_{11} \text{Lev} + \beta_{12} \text{MTB} + \\ & \beta_{13} \text{AgeDummy40} + \beta_{14} \text{AgeDummy50} + \beta_{15} \text{AgeDummy60} + \beta_{16} \\ & \text{HighPerformancePay} + \beta_{17} \text{SalesGrowth} + \beta_{18} \text{JustMiss} + \epsilon \end{aligned} \quad (11)$$

Table 14 presents the results from estimating equation (11) which examines the relationship between Pilot-CEOs that use real earnings management to meet/beat earnings benchmarks and future investment efficiency. The coefficient of interest, PilotCEO*Meet/Beat*RM/Indicator, represents the relationship between Pilot-CEO firms that meet/beat earnings benchmarks using real earnings management and subsequent under or over investment. The results indicate that there

is a negative and significant ($p\text{-value} < 0.01$) relationship between these firms run by Pilot-CEOs who meet/beat earnings benchmarks using real earnings management and under investment. The result is robust to using all four measures of real earnings management. This suggests that Pilot-CEOs of firms that used real earnings management to meet or beat benchmarks are less likely to underinvest and not more likely to overinvest (the coefficient in column 2 is insignificant). Together these results provide further evidence that Pilot-CEOs take a strategic risk and use real earnings management in a non-opportunistic fashion. If Pilot-CEOs were using real earnings management for opportunistic reasons, then shareholder value would be destroyed and they would likely underinvest in subsequent periods. These results, however, show the opposite.

Table 14: The Association between Pilot-CEOs in Meet/Beat Firms, Real Activities Manipulation, and Investment Efficiency. This table presents the results for estimating model (11). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	UnderInvest	OverInvest
PilotCEO	-0.215 (0.126)	-0.109 (0.524)
PilotCEO*Meet/Beat*RM/REM	-17.81*** (0.000)	1.22 (0.26)
RM/REM	0.0901 (0.303)	0.209* (0.082)
Meet/Beat	-0.140 (0.177)	-0.223** (0.018)
Meet/Beat*RM/REM	0.336 (0.168)	0.007 (0.982)
Meet/Beat*PilotCEO	-0.064 (0.887)	-0.275 (0.697)
PilotCEO*RM/REM	-0.112 (0.681)	-0.243 (0.504)
Confident	-0.343*** (0.000)	0.124* (0.070)
Size	-0.289*** (0.000)	-0.168*** (0.000)
ROA	0.572* (0.0714)	-0.085 (0.647)
Lev	-0.947*** (0.000)	0.068 (0.726)
MTB	-8.91e-05 (0.813)	-3.36e-05 (0.899)
Age_40_49	-0.0328 (0.873)	-0.111 (0.635)
Age_50_59	-0.126 (0.559)	0.546** (0.0345)
Greater_60	-0.219 (0.315)	0.002 (0.995)
High_Performance_Pay	-0.167*** (0.007)	0.214*** (0.002)
SalesGrowth	-0.160* (0.0545)	0.803*** (0.000)
JustMiss	0.000 (0.892)	0.000 (0.997)
Constant	0.989* (0.0634)	-2.759*** (0.000)
Industry FE	YES	YES
Year FE	YES	YES
Observations	12,883	12,883

6.3 Alternative Indicators for Real Earnings Management

6.3.1 Real Earnings Management Terciles

Following Gunny (2010) I identify firms as using real earnings management if the specific measure for a firm is in the top quintile in my main analysis. For example, I if a firm's abnormal production costs are in the top quintile then I classify that firm as using real earnings management. One concern regarding this method is that I may only be capturing the extreme values for each measure. Although higher values are an indication of real earnings management, extreme values may be an indication of an excessive use of real earnings management. Therefore, I may be capturing firms that use real earnings management excessively rather than all firms that engage in real earnings management. I mitigate this concern by identifying firms as using real earnings management if the specific measure for a firm is in the top tercile. This will help include more firms that are likely to be engaging in real earnings management and mitigate the concern that I am only capturing firms that are using real earnings management excessively.

Table 15 presents the results for estimating a modified equation (8) where I use terciles instead of quintiles to identify firms that use real earnings management. For example, the indicator variable for abnormal production costs, $RM/Abprod$, is now equal 1 if the firm's abnormal production costs are in the top tercile and 0 otherwise. I find that even with the alternative indicator for real earnings management, Pilot-CEO firms that use real earnings management to meet/beat earnings benchmarks have stronger future performance. These results are robust to using $AdjROA_{t+2}$ and $AdjROA_{t+3}$. Furthermore, I find that these firms perform better than firms that barely miss earnings benchmarks and firms that meet/beat earnings benchmarks without the use of real earnings management. The findings from this table, although slightly weaker, are consistent with the findings of table 10 and lend further support to my hypothesis that Pilot-CEO firms that use real earnings management to meet/beat earnings benchmarks have stronger future performance.

Table 15: The Association between Pilot-CEOs in Meet/Beat Firms, Real Activities Manipulation (Using Terciles), and Future Performance. This table presents the results for estimating a modified model (8) where the real earnings management indicator is equal to 1 if a measure is in the top tercile and 0 otherwise. *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjROAt+1	AdjROAt+1	AdjROAt+1	AdjROAt+1
PilotCEO	0.004 (0.580)	0.003 (0.666)	0.004 (0.332)	0.004 (0.556)
JustMiss	0.008*** (0.001)	0.005* (0.069)	0.009*** 0.000	0.004* (0.081)
Meet/Beat	0.010*** (0.000)	0.007*** (0.009)	0.011*** (0.000)	0.010*** (0.000)
RM/Abcash	-0.100*** (0.000)			
PilotCEO*Meet/Beat*RM/Abcash	0.031* (0.094)			
RM/Abprod		-0.063*** (0.000)		
PilotCEO*Meet/Beat*RM/Abprod		0.025** (0.032)		
RM/Disc			0.000 (0.314)	
PilotCEO*Meet/Beat*RM/Disc			0.058** (0.042)	
RM/REM				-0.019*** (0.000)
PilotCEO*Meet/Beat*RM/REM				0.013* (0.067)
Meet/Beat*RM/indicator	0.061*** (0.000)	0.019*** (0.000)	0.037*** (0.000)	0.009** (0.041)
Meet/Beat*PilotCEO	0.005 (0.398)	0.011** (0.017)	0.024*** (0.000)	0.017** (0.026)
PilotCEO*RM/indicator	0.002 (-0.215)	0.000 (-0.952)	0.000 (-0.746)	0.001 (-0.448)
Size	0.012*** (0.000)	0.013*** (0.000)	0.005*** (0.000)	0.009*** (0.000)

Table 15 continued

VARIABLES	AdjROAt+1	AdjROAt+1	AdjROAt+1	AdjROAt+1
MTB	0.000 (0.484)	0.000 (0.609)	0.000 (0.212)	0.000 (0.128)
Lev	-0.070*** (0.000)	-0.099*** (0.000)	-0.048*** (0.000)	-0.039*** (0.000)
AdjROA	0.300*** (0.000)	0.272*** (0.000)	0.291*** (0.000)	0.300*** (0.000)
Sales_Growth	-0.028** (0.017)	-0.025** (0.024)	-0.006 (0.608)	-0.011* (0.087)
Confident	-0.025*** (0.000)	-0.030*** (0.000)	-0.022*** (0.000)	-0.031*** (0.000)
High_Performance_Pay	-0.004 (0.197)	-0.002 (0.581)	0.000 (0.846)	0.000 (0.661)
Constant	-0.009 (0.568)	-0.002 (0.470)	-0.001 (0.734)	-0.002 (0.955)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	13,431	12,894	13,125	11,678
Adjusted R-squared	0.171	0.166	0.169	0.17

6.3.2 Pilot-CEOs in all Meet/Beat Firms

By using both Quintiles and Terciles to identify firms that use real earnings management, I leave less room for the exclusion of firms that may be engaging in real earnings management. However, as can be seen from table 9, I find a strong relationship between Pilot-CEOs in Meet/Beat firms and the real earnings management measures. Given this, the concern that I may not be capturing all the firms that are engaging in real earnings management even with the use of both quintiles and terciles still exists. To further mitigate this concern, I examine the relationship between all Meet/Beat firms with Pilot-CEOs and future performance. To do this I run the following model:

$$\begin{aligned}
 \text{AdjROA } t+i = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{PilotCEO*Meet/beat} \\
 & + \beta_5 \text{Size} + \beta_6 \text{MTB} + \beta_7 \text{Lev} + \beta_8 \text{ROA} + \beta_9 \text{SalesGrowth} + \beta_{10} \text{Confident} + \\
 & \beta_{11} \text{HighPerformancePay} + \beta_{12} \text{AgeDummy40} + \beta_{13} \text{AgeDummy50} + \\
 & \beta_{14} \text{AgeDummy60} + \varepsilon
 \end{aligned} \tag{12}$$

Table 16 presents the results from estimating equation (12) which examines the relationship between Pilot-CEOs in Meet/Beat firms and future performance. The coefficient of interest, PilotCEO*Meet/Beat, represents the performance of all Pilot-CEO firms that meet or beat earnings benchmarks. The results indicate that these firms have significantly stronger performance the year after they barely meet or beat earning benchmarks. These results are consistent even when using AdjROA_{t+2} and AdjROA_{t+3}. The results also indicate that these firms perform better than firms that barely miss earnings benchmarks and non-Pilot-CEO firms that meet/beat earnings benchmarks. For example, firms that barely miss earnings benchmarks (JustMiss firms) perform 0.07% better on average the year after they miss earnings benchmarks. Non-Pilot-CEO firms that meet/beat earnings benchmarks (Meet/Beat firms) perform 0.08% better on average the year after they meet or beat earnings benchmarks. Pilot-CEO firms that meet or beat earnings benchmarks (PilotCEO*Meet/Beat firms) however, perform 2.1% better on average the year after they meet or beat earnings benchmarks.

The results from table 16 further mitigate the concern that I am not capturing all Pilot-CEO firms that use real earnings management to meet or beat earnings benchmarks. They also support the notion that Pilot-CEOs are willing to take strategic risks to avoid the negative long-term consequences of missing earnings benchmarks and as a result their firms perform better in the future.

Table 16: The Association between Pilot-CEOs in Meet/Beat Firms and Future Performance. This table presents the results for estimating a modified model (12). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjROA _{t+1}	AdjROA _{t+2}	AdjROA _{t+3}
pilotceo	0.005 (0.314)	0.003 (0.658)	0.005 (0.509)
JustMiss	0.007*** (0.000)	0.006** (0.023)	0.003 (0.321)
Meet/Beat	0.008*** (0.000)	0.008*** (0.002)	0.007** (0.038)
PilotCEO*Meet/Beat	0.021**	0.023**	0.012*

Table 16 continued

VARIABLES	AdjROA _{t+1}	AdjROA _{t+2}	AdjROA _{t+3}
	(0.017)	(0.034)	(0.088)
Size	0.006*** (0.000)	0.008*** (0.000)	0.011*** (0.000)
MTB	0.000 (0.239)	-0.000 (0.192)	0.000*** (0.000)
Lev	-0.028*** (0.009)	-0.013 (0.324)	-0.009 (0.563)
ROA	0.523*** (0.000)	0.403*** (0.000)	0.321*** (0.000)
Sales_Growth	-0.026** (0.011)	-0.035*** (0.000)	-0.017*** (0.002)
Confident	-0.014*** (0.000)	-0.006* (0.083)	-0.004 (0.304)
High_Performance_Pay	-0.003 (0.381)	-0.000 (0.901)	0.003 (0.403)
Age_40_49	-0.010 (0.433)	-0.004 (0.828)	-0.022* (0.081)
Age_50_59	-0.006 (0.603)	0.000 (0.988)	-0.020* (0.099)
Greater_60	-0.001 (0.903)	0.005 (0.801)	-0.014 (0.276)
Constant	-0.026 (0.197)	-0.042* (0.088)	-0.058*** (0.002)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	15,708	13,676	11,908
Adjusted R-squared	0.259	0.173	0.124

6.4 Alternative Earnings Benchmarks: Analyst Forecasts

Prior literature suggests that analyst forecasts are another benchmark for which managers are likely to use earnings management to meet/beat (Burgstahler and Dichev, 1997 and Degeorge et al., 1999). Furthermore, Roychowdhury (2006) finds evidence that managers use real earnings management to meet/beat earnings benchmarks. Therefore, analyst forecasts provide an additional

setting that allows me to examine whether or not firms with Pilot-CEOs use real earnings management to meet/beat earnings benchmarks.

However, analyst forecasts differ from zero earnings and prior year's earnings benchmarks because analyst forecasts constantly change prior to the earnings announcement. Therefore, analyst forecasts present what Roychowdhury (2006) called a "moving target for real activities manipulation". Because of the inability to determine which forecast managers use as their target, Roychowdhury (2006) uses the mean analyst forecast as the benchmark for their examination. Nevertheless, I follow Roychowdhury and examine the relationship between Pilot-CEO firms, real earnings management and analyst forecasts. To do this I run the following model:

$$\begin{aligned} \text{RM Measure} = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{PilotCEO} * \text{Meet/beat} \\ & + \beta_5 \text{Size} + \beta_6 \text{MTB} + \beta_7 \text{Lev} + \beta_8 \text{ROA} + \beta_9 \text{SalesGrowth} + \beta_{10} \text{Confident} + \\ & \beta_{11} \text{HighPerformancePay} + \beta_{12} \text{AgeDummy40} + \beta_{13} \text{AgeDummy50} + \\ & \beta_{14} \text{AgeDummy60} + \varepsilon \end{aligned} \quad (13)$$

Where:

- RM Measure is one of the four real earnings management measures previously defined.
- JustMiss is a variable equal to 1 if a firm's actual Earnings Per Share (EPS) minus the mean analyst forecast for EPS is between 0 and -0.01 and 0 otherwise.
- Meet/Beat is a variable equal to 1 if a firm's actual EPS minus the mean analyst for EPS is between 0 and 0.01 and 0 otherwise.
- PilotCEO*Meet/Beat is a variable equal to 1 if a PilotCEO is in a Meet/Beat firm and 0 otherwise.

Table 17 presents the results from estimating equation (13) which examines the relationship between Pilot-CEO firms, real earnings management, and analyst forecasts. The results indicate that firms with Pilot-CEOs are likely to engage in real activities manipulation using abnormal production costs and abnormal discretionary expenditures to meet/beat analyst forecasts. These results are consistent with my prior findings and provide further support to the notion that firms with Pilot-CEOs are likely to use real earnings management to meet/beat earnings benchmarks. It is important to note that the results for this test are less significant than my previous findings. This is most likely due to the fact that a large number of observations are lost when I merge my data

with the I/B/E/S analyst database. Furthermore, I use the mean analyst forecast¹⁷ because analyst forecasts act as a moving target for managers making it more difficult to determine which forecast managers use as their target.

Taken together, this evidence suggests that Pilot-CEOs are likely to take a risk and engage in real activities manipulation to meet/beat analyst forecasts regardless of the negative short-term consequences. However, in order to determine if it is a strategic risk that adds long-term shareholder value, future performance must be examined. To examine this relationship, I run the following model:

$$\begin{aligned} \text{AdjROA } t+i = & \beta_0 + \beta_1 \text{PilotCEO} + \beta_2 \text{JustMiss} + \beta_3 \text{Meet/beat} + \beta_4 \text{PilotCEO} * \text{Meet/beat} \\ & + \beta_5 \text{Size} + \beta_6 \text{MTB} + \beta_7 \text{Lev} + \beta_8 \text{ROA} + \beta_9 \text{SalesGrowth} + \beta_{10} \text{Confident} + \\ & \beta_{11} \text{HighPerformancePay} + \beta_{12} \text{AgeDummy40} + \beta_{13} \text{AgeDummy50} + \\ & \beta_{14} \text{AgeDummy60} + \varepsilon \end{aligned} \tag{14}$$

Table 18 presents the results from estimating equation (14) which examines the relationship between Pilot-CEOs that use real earnings management to meet/beat analyst forecasts and future performance. The coefficient of interest, PilotCEO*Meet/Beat, represents the performance of all Pilot-CEO firms that meet or beat analyst forecasts. These results are consistent with my previous findings and indicate that Pilot-CEO firms have stronger performance the year after meeting or beating analyst forecasts. These results remain the same even when I use cash flows from operations as an alternative measure of future performance. Consistent with my prior findings, Pilot-CEO firms that use real earnings management perform better than JustMiss firms and non-Pilot-CEO meet/beat firms.

These results provide further support to the notion that Pilot-CEOs use real earnings management for non-opportunistic reasons. They have stronger operating performance in the future because they are aware of the negative consequences of missing earnings benchmarks and take a strategic risk to avoid those negative consequences

¹⁷ In un-tabulated results I use the median analyst forecast as my benchmark and find similar results.

Table 17: The Association between Pilot-CEOs, Real Earnings Management, and Analyst Forecasts. This table presents the results for estimating model (13). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are clustered by firm. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	Abcash	Abprod	Disc	REM
PilotCEO	-0.006 (0.103)	-0.010 (0.322)	-0.007 (0.468)	-0.017 (0.445)
JustMiss	-0.006 (0.271)	-0.011 (0.543)	-0.032 (0.120)	-0.066 (0.139)
Meet/Beat	0.059** (0.031)	0.065** (0.044)	0.039** (0.029)	0.020* (0.084)
PilotCEO*Meet/Beat	0.012 (0.440)	0.058* (0.088)	0.106** (0.015)	0.092* (0.075)
Size	-0.010*** (0.000)	0.010*** (0.000)	0.027*** (0.000)	0.032*** (0.000)
MTB	-0.000 (0.465)	0.000 (0.281)	-0.000 (0.433)	-0.000 (0.369)
Lev	0.111*** (0.000)	-0.003 (0.899)	0.060*** (0.006)	0.144*** (0.001)
ROA	-0.308*** (0.002)	0.743*** (0.000)	0.191*** (0.000)	-0.946*** (0.000)
Sales_Growth	0.005 (0.882)	0.007 (0.688)	-0.125*** (0.004)	-0.263*** (0.000)
Confident	0.004 (0.277)	0.003 (0.551)	0.010 (0.109)	0.010 (0.351)
High_Performance_Pay	0.004 (0.146)	0.014*** (0.002)	0.024*** (0.000)	0.047*** (0.000)
Age_40_49	0.017 (0.411)	-0.073* (0.060)	0.088* (0.077)	0.104 (0.218)
Age_50_59	0.010 (0.636)	-0.066* (0.091)	0.077 (0.117)	0.084 (0.324)
Greater_60	0.009 (0.652)	-0.051 (0.187)	0.072 (0.151)	0.059 (0.490)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	9,685	7,709	8,351	6,612
Adjusted R-squared	0.409	0.636	0.603	0.636

Table 18: The Association between Pilot-CEOs, Analyst Forecasts, and Future Performance. This table presents the results for estimating a model (14). *, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Coefficients are presented throughout the table and p-values are in parentheses. Standard errors are robust. Industry and year fixed effects are used in all models. Variables definitions can be found in Appendix A.

VARIABLES	AdjROA _{t+1}	AdjROA _{t+2}	AdjROA _{t+3}
PilotCEO	0.002 (0.773)	-0.003 (0.575)	-0.004 (0.551)
JustMiss	0.025*** (0.004)	0.022** (0.013)	0.036*** (0.000)
Meet/Beat	0.023*** (0.000)	0.027*** (0.000)	0.028*** (0.000)
PilotCEO*Meet/Beat	0.088** (0.034)	0.058** (0.022)	0.091*** (0.001)
Size	0.007*** (0.000)	0.007*** (0.000)	0.006*** (0.000)
MTB	0.000 (0.545)	-0.000** (0.027)	0.000* (0.057)
Lev	-0.053*** (0.000)	-0.043*** (0.000)	-0.033*** (0.000)
ROA	0.264*** (0.000)	0.163*** (0.000)	0.119*** (0.000)
Sales_Growth	-0.012*** (0.000)	-0.012*** (0.000)	-0.008*** (0.010)
Confident	-0.012*** (0.000)	-0.002 (0.423)	0.000 (0.949)
High_Performance_Pay	-0.001 (0.803)	-0.000 (0.994)	-0.000 (0.965)
Age_40_49	0.028** (0.019)	-0.002 (0.883)	-0.016 (0.218)
Age_50_59	0.035*** (0.002)	0.006 (0.627)	-0.007 (0.570)
Greater_60	0.037*** (0.001)	0.006 (0.659)	-0.008 (0.519)
Constant	-0.085*** (0.000)	-0.053*** (0.000)	-0.034** (0.016)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	8,670	7,533	6,597
Adjusted R-squared	0.233	0.122	0.087

CHAPTER 7. CONCLUSION

In this paper, I examine the relationship between risk-taking CEOs and real earnings management. Following Cain and Mckeeon (2016), I use a CEO's possession of a pilot's license as a proxy for risk-taking. I find that Pilot-CEOs are not likely to take a reckless risk and engage in real activities manipulation because it destroys shareholder value. However, Pilot-CEOs recognize the negative long-term consequences of missing earnings benchmarks and are willing to take a strategic risk and use real earnings management to meet/beat short-term earnings benchmarks. Furthermore, I find that, on average, these firms have stronger operating performance in the future providing further evidence that Pilot-CEOs use real earnings management in a non-opportunistic fashion in an attempt to preserve long-term shareholder value.

This study makes several contributions to the literature. First, it provides further evidence that Pilot-CEOs are risk-takers rather than risk-seekers by examining the relationship between Pilot-CEOs and real earnings management. Second, it provides further evidence that a personal characteristic such as risk-taking can affect a CEO's decision-making. Third, it provides evidence that personal characteristics such as risk-taking and overconfidence can affect a CEO's motivation for using real earnings management.

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APPENDIX A VARIABLE DEFINITIONS

<u>Variable</u>	<u>Definition</u>
PilotCEO	An indicator variable equal to 1 if a given CEO has a Pilot's License and 0 otherwise.
Age_40_49	An indicator variable equal to 1 if a CEO's age is greater than or equal to 40 but less than 49 and 0 otherwise.
Age_50_59	An indicator variable equal to 1 if a CEO's age is greater than or equal to 50 but less than 59 and 0 otherwise.
Greater_60	An indicator variable equal to 1 if a CEO's age is greater than 60 and 0 otherwise.
Confident	An indicator variable equal to 1 if a CEO's options exceed 100% moneyness in the current period or any prior period
Moneyness	defined by ExecuComp as $[\text{PRCC_F} - (\text{OPT_UNEX_EXER_EST_VAL}/\text{OPT_UNEX_EXER_NUM})]/[\text{OPT_UNEX_EXER_EST_VAL}/\text{OPT_UNEX_EXER_NUM}]$.
High_Performance_Pay	An indicator variable equal to 1 if $((\text{TDC1} - \text{SALARY})/\text{TDC1})$ from the Compustat database is in the top tercile and 0 otherwise.
JustMiss	An indicator variable equal to 1 if a firm's net income scaled by total assets is between 0 and -0.01 or if the change in net income scaled by total assets is between 0 and -0.01 and 0 otherwise.
Sales_Growth	Is sales growth defined in Compustat as $(\text{REVT}/\text{REVTt-1})$.
Lev	Is firm leverage defined in Compustat as $((\text{DLC} + \text{DLTT})/\text{AT})$.
RD	Research and Development spending defined in Compustat as (XRD/AT) .
MTB	Market to Book ratio defined in Compustat as $((\text{PRCC_F} * \text{CSHO})/\text{SEQ})$.
Asset_Tangibility	Asset Tangibility defined in Compustat as (PPENT/AT) .
ROA	Return on Assets defined in Compustat as (IB/AT) .
Size	Firm size defined in Compustat as $\text{Log}(\text{AT})$.

CFO	Cash flow from operations defined in Compustat as (OANCF/ATt-1).
Prod	Production costs defined in Compustat as ((INVCH+COGS)/ATt-1).
Disexp	Discretionary expenditures defined in Compustat as ((XAD+XRD+XSGA)/ATt-1).
Ab_Cash	Is the measure for abnormal cash flow from operations.
Ab_Prod	Is the measure for abnormal production costs.
Ab_Disc	Is the measure for abnormal discretionary expenditures.
REM	Is the combined measure of real earnings management by first multiplying Ab_Prod by negative 1 and then take the sum of all 3 measures.
Meet/BEAT	Is a variable equal to 1 if a firm's net income scaled by total assets is between 0 and 0.01 or the change in net income scaled by total assets is between 0 and 0.01 and 0 otherwise.
AdjROA	Is the difference between firm-specific ROA and the median ROA for the same year and industry (two-digit SIC).
RM/Abcash	Is an indicator variable equal to 1 if the residual from the abnormal cash flows model is in the lowest quintile and 0 otherwise.
RM/Abprod	Is an indicator variable equal to 1 if the residual from the abnormal production costs model is in the highest quintile and 0 otherwise.
RM/Abdisc	Is an indicator variable equal to 1 if the residual from the abnormal discretionary expenditures model is in the lowest quintile and 0 otherwise.
RM/REM	Is an indicator variable equal to 1 if the combined measure is in the lowest quintile and 0 otherwise.
Investment	Is total investment defined in Compustat as [(XRD+CAPX+AQC-SPPE)*100]/ATt-1.
InvestLevel	Is classified as over-investing if the residuals from the investment model are in the top quartile and classified as under-investing if the residuals from the model are in the bottom quartile.