UNIVERSITY OF SOUTHERN QUEENSLAND

EX ANTE EXPECTATIONS AND EX POST ASSESSMENT OF THE NATURE AND EXTENT OF EARNINGS MANAGEMENT IN THE MBE SETTING

A Dissertation submitted by

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Abstract

There are two main objectives of this research. First, this research investigates whether the relationship between the extent of earnings management and the abnormal return of firms that meet or beat earnings expectations (MBE) is moderated by the nature of the earnings management (opportunistic or informative). Second, this research investigates whether a belief revision process exists regarding the pricing of discretionary accruals. Specifically, this research examines whether the abnormal return is a function of the markets' ex ante expectation of the extent of earnings management at the earnings announcement date, and ex post assessment of the extent assessment of earnings management during the financial statement analysis period.

In relation to the first objective, the results reveal that the extent of earnings management has a negative (positive) relationship with the abnormal return when earnings management is likely opportunistic (informative). The discount (reward) to meeting or beating expectations is more significant when earnings management is more clearly opportunistic (informative). In addition, the market is shown to penalize firms more for the use of opportunistic earnings management than it rewards firms for the use of informative earnings management.

In relation to the second objective, the results reveal that the abnormal return is a function of the prior quarter discretionary accruals at the earnings announcement date and the current quarter discretionary accruals during the financial statement analysis period. Taken together, these results support a belief revision process occurring from the earnings announcement date to the financial statement analysis period as equity valuations change from being a function of prior quarter discretionary accruals to current quarter discretionary accruals. This is consistent with past literature that suggests that investors require time to

price earnings management into the abnormal return (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007).

This research makes several contributions to the literature. Unlike past studies, this research does not assume that all firms that meet or beat expectations by one cent employ an opportunistic earnings management strategy. Rather, this research contributes to literature by testing whether the market differentiates between opportunistic and informative earnings management when awarding an abnormal return to firms that MBE.

A second contribution is in relation to the research design. This is the first known study to use an interaction variable to capture the non-linear relationship between the nature and extent of earnings management and the abnormal return. Utilizing a variable for the nature of earnings management, and examining the non-linear relationship between the nature and extent of earnings management contributes to the literature by offering a more robust test of the market pricing mechanism of earnings management.

A third contribution is the introduction of gross margin into the MBE setting. Anecdotal evidence clearly indicates that gross margin is a key metric; however, academic literature has yet to corroborate this assertion. These results suggest that gross margin is a key metric that is relied upon by the market when determining an abnormal return for firms that MBE. The fourth contribution, which is of significance to practice, is the introduction of a composite model that provides insight into whether a firm's earnings management is likely to be opportunistic or informative. This model has potential applications for investors as a tool to make investment decisions and avoid inefficient allocations of capital. The fifth contribution is the insight regarding the timing by which discretionary accruals are reflected in equity valuations. The impact of the extent of earnings management is shown to be revised from the earnings announcement date to the financial statement analysis period.

CERTIFICATION OF DISSERTATION

I certify that the ideas, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

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Signature of Candidate Date

ENDORSEMENT

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Signature of Principal Supervisor Date

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Signature of Associate Supervisor Date

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1. Introduction

Earnings are widely used as a performance indicator to measure a business' success (Graham, Harvey & Rajgopal 2005). One such measure of success is whether a firm's reported earnings meet or beat their earnings expectations ("MBE"). Investors are interested in a firm's ability to MBE because it provides a signal of future profitability (Bartov, Givoly & Hayn 2002; Kasznik & NcNichols 2001).

MBE has become one of the most simple, visible and merciless measures of corporate success (Fortune 2003; Fox 1997). For example, the market attaches a higher price-earnings multiple to the earnings of firms that MBE (Barth, Elliot & Finn 1999; Lopez & Rees 2002) and disproportionately penalizes firms that fail to MBE (Lopez & Rees 2002; Skinner & Sloan 2002). For an MBE premium, firms that MBE receive an average abnormal return of 0.7% over a three day window, while firms that fail to MBE experience an abnormal loss of 1.0% (Lopez & Rees 2002). The MBE premium continues to persist over longer time periods. In terms of quarterly returns, firms that MBE earn an abnormal return of 2.3% after controlling for the magnitude of the positive earnings surprise, and an additional 0.5% return premium for every 1% in earnings surprise (Bartov, Givoly & Hayn 2002). This premium has decreased in the post-Enron period (Koh, Matsumoto & Rajgopal 2008).

The rewards and penalties imposed by the capital market create an incentive to engage in earnings management to MBE. The current body of academic (Balsam, Bartov & Marquardt 2002; DeGeorge, Patel & Zeckhauser 1999) and anecdotal evidence (Graham, Harvey & Rajgopal 2005; Levitt 1998) indicate that earnings management strategies are commonly employed to MBE.

Opportunistic earnings management is a deliberate attempt to mislead investors (Christie & Zimmerman 1994), while informative earnings management releases private information about the firm's future cash flows (Healy & Palepu 1993; Holthausen & Leftwich 1983). Currently, there exists a gap in the literature as no known model has been developed to differentiate between opportunistic and informative earnings management. The literature on the nature of earnings management in the MBE setting tends to focus on a specific scenario or incentive.

Past literature has made some inroads in determining the impact of the extent and nature of earnings management on the abnormal returns of firms that MBE. Investors have been shown to discount the MBE premium in the presence of earnings management (Bartov, Givoly & Hayn 2002; Koh, Matsumoto & Rajgopal 2008). For example, there exists a negative relationship between abnormal returns and the extent of earnings management (Balsam, Bartov & Marquardt 2002; Bartov, Givoly & Hayn 2002). This result suggests that the market perceives the discretionary accruals to be opportunistic, as opposed to informative.

The market's reaction to the extent of opportunistic earnings management should be significantly different than its reaction to the extent of informative earnings management. For example, although research in the MBE setting suggests a negative relationship between the extent of earnings management and abnormal returns, research in general settings reveals that earnings management can have a positive relationship with stock prices (Subramanyam 1996; Xie 2001).

Accordingly, another gap in the literature exists as no past study formally investigates whether the relationship between abnormal returns of firms that MBE and the extent of

earnings management varies according to the nature of earnings management. The studies that consider the nature of earnings management in the MBE setting make a general assumption that all discretionary accruals of firms that MBE by one cent or less employ an opportunistic strategy (Balsam, Bartov & Marquardt 2002; Bhojraj et al. 2009).

However, this assumption is not accurate. Some firms meet or have a small beat with high quality accruals to signal future profitability (Lee 2007). In addition, assuming that all small beat firms employ opportunistic earnings management fails to consider the information content of other key financial statements metrics that can provide important information about the nature of earnings management, such as revenue (Rees & Sivaramakrishnan 2007) or gross margin (Lev & Thiagarajan 1993). Investigating the impact of the extent of earnings management on the abnormal return of MBE firms without paying careful attention to understanding the nature of the earnings management may lead to inconsistent and/or incomplete conclusions regarding the market pricing mechanism of earnings management.

A review of the literature also reveals conflicting results surrounding the timing of the market's pricing of the extent of earnings management. For example, Baber, Chen & Kang (2006) suggest that the market can disentangle the impacts of earnings management at the earnings announcement date. However, the vast majority of the literature suggests that the market cannot disentangle the impacts of earnings management until sometime after the earnings announcement date (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007).

The conflicting research regarding the timing that discretionary accruals are reflected in equity valuations leads to another gap in the literature. Specifically, a gap exists as no known past study attempts to shed light on these conflicting results by investigating the existence a belief revision process between: 1) the market's expectation of the extent of earnings management when earnings are announced; and 2) the market's assessment of the extent of earnings management once the financial statements are analysed.

1.1. The Research Questions

The above noted gaps in the literature provide the impetus for the research questions:

Research Question 1: *Is the abnormal return for firms that MBE a function of the nature and ex ante expectation of the extent of earnings management on the earnings announcement date?*

Research Question 2: *Do investors revise their initial beliefs regarding the extent of earnings management during the financial statement analysis period?*

1.2. Objectives

Main objective:

The main objective of this research is to investigate the relationship between the nature and extent of earnings management and the abnormal return for firms that MBE. Specifically, this research investigates whether the relationship between the extent of earnings management and the abnormal return for firms that MBE is moderated by the nature (opportunistic or informative) of the earnings management.

The secondary purpose of this research is to determine if the market revises their initial beliefs about the extent of earnings management from the earnings announcement date

to the financial statement analysis period. Determining the extent of earnings management requires time to analyse the financial statements. Therefore, this research explores whether the market relies upon ex ante expectation of the extent of earnings management at the earnings announcement date, and an ex post assessment of the extent of earnings management during the financial statement analysis period.

Sub-objectives:

1. To develop a model to capture the nature of earnings management (opportunistic versus informative) at the earnings announcement date. No known past study attempts to develop a model to capture the nature of earnings management in the MBE setting.
2. To investigate whether gross margin is a significant factor in explaining the abnormal return for firms that MBE. Anecdotal evidence (Guglielmo 2010; Savitz 2011) suggests that gross margin is very important to market participants; however, no known past study in the MBE setting incorporates gross margin into their analysis.
3. To investigate whether firms that engage in informative earnings management generate superior future performance relative to firms that engage in opportunistic earnings management.

1.3. Contributions

This research contributes to the literature by testing whether the market differentiates between opportunistic and informative earnings management. Unlike past literature, this research does not assume that all firms that meet or beat expectations by one cent employ an opportunistic earnings management strategy. Rather, it incorporates a composite measure that differentiates between informative and opportunistic earnings

management. Accordingly, this is the first known study to formally include variables that proxy for both the nature and extent of earnings management when analyzing the abnormal return for firms that MBE.

This study makes a significant methodological extension to the extant body of literature. Essentially, this research merges the Bhojraj et al. (2009) methodology for the nature of earnings management with the Balsam, Bartov, & Marquardt (2002) and Baber, Chen, & Kang (2006) regression methodology for the extent of earnings management. The merger eliminates the issues associated with the assumption that all firms that MBE by one cent or less employed an opportunistic earnings management strategy (Lee 2007). The merger is accomplished with an interaction variable that captures the dynamic relationship between the nature and extent of earnings management on the abnormal return.

Accordingly, this is the first known study to use an interaction variable in order to capture the non-linear relationship between the nature and extent of earnings management on the abnormal return for firms that MBE. Including a variable for the nature of earnings management and examining the non-linear relationship between the nature and extent of earnings management extends prior literature by providing a more robust test of the market pricing mechanism of earnings management in the form of the abnormal return for firms that MBE.

A third contribution is the introduction of a composite model that provides insight into whether a firm's earnings management is likely to be opportunistic or informative. The composite model relies on four metrics: the change in gross margin, meeting revenue expectations, insider ownership, and beating earnings expectations by one cent or less.

The composite model is shown to be able to differentiate between the two types of earnings management. This model has potential applications for investors as it may be used in order to make better investment decisions and avoid improper allocation of capital to firms that opportunistically manage earnings.

A fourth contribution is the introduction of gross margin into the MBE setting analysis. Anecdotal evidence clearly indicates that changes in gross margin are a key metric relied upon by the market at the earnings announcement date; however, to the authors' best knowledge, there is no academic literature that analyzes the relationship between gross margin and the abnormal return in the MBE setting. These results support the assertion that gross margin is a key metric upon which the market focuses when determining the abnormal return.

A fifth contribution of this study is the insight regarding the conflicting results surrounding the timing of the market's pricing of earnings management in the MBE setting. This research suggests that there is a belief revision process for the pricing of the extent of earnings management. The market's ex ante expectation of the extent of earnings management at the earnings announcement date is shown to be revised with the ex post assessment of the extent of earnings management during the financial statement analysis period. The results reveal that equity valuations change from being a function of prior quarter discretionary accruals at the earnings announcement date to current quarter discretionary accruals in the days after the earnings announcement date.

1.4. Motivations

A large number of firms rely on earnings management even though recent trends indicate that its use has declined in the post-Enron scandal era. The proportion of firm

quarters that MBE with the assistance of discretionary accruals declined from 47.27% to 42.78% (Koh, Matsumoto & Rajgopal 2008). Therefore, earnings management is still a relevant issue in today's financial reporting landscape.

For example, Arthur Levitt, former Chairman of the Security and Exchange Commission (SEC), made the following comments in a speech given at New York University:

> "*Increasingly, I have become concerned that motivation to meet Wall Street earnings expectations may be overriding common sense business practices…While the problem of earnings management is not new, it has swelled in a market that is unforgiving of companies that miss their estimates (Levitt 1998).*"

In addition, several CFOs argue that:

> *''you have to start with the premise that every company manages earnings''* (Graham, Harvey and Rajgopal, 2005, pg. 29)

Given the significant use of earnings management, several factors motivate the examination of the nature and extent of earnings management. Earnings management can be either informative or opportunistic. Opportunistic earnings management leads to negative consequences, while informative earnings management signals future performance. Therefore, developing a model to identify the nature of earnings management is important to academics and investors alike.

First, it is important that investors understand the relationship between the nature and extent of earnings management in order to make better investment decisions and help mitigate the risk of inappropriate allocation of capital. Investors can use an earnings nature model in order to identify firms with expected superior performance, as suggested by informative earnings management. Conversely, investors can use an

earnings nature model to identify firms with opportunistic earnings management, which may suggest inferior future performance.

Second, it is important for academics to be able to identify the nature of earnings management in order to understanding how the market reflects the extent of discretionary accruals in equity valuations. Past studies that investigate solely the extent of earnings management may not capture the full market pricing dynamic as the nature of earnings management may moderate the relationship between equity values and discretionary accruals.

1.5. Delimitation

First, this study focuses only upon earnings management in the MBE setting. Second, only earnings management through discretionary accruals will be investigated (i.e., real earnings management is not considered). Third, there are three main approaches utilized to measure discretionary accruals (total accruals approach, specific accruals approach, and distributional analysis). This study will utilize only the total accruals approach. Finally, the study uses the analysts' forecast as a proxy for expectations. No other proxies are investigated.

1.6. Outline of the Research

Chapter 2 reviews of the main streams of literature relevant to this research. First, prior research into earnings management is reviewed with a focus on the nature, incentives, and indicators of earnings management. Second, the literature on the MBE premium and MBE phenomenon is analysed. Third, the literature investigating the impact of earnings management in the MBE setting is analyzed.

Chapter 3 presents the theoretical framework and research questions. In addition, the hypotheses are developed and justified.

Chapter 4 explains the research design that tests the hypotheses. First, an explanation of the dependent variable, including its measurement, is offered. Next, the proxies for the nature and extent of earnings management are discussed. The control variables are also defined, and supported. Finally, the regression equations that test the hypotheses are developed and justified.

Chapter 5 discusses the data. The chapter begins with a discussion of the data sources, the population from which the sample was chosen, and the sample selection methods. Second, the MBE phenomenon and abnormal returns for MBE firms is documented in the data. Third, the descriptive statistics of the first-stage Modified Jones Model regressions are presented. The Chapter concludes with stand-alone tests of the composite model's ability to identify the nature of earnings management.

Chapter 6 analyses the results obtained from the empirical tests. First, the results of the regressions related to the first research question are presented. Second, the regression results for the second research question are presented. Descriptive statistics related to the data and models are presented for both regression tests. Finally, the Chapter presents sensitivity analyses and robustness checks of the main regression results.

Chapter 7 presents the conclusions and implications arising from the results. First, conclusions relating to the hypotheses are discussed. Second, there is a discussion of the implications of these conclusions for both theory and practice. Third, limitations of this research are presented. Finally, a number of avenues for future research that arise from the limitations are discussed.

2. Review of the Pertinent Literature

2.1. Introduction

The purpose of Chapter 2 is to review the literature relevant to this research. The chapter is organized as follows. Section 2.2 begins by exploring the nature, incentives, and indicators of earnings management. Section 2.3 provides an overview of the research on the MBE phenomenon and MBE premium. Section 2.4 brings together the streams of research in the previous two sections by investigating the relationship between earnings management in the MBE setting. Finally, Section 2.5 concludes the chapter by summarizing its main themes.

2.2. Earnings Management

Accountants have focused on periodic income measurement since joint-stock corporations began operating as going-concerns. Today, earnings are still a managerial priority and widely used as a key performance indicator. A recent survey of Chief Financial Officers (CFO) reveals that the earnings number prepared in accordance with Generally Accepted Accounting Principles (GAAP), especially the earnings per share (EPS), is the key metric upon which the market focuses (Graham, Harvey & Rajgopal 2005). The importance of GAAP earnings gives rise to a large body of research on earnings management, emerging from the pioneering studies of Healy (1985), DeAngelo (1986) and Jones (1991).

Earnings management is an outcome of the discretion managers are afforded in reporting their financial performance (Jackson & Pitman 2001). Managers are able to select an appropriate level of earnings management that is accepted by auditors (Tan & Jamal 2007) because of their proprietary information (Schipper & Vincent 2003).

Although earnings management is commonly cited in the media and academic literature, its definition is somewhat elusive (Mulford & Cominsky 2002). An early definition is provided by Davidson, Stickney, and Weil (1987), as cited in Schipper (1989):

> *"the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings"* (p. 92).

Schipper (1989) also offers a definition:

> *"a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain..."* (p. 92).

A recent, and often cited, definition is provided by Healy and Wahlen's (1999):

> *"when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers"* (Healy and Wahlen, 1999, p. 368).

The focus of Healy and Wahlen's (1999) definition is on the exercise of judgment in the reporting process and can be interpreted to include two perspectives: 1) opportunistic earnings management; and 2) informative earnings management. The opportunistic perspective asserts that managers attempt to mislead investors (Christie & Zimmerman 1994; Payne & Robb 1997), while the informative perspective asserts that managerial discretion in the reporting process allows for the release of private information about the firm's future performance (Healy & Palepu 1993; Holthausen & Leftwich 1983; Ronen & Sadan 1981).

Informative earnings management can be defined as follows (Ronen & Yaari 2008):

> *"earnings management is taking advantage of the flexibility in the choice of accounting treatment to signal the manager's private information on future cash flows"* (p. 25).

Extensive literature, typified by Healy (1985) and DeAngelo (1988), suggests that managers use accruals opportunistically to hide poor performance or to maximize their compensation. However, accrual based earnings provide a superior measure of firm performance relative to cash flows (Dechow 1994). Additionally, the market values both the discretionary and the non-discretionary accruals (Subramanyam 1996). Thus, it appears that opportunistic and informative earnings management can co-exist.

2.2.2. Opportunistic Earnings Management

The recent accounting scandals (e.g., Enron and WorldCom) have resulted in a public perception that earnings management is predominantly used opportunistically. This perception is accentuated by the recent action of regulators, such as public outcries (Levitt 1998) and the introduction of the Sarbanes-Oxley Act (Jiraporn et al. 2006).

There are many incentives for opportunistic earnings management. Earnings-based compensation systems supply managers with a strong incentive to opportunistically manage earnings. Managing earnings allows for the maximisation of remuneration for the current period or future periods depending on the parameters of the compensation system (Healy 1985; Holthausen, Larcker & Sloan 1995; McNichols & Wilson 1988; Skousen & Wright 2006; Warfield & Cheng 2005). Additionally, managers may try to mask poor performance and safeguard themselves from possible dismissals (DeAngelo 1988; Dechow & Sloan 1991; Dharan & Lev 1993).

The capital markets also provide an incentive to opportunistically manage earnings. Firms that report greater than expected earnings typically enjoy significant share price increases (Bartov, Givoly & Hayn 2002). Conversely, firms that fail to meet expectations suffer a significant share price decrease (Skinner & Sloan 2002). As a result, managers have a strong incentive to ensure that earnings expectations are met, particularly if they hold shares in their firm. One way to meet expectations is to opportunistically manage earnings. Managing earnings to meet or beat earnings expectations is common (Kasznik 1999; Levitt 1998), and is discussed in Section 2.5.

Another capital market incentive emerges from the initial public offering (IPO) process (Clarkson et al. 1992; Hughes 1986). The IPO setting is subject to high levels of informational asymmetry, which creates an opportunity for opportunistic earnings management. Income-increasing abnormal accruals have been identified in both the IPO setting (Teoh, Welch & Wong 1998a) and the seasoned equity offering setting (Teoh, Welch & Wong 1998b).

Debt covenants very often depend on accounting variables, and can impose heavy costs on a firm if violated. Accordingly, managers may use opportunistic earnings management to avoid violating bank covenants. Managers also have an incentive to avoid being close to violation in order to ensure that their managerial discretion is not constrained (Dechow, Sloan & Sweeney 1995; DeFond & Jiambalvo 1994; Sweeney 1994).

Political costs and pressures provide an additional incentive to manage earnings (Watts & Zimmerman 1986). Political costs can be imposed by high profitability, which may attract attention from media, consumer, and/or government groups. Again, the

empirical research supports this notion. For example, firms reported lower net income during import relief investigations as the granting of relief is, in part, a political decision. The lower net income appears to be the result of significantly negative discretionary accruals (Jones 1991).

2.2.2. Informative Earnings Management

Regardless of the persistent perceptions that earnings management is employed opportunistically, discretionary accruals can also be used to communicate private information about future performance (Arya, Clover & Sunder 2003; Demski 1998; Guay, Kothari & Watts 1996; Healy & Palepu 1993; Holthausen 1990; Louis 2003; Watts & Zimmerman 1986). Discretionary accruals can be used to improve management's ability to create an earnings figure that best reflects the firm's fundamental value (Scott 2008; Subramanyam 1996).

Firm value is shown to be positively related to the extent of earnings management. In addition, the extent of earnings management is associated with agency costs, whereas firms with larger (less) earnings management have lower (more) agency costs. Collectively, these two empirical observations suggest that earnings management is, on average, informative (Jiraporn et al. 2006).

Arguments in favour of informative earnings management are offered by the blocked communication concept (Demski & Sappington 1987) and the efficient contracting theory (Chen, Q., Hemmer & Zhang 2007; Dye 1988; Evans & Sridhar 1996).

Frequently, managers (as agents of the owners) obtain specialized information as part of their expertise. This information can be prohibitively costly to communicate to the owners (principals). Communication is said to be blocked.

There are several ways to reduce the blockage. For example, the market reacts positively to disclosures of business strategy that are preceded by a credible gesture of confidence (e. g., the acquisition of shares) by management (Gu, F. & Li 2007). Additionally, earnings management can be used to convey inside information regarding the expected long-run persistence of earnings. The unblocking of managers' inside information through the use of earnings management produces a desired result that has credibility (Demski & Sappington 1987, 1990).

While earnings management can reveal inside information to investors, it also imposes a cost (e.g., litigation, reputation loss, etc.). Thus informative earnings management is employed only when the benefits outweigh its costs, such as when a firm's environment is volatile (i.e., insider information will be very useful) and/or the amount of inside information is high (Stocken & Verrecchia 2004).

2.2.3. Detecting Earnings Management

How can investors, regulators, and analysts detect the use of opportunistic earnings management? This question has long been under investigation by academics and is important for an efficiently functioning capital market. For an investor, it can lead to improved returns and an efficient allocation of capital.

Although the conceptual difference between opportunistic and informative earnings management is clearly evident, the nature of financial reporting makes it difficult to decompose discretionary accruals into informative and/or opportunistic components.

For example, assume that a manager has inside information regarding the predicted future cash flows of the business. Based on this inside information, the manager's estimate of persistent earnings is $1 per share. If the net income is $0.90 per share with

no discretionary accruals, the manager can use discretionary accruals to increase earnings to $1 per share. However, the manager can also use discretionary accruals to increase the income to $1.20 per share in order to meet or beat analysts' expectations. In this scenario, part of the earnings management (10 cents) is informative and part is (20 cents) is opportunistic. Therefore, unless a firm's true income is known, it is not possible to attribute the earnings management to a definite mix of informative and opportunistic. However, if true income is known, the notion of earnings management becomes irrelevant (Scott 2008).

Although it is not possible to clearly segregate discretionary accruals into a definitive mix of opportunistic and informative, a rational investor will compare the reported earnings with future performance. In the long-run, an investor will continually refine their interpretation of the earnings reported by management (Gul, Leung & Srinidhi 2003). Managers motivated to inform investors generate a reported income stream that closely coincides with the future performance of the firm. Investors will have more confidence in the earnings of the firms with such a track record. Conversely, managers motivated by opportunism generate a reported income stream that is less likely to coincide with future performance (Dechow & Skinner 2000).

The empirical research that differentiates between informative and opportunistic earnings management is somewhat ambiguous. Currently, there is a gap in the literature as no known study provides a model to identify the nature of earnings management. The vast majority of the research that attempts to identify the nature of earnings management focuses on a given setting or incentive. The purpose of this section is to review the indicators of opportunistic earnings management that have been identified in past studies.

2.2.3.1. Individual Indicators of Earnings Management

The extant body of literature identifies various firm characteristics that suggest the use of opportunistic earnings management. For example, opportunistic earnings management has been linked to deteriorating financial performance (Beneish 1999), non-financial measures (Brazel, Jones & Zimbelman 2006), deferred tax liabilities (Ettredge et al. 2006), stock recommendations (Abarbanell & Lehavy 2003), and the extent of discretionary accruals (Beneish 1997, 1999; Dechow, Sloan & Sweeney 1995; Feroz, Park & Pastena 1991; Richardson, Tuna & Wu 2002).

Deteriorating financial performance can provide management with an incentive to manage earnings, especially if managers are trying to maintain a high stock price. Poor financial performance has also been identified as a distinguishing indicator between aggressive accrual managers and GAAP violators (Beneish 1997; Dechow et al. 2011).

Much of the empirical research that attempts to differentiate between informative and opportunistic earnings management is found in the IPO setting (Ball & Shivakumar 2007; Billings & Lewis 2009; DuCharme, Malatesta & Sefcik 2001; Teoh, Welch & Wong 1998a). Earnings management has been linked to managerial opportunism (information signaling) when an IPO issuer faces greater (less) information uncertainty (Shao, Sheng & Wen 2008) and when the IPO is underwritten by a less (more) reputable investment bank[1] (Lewis 2008). The market appears to be able to identify the informative accruals[2] (Lewis 2008).

[1] Lewis postulates that in order to protect their reputations (Fang 2005), reputable investment bankers may seek to limit their association with a firm that reports large amounts of income-increasing accruals (Jo, Kim & Park 2007) or adjust the IPO security prices based on the extent of accruals (Skivakumar 2000).
[2] Informative earnings management is defined as abnormal accruals that are correlated with future performance.

A firm's growth opportunity, as measured by the investment opportunity set (IOS), is also related to management's use of informative and opportunistic accruals. Discretionary accruals improve the value relevance of earnings measured in terms of the earnings-return relationship in firms with high IOS. This suggests that there is a higher proportion of informative earnings management in high-IOS firms (Gul, Leung & Srinidhi 2003).

2.2.3.2. Composite Models of Earnings Management

In addition to individual indicators, composite measures of earnings management have been developed. For example, Bayley and Taylor (2007) offer a model to identify firms likely to overstate earnings. The model utilizes six red flag ratios: (1) operating accrual magnitude; (2) sales index; (3) accruals index; (4) inventory index; (5) reserve index; and (6) asset quality index. These factors are combined with a logit regression, and suggest that firms overstating earnings outside of the boundaries of GAAP have different financial statement characteristics.

Beaver, McNichols, and Rhie (2005) found similar results regarding the ability of financial statement ratios to predict bankruptcies. The accruals index (divergence between earnings and cash flows) and sales index (ratio of reported net revenue relative to a notional estimated of un-manipulated net revenue) are the most powerful variables in the model. Additionally, the results suggest that financial statement indicators are better at identifying overstatements than other measures of unexpected accruals.

Most recently, Dechow et al. (2011) offer three models to predict earnings management by analyzing: 1) off-balance sheet variables; 2) non-financial variables; 3) market-

related variables; and 4) financial statement variables. A computational algorithm selects the variables and logistic regression creates the models.

The first model includes variables obtained primarily from financial statements. Backward elimination results in the following variables: accrual quality (as measured in Richardson et al. (2005)), change in receivables, change in inventory, change in cash sales, change in earnings, and actual share issuance. The second model builds on the first model by including off-balance sheet and non-financial measures to the financial statement variables. After backward elimination, two additional variables are included into the model: abnormal change in employees and the existence of operating leases. The third model builds on the second model by incorporating market-related variables. Backward elimination results in two additional variables: book-to-market ratio and lagged market-adjusted stock returns.

The results suggest that the bulk of the predictive ability is obtained from the financial statement variables in the first model. Measures beyond the financial statement variables are incrementally informative in the second and third models. Similar to Beneish (1997), these models suggest that growth in receivables and revenues are important in predicting earnings management.

2.2.4 Summary of the Section's main Themes

This section investigates the nature, incentives, and indicators of earnings management. Earnings management has been shown to be either opportunistic or informative. There exists a gap in the literature as no known model attempts to differentiate between opportunistic and informative earnings management. Various incentives are related to the use of either opportunistic or informative earnings management. A major incentive

for using earnings management is to meet or beat earnings expectations. Accordingly, the next section discusses the MBE phenomenon and MBE premium in detail.

2.3. Meeting or Beating Earnings Expectations

Recall that the research questions focus on earnings management in the MBE setting. Section 2.3.1 briefly discusses the capital market incentive to manage earnings in the form of a share price premium to beating earnings expectations. This section expands the discussion of the MBE phenomenon and MBE premium in order to outline the MBE setting.

2.3.1. The Meeting or Beating Expectations Phenomenon

A firm is able to meet or beat expectations (MBE) when earnings are greater than the market's expectation. However, the market's expectation is unobservable. Both management and the market focus on three expectations (DeGeorge, Patel & Zeckhauser 1999):

(1) An expectation of positive earnings, or avoiding losses (Burgstahler & Dichev 1997; Dechow, Richardson & Tuna 2003);
(2) An expectation of reporting an increase from the prior year's earnings, or avoiding earnings decreases (DeGeorge, Patel & Zeckhauser 1999; Graham, Harvey & Rajgopal 2005); and
(3) An expectation of reporting earnings that are greater than the analysts' forecast (Bartov, Givoly & Hayn 2002).

The analysts' forecast is the most widely used proxy of the earnings expectation because it is thought to include the most current information available regarding a

firm's earnings. Additionally, managers aim to beat the analysts' forecast (Burgstahler & Eames 2006; Richardson, Teoh & Wysocki 2004).

It is common for firms to MBE. For example, approximately 50% of firms were able to meet or beat expectations from 1984 to 1992. The number of MBE cases increased to approximately 65% from 1992 to 1998 (Lopez & Rees 2002). Although this trend has decreased recently (Koh, Matsumoto & Rajgopal 2008), this has become known as the *MBE phenomenon*.

In regards to the distribution of the forecast error for firms that MBE, there are a disproportional number of firms reporting earnings per share that are just above the consensus analysts' forecasts (Brown, L. D. 2000; Matsumoto 2002). However, recent trends indicate that firms just barely MBE less often in the post-Enron scandal era (Koh, Matsumoto & Rajgopal 2008).

2.3.2. Beating Expectations and Future Performance

Meeting or beating earnings expectations can be a signal of future profitability. Firms that MBE tend to report higher future earnings, after controlling for current earnings, than firms that do not MBE (Bartov, Givoly & Hayn 2002). In addition, firms that MBE also have superior future performance over a two year period, as measured by ROA, ROE, cash flows from operations, profit margin, income growth and sales growth (Dopuch, Seethamraju & Xu 2008).

The increase in future performance for firms that are able to meet or beat their earnings expectation is a rational explanation, and driving force, for an *MBE premium*.

2.3.3. The Premium to Meeting or Beating Analysts' Expectations

The characteristics of analysts' forecasts have been called into question, including their accuracy and whether analysts have incentives for biasing their forecasts (Baber, B. M. et al. 2006; Brown, L. D. 1997, 2001; Clement 1999; Jacobs, Lys & Neale 1999). However, significant economic benefits continue to accrue to firms whose earnings meet or beat analysts' forecasts.

There is a large body of literature, both academic and anecdotal, that documents a significant capital market premium for firms that meet or beat their earnings expectations. This has become known as the *MBE premium*. The MBE premium appears to be justified on economic grounds as these firms tend to have superior future performance, as discussed in section 2.4.2.

The market significantly rewards firms that MBE, relative to firms that do not MBE, with an average abnormal return of 0.7% over a three day window. Firms that failed to MBE experience an abnormal loss of 1.0% over the same period. The large, negative response is a function of missing analysts' forecast, rather than the forecast error (Lopez & Rees 2002). In addition, growth stocks are found to be punished more severely, relative to value stocks, for the same amount of negative earnings surprise (Skinner & Sloan 2002).

The MBE premium continues to persist over longer time periods. In terms of quarterly returns, firms that MBE earn an abnormal return of 2.3% after controlling for the magnitude of the positive earnings surprise, and an additional 0.5% return premium for every 1% in earnings surprise. This is significant considering that MBE firms earned

an average quarterly return of almost 3% higher than their peers that fail to do so (Bartov, Givoly & Hayn 2002).

The MBE premium continues to persist even over long-range windows, such as a year. For example, firms that consistently meet or beat their earnings expectations over three successive years enjoy a valuation premium (Kasznik & NcNichols 2001).

The recent accounting scandals in the United States impacted the MBE premium. In the post-Enron scandal era, the premium for just barely MBE has disappeared, while the premium for MBE by larger margins decreased (Koh, Matsumoto & Rajgopal 2008).

Investors may use sources of information aside from the analysts' forecast to assess the possibility that market expectations have truly been met or beaten. The market appears to also focus on prior years' earnings as a benchmark and a source of additional information. A market premium is documented for firms that meet or beat time-series forecasts, and that the highest market premium accrued to firms that meet or beat both analysts' and time-series forecasts (Dopuch, Seethamraju & Xu 2008).

2.3.4. Summary of Section's main Themes

In summary, there is a significant, positive abnormal return for meeting or beating expectations (Bartov, Givoly & Hayn 2002). This premium has decreased in the post-Enron period (Koh, Matsumoto & Rajgopal 2008). The premium appears warranted as MBE firms tend to have higher future performance (Kasznik & NcNichols 2001). Conversely, failing to MBE leads to a disproportionately large penalty that may not be warranted as it is solely a function of missing expectations (Lopez & Rees 2002).

The significant, positive abnormal MBE premium, combined with the disproportionately large penalty for failing to MBE creates an incentive for executives to manage earnings to MBE. This behaviour has attracted the attention of regulators and researchers. For example, Arthur Levitt, former Chairman of the Security and Exchange Commission (SEC), made the following comments in a speech given at New York University:

> "*Increasingly, I have become concerned that motivation to meet Wall Street earnings expectations may be overriding common sense business practices…While the problem of earnings management is not new, it has swelled in a market that is unforgiving of companies that miss their estimates. I recently read of one major U.S. company, that failed to meet its so-called numbers by one penny, and lost more than six percent of its stock value in one day (Levitt 1998).*"

The market is skeptical towards earnings that reach their targets through questionable means (Morgenson 2004). Additionally, analysts react negatively to firms that artificially inflate earnings and the negative reaction is followed by an even stronger negative reaction by the market (Balsam, Bartov & Marquardt 2002).

The preceding two sections of the literature review discussed earnings management and the MBE setting in isolation. The following section brings together these streams of literature by reviewing the use of earnings management in the MBE setting.

2.4. Earnings Management in the MBE Setting

The MBE premium creates an incentive for earnings management. Managers can use discretionary accruals as a means of obtaining their earnings expectation. This section of the literature review builds on the last two sections by reviewing the market reaction to earnings management, with a specific focus on earnings management in the MBE setting.

2.4.1. How does the Extent of Earnings Management impact the MBE Premium?

Investors discount the MBE premium when earnings likely exceeded expectations as a result of earnings management. Early research reveals that the MBE premium from 1983 to 1997 was still significant in light of the earnings management (Bartov, Givoly & Hayn 2002). Recently, investors are imposing significant costs on firms for using earnings management by eliminating 12% of the MBE premium (Das, Kim & Patro 2008).

The MBE premium appears to be more significant under two conditions: (1) the firm did not engage in earnings or expectations management[3]; (2) the firm met or beat expectations in the previous period. These capital market conditions create a situation whereby a small subset of firms are mispriced, namely firms that have genuine performance but did not MBE in the previous year (Athanasakou, Strong & Walker 2008)[4].

The market appears to focus on the earnings management of firms that MBE by one cent or less (Morgenson 2004). The abnormal return of firms that MBE by one cent is shown to have a negative relationship with the unexpected discretionary accruals (Balsam, Bartov & Marquardt 2002). This suggests that the market discounts the MBE premium in conjunction with the extent of earnings management.

However, firms that beat their earnings expectation by one cent with large income increasing discretionary accruals and cut discretionary spending experience a short-

[3] Expectation management occurs when managers walk down the analysts' earnings expectation to a threshold that can be exceeded (Matsumoto 2002; Richardson, Teoh & Wysocki 2004).
[4] It is important to note that Athanasakou et al. relied on a dataset from the U.K., which results in regulatory and structural differences from a U.S. based dataset.

term benefit relative to firms that miss their earnings expectation by one cent with income decreasing accruals and increases in discretionary spending. This differential reverses over a three year period. Management appears to be aware of this situation, and takes advantage of the short term benefit through insider sales and equity issuances (Bhojraj et al. 2009).

The results of these studies suggest that investors are capable of discerning the effects of earnings management on the earnings surprise, and adjusting the MBE premium accordingly.

2.4.2. How does the Nature of Earnings Management impact the MBE Premium?

As discussed in the previous section, a negative relationship is documented between earnings management and abnormal returns for firms that MBE (Athanasakou, Strong & Walker 2008; Balsam, Bartov & Marquardt 2002; Bartov, Givoly & Hayn 2002; Das, Kim & Patro 2008). This negative relationship has also been documented in a broader sample (Baber, W. R., Chen & Kang 2006). For example, future abnormal stock returns are shown to be negative for firms whose earnings include large accruals and positive for firms with low accruals (Sloan 1996)

As discussed, opportunistic earnings management is intended to mislead investors (Healy & Whalen 1999), whereas informative earnings management is intended to signal future profitability. With this in mind, the negative relationship between stock returns and the extent of earnings management suggests that the market interprets the discretionary accruals as opportunistic. However, there is also evidence of a positive correlation between annual discretionary accruals and one-year forward stock returns

(Subramanyam 1996; Xie 2001). This suggests that the discretionary accruals are also informative, and not just opportunistic.

The impact of the nature of earnings management (i.e., opportunistic or informative) on the abnormal returns of firms that MBE can be implied from the past literature. For example, the positive (negative) relationship between the extent of discretionary accruals and abnormal returns implies informative (opportunistic) earnings management. However, a gap in the literature exists as no known study formally tests the relationship between the nature of earnings management and the abnormal return of firms that MBE.

When addressed, the nature of earnings management is incorporated into the research by analyzing scenarios whereby all discretionary accruals are assumed to be opportunistic. For example, Balsam, Bartov & Marquardt (2002) assume that firms that beat consensus expectations by one cent or less (small beat) employ an opportunistic earnings management strategy. Similarly, Bhojraj et al. (2009) assume an opportunistic earnings management strategy is employed by firms that beat expectations by one cent and cut discretionary spending.

However, assuming that all firms that meet or beat their consensus earnings expectation by one cent employ an opportunistic earnings management strategy is too simplistic. It is possible, and likely, that some firms meet or have a small beat with high quality accruals to signal future profitability. For example, Lee (2007) shows that firms may use income increasing discretionary accruals in order to meet or beat earnings expectations, but concludes that this does not imply that these firms experience inferior

future firm and stock performance. This may be the case because these firms are inherently financially healthy firms.

2.4.3. When is Earnings Management reflected in the MBE Premium?

Analysis of abnormal returns suggests that investors are capable of discerning the effects of earnings management on a firm's ability to MBE (Balsam, Bartov & Marquardt 2002; Bartov, Givoly & Hayn 2002). However, the date that the market adjusts the abnormal returns to reflect the earnings management is unclear. There are two key dates with respect to the pricing of earnings management: the earnings announcement date (Baber, W. R., Chen & Kang 2006) and the financial statement release date (Balsam, Bartov & Marquardt 2002; Easton & Zmijewski 1993).

Quarterly earnings announcements (filed on Form 8-K with the SEC) usually precede the quarterly financial statement (filed on Form 10-Q with the SEC) filing date by as much as several weeks. The efficient market hypothesis (Fama 1970) suggests that the stock price at the earnings announcement date incorporates the information contained in the earnings figure. However, investors may not have sufficient time and information to disentangle the impacts of earnings management at that time.

Balsam, Bartov, and Marquardt. (2002) focus on the abnormal return of firms that MBE at both the earnings announcement date and the Form 10-Q filing date. The primary focus of their research is to investigate when the market disentangles the impacts of earnings management, and whether this timing is affected by the level of investor sophistication. The results reveal a negative association between unexpected discretionary accruals and cumulative abnormal returns over a 17-day window around the filing date of Form 10-Q. This suggests that investors are unable to recognize

earnings management around the earnings announcement date but are able to do so upon the full release of the financial statements.

Investors appear to focus solely on the earnings figure at the earnings announcement date and re-assess the quality of earnings after the earnings announcement date (Gavious 2007). Security prices behave as if sophisticated investors incorporate the implications of unexpected discretionary accruals prior to the formal release of the financial statement but not as early as the earnings announcement date. Unsophisticated investors are able to incorporate this information into stock prices upon the release of the financial statements (Balsam, Bartov & Marquardt 2002).

The security price reaction to the discretionary accruals at the earnings announcement date appears to vary depending on whether Balance Sheet and/or Cash Flow (BS/CF) information is released concurrently with earnings press releases. Specifically, the market appears to be able to incorporate the impact of discretionary accruals into share prices for the firms that disclose BS/CF information. No relationship is documented between discretionary accruals and stock prices at the earnings announcement date for firms that do not disclose BS/CF information (Baber, W. R., Chen & Kang 2006).

Traditionally, firms announce earnings before filing financial statements with the SEC. However, firms sometimes reverse the order. It appears that these firms may be delaying public earnings announcements. Accordingly, firms that delay announcing earnings have poor financial performance and engage in earnings management. Significant stock price reactions are documented at the SEC filing and the earnings announcement. The price reaction to the earnings appears to be incomplete at the SEC filings, and the market continues reacting to firms' subsequent earnings

announcements. This would suggest that the SEC filing fails to communicate the full set of earnings information to some investors or that investors ignore the filing and focus solely on the announcement (Chung, Jacobs & Tang 2003).

Some firms voluntarily disclose accruals in their earnings press releases, while other firms disclose the information only in their 10-Q. The accruals of the firms that voluntarily disclose tend to be of lower quality, which indicates that the breakdown of earnings into their accruals and cash flow components is of greater importance to the investors of the voluntary disclosing firms. In addition, the accruals of the voluntary disclosing firms are fully impounded in prices upon disclosure, but those of the 10-Q filing firms are associated with subsequent return drifts. Taken together, this suggests that any mispricing typically associated with accruals is mitigated when higher demand for accruals information exists and firms respond with early disclosures of accruals (Levi 2005).

In summary, the results of Balsam, Bartov & Marquardt (2002) and Gavious (2007) are consistent with a much of the prior literature conducted outside of the MBE setting which suggests that investors do not fully see through earnings management (Dechow & Dichev 2002; Rangan 1998; Sloan 1996; Teoh, Welch & Wong 1998a; Xie 2001), and that investors appear to be even more deceived at the announcement date (DeFond & Park 2001). However, Baber, Chen & Kang (2006) suggest that earnings management is reflected in equity valuations at the earnings announcement date. Note that the Baber, Chen & Kang (2006) study is not conducted in the MBE setting.

A gap in the literature arises from the conflicting results regarding the timing that discretionary accruals are reflected in equity valuations. Specifically, no known past

study attempts to shed light on these conflicting results by investigating the existence of a belief revision process between: 1) the market's expectation of the extent of earnings management when earnings are announced; and 2) the market's assessment of the extent of earnings management once the financial statements are analysed.

2.4.4. Summary of Section's main Themes

In summary, it appears that investors are aware of the extent of a firm's discretionary accruals when evaluating the MBE signal. This is evidenced by the well documented negative relationship between abnormal returns and the extent of earnings management for firms that MBE (Baber, W. R., Chen & Kang 2006; Bartov, Givoly & Hayn 2002; Koh, Matsumoto & Rajgopal 2008). The negative relationship suggests that the market perceives the discretionary accruals to be opportunistic, as opposed to informative.

In regards to the nature of earnings management in the MBE setting, the research is inconclusive. In general, some studies suggest that the market reacts negatively to discretionary accruals (Baber, W. R., Chen & Kang 2006; Bartov, Givoly & Hayn 2002; Sloan 1996), while others suggest the opposite (Jiraporn et al. 2006; Subramanyam 1996; Xie 2001). However, the nature of earnings management has not been tested directly in the MBE setting. The tests that incorporate the nature of earnings management into the analysis assume that all firms that beat by one cent employed an opportunistic strategy (Balsam, Bartov & Marquardt 2002; Bhojraj et al. 2009). However, this may not be appropriate (Lee 2007).

There are conflicting results regarding the timing that discretionary accruals are reflected in equity valuations. Some studies suggest that the market can disentangle the impacts of discretionary accruals at the earnings announcement date (Baber, W. R.,

Chen & Kang 2006), while others suggests that the market cannot disentangle the impacts of earnings management until sometime after the earnings announcement date (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001) as the market fixates only upon the earnings reported at the earnings announcement date (Gavious 2007).

2.5. Summary of Chapter's main Themes

It is clearly evident that there exists a significant, positive abnormal return for MBE firms (Bartov, Givoly & Hayn 2002). The premium appears warranted as MBE firms tend to have higher future earnings (Kasznik & NcNichols 2001). This premium has decreased in the post-Enron period (Koh, Matsumoto & Rajgopal 2008). Conversely, failing to MBE leads to a disproportionately large penalty that may not be warranted as it is solely a function of not meeting or beating expectations (Lopez & Rees 2002).

It appears to be a common practice for firms to manage earnings to MBE (Levitt 1998) and investors discount the MBE premium in the presence of earnings management (Bartov, Givoly & Hayn 2002; Koh, Matsumoto & Rajgopal 2008).

Past literature has made inroads in determining the impact of the nature and extent of earnings management on the abnormal returns of firms that MBE. For example, research provides evidence of a negative relationship between abnormal returns and the extent of earnings management for firms that MBE (Baber, W. R., Chen & Kang 2006; Bartov, Givoly & Hayn 2002; Bhojraj et al. 2009). These results suggest that the market perceives the discretionary accruals to be opportunistic.

Recall that opportunistic earnings management differs from informative earnings management. A gap in the literature exists as no known model attempts to differentiate

between opportunistic and informative earnings management. The research on the nature of earnings management tends to focus on a specific scenario or incentive.

The market's reaction to the extent of opportunistic earnings management should be significantly different than the reaction to the extent of informative earnings management. For example, although research in the MBE setting suggests a negative relationship between the extent of earnings management and abnormal returns, research in general settings reveals that earnings management can have a positive relationship with stock prices (Subramanyam 1996; Xie 2001).

A second gap in the literature exists as no past study investigates whether the relationship between abnormal returns and the extent of earnings management is moderated by the nature of earnings management. The studies that consider the nature of earnings management make a general assumption that all discretionary accruals of firms that MBE by one cent or less employ an opportunistic strategy (Balsam, Bartov & Marquardt 2002; Bhojraj et al. 2009).

However, this assumption is not accurate. Some firms meet or have a small beat with high quality accruals in order to signal future profitability (Lee 2007). In addition, assuming that all small beat firms employ opportunistic earnings management fails to consider the information content of other key financial statements metrics. For example, revenue (Rees & Sivaramakrishnan 2007) and gross margin (Lev & Thiagarajan 1993) can provide important information about the likelihood that the earnings management is opportunistic or informative.

Investigating the impact of the extent of earnings management on the abnormal return of MBE firms without paying careful attention to understanding the nature of the

earnings management may lead to inconsistent and/or incomplete conclusions regarding the market pricing mechanism of earnings management.

The literature offers conflicting research surrounding the timing of the market's pricing of discretionary accruals. For example, Baber, Chen & Kang (2006) suggest that the market can disentangle the impacts of discretionary accruals at the earnings announcement date. However, the vast majority of the literature suggests that the market cannot disentangle the impacts of earnings management until sometime after the earnings announcement date (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007). Gavious (2007) suggests that the market fixates only upon the earnings reported at the earnings announcement date, while Balsam, Bartov & Marquardt (2002) do not document a relationship between earnings management and abnormal returns at the earnings announcement date.

A third gap arises from the conflicting results regarding the timing that discretionary accruals are reflected in equity valuations. Specifically, no known past study attempts to analyze the conflicting results by investigating the existence a belief revision process between: 1) the market's ex ante expectation of the extent of earnings management at the earnings announcement date; and 2) the market's ex post assessment of the extent of earnings management once the financial statements are analysed.

The three gaps in the literature provide the impetus for this research. The next Chapter discusses the research questions and hypotheses that extend the literature by investigating these three gaps.

3. Hypothesis Development

3.1. Introduction

The purpose of Chapter 3 is to present the theoretical framework and develop the hypotheses. The chapter is organized as follows. Section 3.2 begins by presenting a theoretical framework that can be used to analyze the research questions. Section 3.3 develops the hypotheses associated with equity valuations and earnings management at the earnings announcement date. Section 3.4 develops the hypotheses associated with equity valuations and earnings management during the financial statement analysis period. Finally, Section 4.5 summarizes the chapter's main themes.

3.2. Theoretical Framework

Most studies that investigate earnings management and abnormal returns in the MBE setting (Balsam, Bartov & Marquardt 2002; Bartov, Givoly & Hayn 2002; Bhojraj et al. 2009) employ a theoretical framework that can best be described as Single Person Decision Theory (SPDT) (Ronen & Yaari 2008). SPDT takes the view of an individual investor who must make a decision under uncertainty (Laffont 1989; Raiffa 1968). The following is a discussion of SPDT as it applies to the MBE setting.

The MBE premium creates an incentive for weak firms to pool with strong firms. For example[5], suppose that an MBE firm can be either strong or weak. The market value of a strong firm is 1.0, while the market value of a weak firm is 0.2. If only strong firms MBE, the market value of an MBE firm is 1.0 and that of a non-MBE firm is 0.2. However, the model is complicated by weak firms attempting to MBE in order to pool with the strong firms.

[5] This numerical example is based on a similar discussion provided by Ronen and Yaari (2008).

The MBE premium creates a moral hazard because the manager of a weak firm can receive a higher market value than 0.2 by successfully pooling with the strong firms (Akerlof 1970). A weak firm can potentially MBE through opportunistic earnings management (DeGeorge, Patel & Zeckhauser 1999) and/or expectations management (Richardson, Teoh & Wysocki 2004). The moral hazard creates uncertainty in the reporting landscape. The uncertainty arises from the fact that managers are aware of the true nature of the firm, whereas investors are not. This creates the potential for adverse selection.

Given this uncertainty, SPDT predicts that an investor will reward an MBE firm based on the expectation that it is either weak or strong (Ronen & Yaari 2008). Continuing with the example, let p be the fraction of MBE firms that are strong, and (1 – p) be the fraction of MBE firms that are weak. If the market believes that 60% of firms are strong, and 40% are weak, then the market value of an MBE firm will be 0.68 (1 x 0.60 + 0.2 x 0.40).

The MBE signal acquires credibility from firms that miss expectations by as little as one cent. To expand the above example, suppose that 50% of the weak firms that attempt to MBE miss the target by one cent but every strong firm beats expectations. If a firm misses, its price will be 0.20 because failure to MBE reveals a firm's type. According to Bayes Theorem (Howson & Urbach 2005), since 80% of firms MBE (60% + 50% (100% - 60%)) and 60% of the MBE firms are strong, the market price of an MBE firm is $\frac{60\% \text{ x } 1}{80\%} + \frac{40\% \text{ x } 50\% \text{ x } 0.20}{80\%} = 0.80 > 0.68$. Therefore, meeting or beating expectations has some credibility because every firm does not successfully MBE. Note that strong firms have incentives to MBE because their market price will be 0.68 (or

less) if they do not signal their worth. This argument is only valid if some firms miss the forecast. Although more firms MBE than miss (Durtschi & Easton 2005), many firms miss expectations as well (Burgstahler & Dichev 1997).

The market is also likely to search for additional information and discount the MBE premium if uncertainty exists regarding the nature of any earnings management (Ronen & Yaari 2008). That is, the MBE premium at the earnings announcement date should be lower when the market suspects opportunistic earnings management.

The level of information uncertainty can be reduced by analyzing financial statements (Balsam, Bartov & Marquardt 2002; Gavious 2007). Bayesian investors can analyze the financial statements to revise their posterior probabilities regarding the state of a firm. For example, assume the financial statements of Firm A suggest an 80% probability of being in a strong state. Bayesian investors could revise their posterior state probability that Firm A is strong to $\frac{75\% \text{ x } 80\%}{75\% \text{ x } 80\% + 25\% \text{ x } 20\%} = 0.92$. The market value of Firm A would then rise from 0.80 to 0.936 (1 x 0.92 + 0.2 x 0.08).

Conversely, assume the financial statements of Firm B suggest that there is a 90% probability that the firm engaged in opportunistic earnings management. In this case, a Bayesian investor would revise their posterior state probability that Firm B is weak to $\frac{25\% \, x \, 90\%}{25\% \, x \, 90\% + 75\% \, x \, 10\%} = 0.75$. The market value of Firm B would drop from 0.80 to 0.40 (1 x 0.25 + 0.2 x 0.75).

According to this theoretical framework, the abnormal return of firms that MBE could be analyzed in two-periods. The first period focuses upon *ex ante expectations* of the extent of earnings management at the announcement date. The second period focuses

on the *ex post assessment* of the extent of earnings management during the financial statement analysis period.

3.3. *Ex Ante* Expectations of Earnings Management

The market's response at the earnings announcement date has been well documented (Baber, W. R., Chen & Kang 2006; Balsam, Bartov & Marquardt 2002; DeFond & Park 2001). Theoretically, a perfectly efficient market reacts quickly to the release of new information (Fama 1970); therefore, a firm's share price should immediately reflect the information content of the earnings announcement. Investors should be able to instantaneously analyze financial statements in order to disentangle the impacts of earnings management on a firm's ability to MBE. However, the reality of capital markets is that both time and expertise are required to analyze the financial statements in order to disentangle the impacts of earnings management on a firm's ability to MBE[6].

Baber, Chen & Kang (2006) suggest that the market disentangles the impact of discretionary accruals at the earnings announcement date. However, the majority of the literature suggests that the market disentangles the impact of earnings management sometime after the earnings announcement date (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007). For example, Gavious (2007) suggests that the market fixates on the earnings reported at the earnings announcement date, and later incorporates the impact of earnings management into stock prices. In addition, Balsam, Bartov & Marquardt (2002) suggest the following:

[6] The time required to analyze the financial statements to understand earnings management has been shown to be inversely related to the extent of a firm's institutional ownership (Balsam, Bartov & Marquardt 2002).

> *"No relation is observed between unexpected discretionary accruals and CAR around earnings announcements" (*Balsam, Bartov, & Marquardt, 2002, pg. 990).

Yet, the market is aware that earnings management is common. Both empirical (DeGeorge, Patel & Zeckhauser 1999) and anecdotal (Levitt 1998) evidence indicate that earnings management is commonly employed to MBE. For example, several CFOs argue that:

> *''you have to start with the premise that every company manages earnings*[7]*''* (Graham, Harvey and Rajgopal, 2005, pg. 29)

In summary, the market expects that some firms engaged in earnings management to MBE at the earnings announcement date (Graham, Harvey and Rajgopal, 2005). However, the extent of the current quarter's earnings management cannot be calculated immediately (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007). Accordingly, a rational investor is likely to include their ex ante expectation of the extent of earnings management into the equity valuation at the earnings announcement date.

Note that investors are concerned with the use of earnings management because it can lead to a suboptimal allocation of capital (Healy & Whalen 1999). However, earnings management can also disclose private information to signal future performance (Holthausen & Leftwich 1983). Only *opportunistic* earnings management leads to suboptimal allocations of capital. Accordingly, the first two hypotheses (stated in

[7] Graham, Harvey and Rajgopal (2005) note that these executives are not suggesting that firms violate GAAP or commit fraud. Rather, earnings are being managed within the confines of GAAP.

alternate form) regarding the abnormal return at the earnings announcement date are as follows:

> Hypothesis 1 (H_1): At the earnings announcement date, the abnormal return for firms that MBE is lower (higher) for firms with opportunistic (informative) earnings management.
>
> Hypothesis 2 (H_2): The abnormal return for firms that MBE has a positive (negative) relationship with the ex ante expectation of the extent of informative (opportunistic) earnings management.

3.4. *Ex Post* Assessment of Earnings Management

Investors do not immediately know whether earnings were managed after the earnings announcement. However, research shows that investors are capable of disentangling the impacts of earnings management once the financial statements are analyzed. The market can take up to seventeen days to analyze financial statements and adjust equity valuations for the extent of earnings management (Balsam, Bartov & Marquardt 2002; Gavious 2007).

The information uncertainty at the earnings announcement date diminishes once the financial statements are analyzed (Balsam, Bartov & Marquardt 2002; DeFond & Jiambalvo 1994; Gavious 2007; Levi 2005). After analyzing the financial statements, SPDT suggests that Bayesian investors revises their *ex ante* expectations based on their *ex post* assessment of the extent of earnings management.

As a result of the belief revision process, firms will be awarded the abnormal return that is indicative of the extent of their current quarter's earnings management. In order to investigate the belief revision process, the following hypothesis is posed:

Hypothesis 3 (H_3): The abnormal return for firms that MBE has a positive (negative) relationship with the ex post assessment of the extent of informative (opportunistic) earnings management.

Firms that MBE with a larger (smaller) extent of opportunistic earnings management than originally expected should experience a decrease (increase) in their abnormal return. Conversely, firms that MBE with a larger (smaller) extent of informative earnings management than originally expected should experience an increase (decrease) in their abnormal return.

3.5. Summary of Chapter's main Themes

This chapter provides the theoretical framework used to develop the hypotheses to test the research questions. The chapter begins by presenting Single Person Decision Theory as the lens by which the relationship between equity valuations and earnings management (nature and extent) can be investigated for firms that MBE.

Next, the chapter develops three hypothesis based on SPDT. The first two hypotheses relate to Research Question 1 by investigating the relationship between equity valuations for firms that MBE and earnings management (nature and extent) at the earnings announcement date. The third hypothesis relates to Research Question 2 by investigating the existence of a belief revision process during the financial statement analysis period.

4. Methodology

4.1. Introduction

This Chapter explains the research method employed to test the hypotheses developed in Chapter 3 and is organised as follows. Section 4.2 discusses the MBE setting employed in this research. Section 4.3 defines the dependent variable and its measurement. Section 4.4 discusses the rationale for, and measurement of, the independent variables and control variables. Section 4.5 details the research design of the empirical tests. Section 4.6 concludes the Chapter by summarising the main themes.

This research uses archival data in the form of company annual reports and market returns in order to investigate the research questions. Two groups of empirical tests are completed: tests that examine the association between earnings management and abnormal returns at the earnings announcement date; and tests that examine the association between earnings management and the abnormal returns during the financial statement analysis period.

4.2. The MBE Setting

Recall that both the research questions and hypotheses focus on the relationship between equity valuations and earnings management for firms that MBE. Accordingly, the sample used to test the hypotheses will only include firms that MBE. Firms that missed their earnings expectation are excluded.

There are several reasons for only including firms that MBE. First, the application of single person decision theory used to develop the hypotheses focuses on the market reaction to a firm's use of earnings management to MBE. In order to capture this market reaction, only MBE firms are included in the sample. Second, this research

seeks to build on past literature that investigates the equity valuations of firms that MBE (Balsam, Bartov & Marquardt 2002). Third, the abnormal returns of firms that MBE varies significantly from the abnormal returns of firms that miss expectations (Lopez & Rees 2002; Skinner & Sloan 2002).

4.3. Measuring the Dependent Variable

The following section discusses how the dependent variable is measured. First, the proxy for a firm's expected return is presented. The expected return is important because it is compared to the firm's actual return to determine the abnormal return. Next, the event window used to measure the abnormal return at the earnings announcement date and financial statement analysis period are discussed.

4.3.1. Defining the Expected Return Proxy for the Abnormal Return

The abnormal return is the difference between the expected return of a security and the actual, or observed, return. The abnormal return is calculated as the actual return less the expected return.

The literature offers several proxies for the unobservable expected return. One option is to use the Capital Asset Pricing Model (CAPM) to proxy the expectation. Another proxy is the market-wide return, or industry-wide return.

There are many research studies that document the inability of the CAPM to estimate an appropriate expected return (Mandelbrot 2004). Therefore, most researchers have utilized the market (or industry) adjusted return. However, the literature does not offer a consensus on how to define the market (or industry) benchmark (Bhojraj et al. 2009). For example, Table 1 outlines the different proxies used to measure the abnormal return in past, related studies.

Table 1 – Proxies used to measure the abnormal returns in past literature

Study	Proxy	Measurement
Balsam, Bartov, and Marquardt (2002)	• Cumulative abnormal returns	• Industry-adjusted cumulative abnormal return.
Bartov, Givoly, and Hayn (2002)	• Cumulative abnormal returns	• Beta-adjusted cumulative abnormal returns. • Results also calculated with alternative proxies, such as the periods buy-and-hold beta-adjusted abnormal return, and the cumulative size-adjusted returns. All three measures led to essentially the same results.
Baber, Chen & Kang (2006)	• Cumulative abnormal returns	• Does not disclose the benchmark used.
Koh, Matsumoto, and Rajgopal (2008)	• Cumulative abnormal returns	• Cumulative market-adjusted (value-weighted) abnormal returns
Bhojraj et al. (2009)	• Cumulative abnormal returns • Portfolio-matched buy-and-hold abnormal return	• The observed return is compared to the return of a corresponding value-weighted size/book-to-market portfolio.

This research calculates the abnormal return as the industry-adjusted return. The industry return is defined as the return from a value-weighted portfolio of companies with the same 2-digit SIC[8]. This measure is similar to the proxy used by Koh, Matsumoto, and Rajgopal (2008) and Balsam, Bartov, and Marquardt (2002).

It is also important to consider the method of compounding the returns. There are two commonly cited compounding methods documented in the literature: buy-and-hold abnormal returns (BHARs) and cumulative abnormal returns (CARs). CARs are similar to BHARs, but involving summing returns instead of compounding (Bhojraj et al. 2009). Prior literature suggests that for short periods of time, the summation process

[8] Note that the CRSP database does not provide industry groupings based on the GICS codes.

used when calculating CARs behaves better statistically than the compounding process used when calculating BHARs, leading to fewer inference problems (Bhojraj et al. 2009).

This study calculates the abnormal returns as CARs[9], which is consistent with Balsam, Bartov, and Marquardt (2002), Bartov, Givoly, and Hayn (2002), Baber, Chen & Kang (2006), and Koh, Matsumoto, and Rajgopal (2008). Aside from the common use of CARs in past literature, both Fama (1998) and Mitchell and Stafford (2000) advocate the use of CARs over BHARs.

4.3.2. Defining the Event Window for the Earnings Announcement Date

Hypothesis 1 (H_1) and Hypothesis 2 (H_2) investigate the impact of the nature and extent of earnings management on the abnormal return at the earnings announcement date. Accordingly, a short window is utilized to test H_1 and H_2 in order to capture the market's immediate reaction to the earnings release information.

The earnings announcement dates are obtained from two databases[10]. An important factor impacting the earnings announcement date in these databases is after-hour earnings announcements. Earnings-related price changes for after-hour announcements are not observed on the announcement date, but, one trading day later. Berkman and Truong (2009) show that daily price changes around earnings announcement dates are significantly biased if event dates are not adjusted for after-hours earnings announcement. Given the large number of observations, it is impractical to obtain the exact earnings announcement date. Berkman and Truong (2009) note this limitation

[9] Note that there are no significant differences between CARs and BHARs over short event windows.
[10] The IBES and Compustat databases are utilized to obtain the earnings announcement dates. These databases are discussed fully in Chapter 5.

and offer a prescription for event window specification by suggesting that the window should include one trading day after the earnings announcement. Therefore, the CAR will be measured over the following two short windows:

1. The 1-day window (0, 1), where day 0 is the earnings announcement date, and day 1 is one day after the earnings announcement.
2. The 3-day window (0, 3), where day 0 is the earnings announcement date, and day 3 is three days after the earnings announcement. The three day window provides a wider window around the earnings announcement date in order to capture any possible misspecifications of earnings announcement dates or after-hour announcements.

Baber, Chen & Kang (2006) also test a similar 1-day and 3-day window around the earnings announcement date. Balsam, Bartov, and Marquardt (2002) test a 9-day event window around the earnings announcement date; however, a 9-day window is not used in this study as H_1 and H_2 focus on the markets' immediate reaction.

Past literature documents differences between the earnings announcement dates across databases. For example, Berkman and Truong (2009) found that 8% of the earnings announcement dates were different between two major databases[11] for the Russell 3000 companies over the period of 2000 to 2004. Therefore, earnings announcement dates from the two databases are compared in order to ensure the accuracy of the date. Observations with dates of more than one day apart between databases are dropped from the analysis. This approach is consistent with past literature (Baber, W. R., Chen & Kang 2006; Bhojraj et al. 2009).

[11] The same two databases used in this research.

4.3.3. Defining the Event Window for the Financial Statement Analysis Period

Hypothesis 3 (H_3) deals with the market's reaction to the analysis of the financial statements. A publicly traded company must file Form 10-Q (quarterly report) with the SEC within 35 days of the end of each of the first three fiscal quarters (SEC 2002, 2004). A company has 65 days after the end of the fourth quarter to file its annual 10-K report (SEC 2002, 2004). The 10-Q/10-K presents the full set of financial statements with note disclosure.

Recently, many firms have been including their quarterly financial statements in Form 8-K, which is released at the earnings announcement date. For example, Chen, DeFond and Park (2002) found that the number of earnings announcements that include the balance sheet and cash flow information increased from 31% to 46% from 1993 to 1995.

The time period analyzed by Chen, DeFond and Park (2002) predates the data used in this research. However, there is no known study that provides updated information regarding the percentage of firms that disclose BS/CF information with their earnings announcement. In order to fill this gap, preliminary research is conducted to determine when the BS/CF information is available.

Earnings announcement reports from 1998 to 2007 are analysed for a random sample of firms studied in this research. The results reveal that approximately 93% of firms released an income statement and balance sheet with their earnings announcement. Therefore, the vast majority of firms provided the market with the information required to calculate the current quarter's discretionary accruals at the earnings announcement date. The results suggest that the average number of days between the earnings

announcement (for 8-K filing) and the financial statement filing (form 10-Q/10-K filing) is 13 days.

The financial statements provide the market with the data needed to compute the discretionary and non-discretionary accruals, thereby allowing investors to revise their *ex ante expectations* based on their *ex post assessment*. Balsam, Bartov, and Marquardt (2002) documented a negative association between discretionary accruals and CARs within 17 days of the 10-Q release date.

Given that the financial statements are mostly included with the earnings announcement, the following windows are tested for the financial statement analysis period:

1. The 16-day window (2, 17), where day 2 is the second day after the earnings announcement date, and day 17 is seventeen days after the earnings announcement.
2. The 14-day window (4, 17), where day 4 is fourth day after the earnings announcement date, and day 17 is seventeen days after the earnings announcement.

These windows test whether the market analyses the financial statements and revises their beliefs immediately after the earnings announcement.

4.4. Measuring the Independent Variables

This section discusses the independent variables and control variables used in this study. A summary table is presented at the end of this section. The independent variables are the nature and extent of earnings management.

4.4.1. The Nature of Earnings Management

An Earnings Nature Score (ENS) is developed to capture the nature of a firm's earnings management. The ENS relies upon four dichotomous variables. An ENS score of four suggests that the earnings management is opportunistic, while an ENS score of zero suggests that the earnings management is informative. Therefore, a higher ENS score suggests a higher expectation of opportunistic earnings management.

This section is organized as follow: Section 4.3.1.1 describes the individual components of the ENS; and Section 4.3.1.2 describes the alternative approaches to jointly employing the components into the Earnings Nature Score.

4.4.1.1. Factors Impacting the Nature of the Earnings Management

The current body of literature documents various indicators of earnings overstatements (Bayley & Taylor 2007) and financial manipulations (Dechow et al. 2011). The literature also offers composite measures of earnings quality (Bhojraj et al. 2009) and financial manipulation (Bayley & Taylor 2007; Dechow et al. 2011). However, a gap was revealed in the literature review as no model has been developed to provide insight into the nature of a firm's earnings management. Accordingly, the ENS is developed in this research, with past literature providing the foundation.

The components of the ENS are selected based on the following criteria:

1. ***Availability of Information:*** a component should be based on information that is available at the earnings announcement date.
2. ***Ease of Calculation:*** a component should be able to be computed instantaneously and with relative ease. This is important as the research

investigates the market's immediate reaction to the nature of earnings management at the earnings announcement date.

3. ***Insight into the Nature of Earnings Management:*** a component should provide insight into the nature of a firm's earnings management (opportunistic versus informative).

The following four components meet the above criteria, and are jointly employed in the ENS:

1. Change in gross margin percentage
2. Meeting revenue expectations
3. Firms that just barely MBE
4. The level of insider ownership

The four components selected are not intended to be collectively exhaustive. Rather, these components are selected as they provide a cross-section of insights into various facets of the nature of a firm's earnings management. The following is a discussion of the rationale for including each component into the ENS.

1) Change in gross margin percentage

The change in gross margin provides valuable information regarding the financial performance of the firm, and can therefore be used to interpret the nature of discretionary accruals (opportunistic versus informative). Gross margin is traditionally defined as the gross profit divided by sales, and is normally announced along with earnings[12].

[12] Although the SEC does not require registrants to report gross margin with Form 8-K when reporting earnings announcements, a review of Form 8-K filings on EDGAR over the period analyzed in this study reveals that most companies report gross margin in the text component of Form 8-K. Additionally,

Analysts pay significant attention to changes in gross margin at the earnings announcement date. Although there is very little academic research that focuses on the analysts' use of gross margin at the earnings announcement, there is ample anecdotal evidence to support this assertion. For example, Dell (NASDAQ: DELL) missed their 2010 first quarter's gross margin expectation and analysts reacted as follows:

> *"'The gross margin is somewhat concerning'" said Shaw Wu, an analyst at Kaufman Bros. in San Francisco (Guglielmo 2010)*

Another example can be found in the Wall Street Journal article entitled *Apple Filing Repeats View That Gross Margins Will Fall in 2011* which reported the following:

> *"Apples' shares are coming under some modest pressure in late trading after the company said in its 10-K filing with the SEC that it expects gross margin in future periods to decline from the 39.4% level recorded in FY 2010 … the company has already said it expects gross margin in the December quarter to be about 36%, which will be down from 36.9% in the September quarter, a level which fell a point or so short of Street expectations… in the filing, the company said the expected margin decline 'is largely due to a higher mix of new and innovative products that have higher cost structures and deliver greater value to customers, and expected and potential future component cost and other cost increases (Savitz 2011)."*

The Wall Street Journal, Bloomberg, and other financial media contain numerous examples of the market's emphasis on gross margin at the earnings announcement date.

Analysts' likely focus on gross margin as variations in the ratio affect the firm's long-term performance and it is informative with respect to earnings persistence (Lev & Thiagarajan 1993). A decrease in gross margin relative to sales is considered deteriorating financial performance because it indicates either a deterioration of the

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analysts can calculate gross margin as most firms include financial statements (excluding note disclosure) in Form 8-K.

firm's pricing power or a lack of production cost control, or some combination of the two. The opposite can be said for an increasing gross margin.

Gross margin, as a measure of financial performance, is used to create a dichotomous variable that receives a value of one ("1") if a firm's gross margin has decreased in the current quarter relative to the prior quarter. Otherwise, the variable will be zero ("0").

It could be argued that a decrease in gross margin could be positive for a company. For example, if the decrease in gross margin is offset by a faster inventory turnaround, the bottom line (net income) increases even though gross margin decreases. Although a decrease in gross margin can be positive in certain situations, it is more common that a decrease in gross margin will be viewed by the market as a negative. For example, a business generally focuses on either a low gross margin and high volume strategy or a high gross margin and low turnover strategy. Businesses do not tend to switch back and forth between these strategies (e.g., Wal-Mart has always been a high volume, low margin vendor).

Therefore, although it is possible that a decrease in gross margin can be seen to be a positive, it is unlikely that a lower quarter-over-quarter margin is going to be offset by a high turnover as this would suggest a change in business strategy. In addition, postulating that a decrease in gross margin is considered bad news is consistent with past literature (Lev & Thiagarajan 1993).

Another issue may be in regards to a seasonality component impacting the quarter-over-quarter change in gross margin (i.e., a decrease in gross margin may result from seasonality in sales, especially if a company has large amount of fixed costs allocated into the inventory costs).

The average gross margin in each quarter is as follows:

	Q1	Q2	Q3	Q4
Mean (%)	40.8	38.2	40.9	42.3
Difference (%) from previous quarter	(1.47)	(2.68)	2.77	1.38
p-value from z-test for mean difference	0.06	0.35	0.34	0.24

At the 5% level of significance, the differences in the gross margin means from quarter to quarter are not significant. Accordingly, on average, seasonality from quarter to quarter does not have a systematic impact on the measure of change in gross margin.

2) Meeting Revenue Expectations

Revenues forecasts are a widely followed performance metric. After earnings, revenue forecasts are likely the second most followed metric by analysts (Rees & Sivaramakrishnan 2007). Earnings announcements often demonstrate the importance the market places on revenue forecasts. For example, the following is an excerpt from a McDonald's (NYSE: MCD) press release:

> *"McDonald's (NYSE: MCD) has reported its Q1 EPS at $1.00, exceeding the consensus expectations of $0.96. MCD's revenues for the quarter came in at $5.61 billion, marginally beating the Street view of $5.52 billion."*

Revenue expectations are commonly included in the earnings announcement (Rees & Sivaramakrishnan 2007), and are given significant coverage in both print (e.g., The Wall Street Journal) and television (e.g., CNBC) media.

Anecdotal evidence suggests that the market's interpretation of earnings news depends on revenue performance. For example, after the markets closed on October 8, 2005, Apple Computer, Inc. announced fourth-quarter earnings of $0.52 per share. This was substantially above the consensus earnings estimate of $0.37 per share issued by Thomson Financial. However, Apple's stock price decreased nearly 11 percent. The

reason offered was that reported revenues of $3.68 billion failed to impress analysts, being well below forecasted revenues of $3.74 billion. Thus, while Apple's earnings performance exceeded expectations, its revenue performance did not, and the market reacted negatively.

Academic research also documents a significant association between abnormal returns and revenue forecast errors (Ertimur, Livnat & Martkainen 2003; Rees & Sivaramakrishnan 2007). The market reaction is justified as reporting increases in revenues has been associated with higher quality earnings. Specifically, firms with revenue supported earnings tend to have more persistent earnings (Ghosh, Gu & Jain 2005). In addition, revenue has information content that is incremental to earnings (Swaminathan & Weintrop 1991).

The effect of meeting revenue forecasts has a significant effect on the observed market premium (penalty) to meeting (missing) earnings forecasts. Specifically, there is a significant increase (decrease) in the market premium to meeting earnings forecasts when the revenue forecast is also met (missed). Similarly, the market penalty to missing earnings forecasts is significantly attenuated (accentuated) when the revenue forecast is met (missed) (Rees & Sivaramakrishnan 2007).

The literature suggests that the earnings management of firms that exceed revenue expectations is likely informative, signaling future profitability and high quality earnings (Ghosh, Gu & Jain 2005). Meeting revenue expectations is measured as a dichotomous variable that receives a value of one ("1") if revenue expectations are not met and a value of zero ("0") otherwise.

3) Firms that just barely MBE

Both anecdotal and academic research provides strong evidence that the market perceives firms that just barely MBE as employing an opportunistic earnings management strategy.

In terms of academic studies, it has been shown that the empirical patterns in quarterly forecast errors are consistent with the notion that management intervenes to just barely MBE (Balsam, Bartov & Marquardt 2002; Burgstahler & Eames 2006; Dechow, Richardson & Tuna 2000). There is a well documented kink in the distribution of earnings forecast errors at the zero level. It is unlikely that the large number of earnings that exactly met or narrowly beat analysts' forecast occurs by chance (Burgstahler & Dichev 1997; Burgstahler & Eames 2006).

There is also a host of anecdotal evidence suggesting the market perceives that firms that just barely MBE used opportunistic earnings management (Levitt 1998; Morgenson 2004). For example, the following is from the article *Pennies from Heaven* from The New York Times:

> *"… investors finally seem to be wising up to the fact that an extra penny of profit is not only meaningless but may also be evidence of earnings management and, therefore, bad news'(Morgenson 2004).*

This sentiment has been reflected in the market rewards to beating expectations by just a penny. In 1998, Dow components that beat their numbers by a cent saw their stocks rise 0.78 percent the day of the announcement. In 2004, the increase averaged 0.15 percent (Morgenson 2004).

Although some firms that MBE by one cent or less may be signaling future performance (Lee 2007), the anecdotal and academic research suggests that many of

these firms employ an opportunistic earnings management strategy. Therefore, although the small beat should not be the sole criteria for determining the nature of earnings management, as is the case in past studies (Balsam, Bartov & Marquardt 2002; Bhojraj et al. 2009), it does merit inclusion in a composite model that includes other financial statement metrics. Firms that MBE by a cent or less receive a value of one ("1"), otherwise, the firm will receive a value of zero ("0").

4) The level of insider ownership

An executive compensation package normally includes some form of stock based compensation. Stock based compensation is used to offset the myopic focus of base salary and bonuses. In addition, stock based compensation is thought to align the interests of managers and outside shareholders and reduce agency problems (John & John 1993).

However, stock based compensation is sensitive to changes in stock prices. It has been documented that MBE firms receive a disproportionately large abnormal share price return (Lopez & Rees 2002). Accordingly, executives of firms with sizable levels of insider ownership plans have increased incentives to report earnings that MBE (Bauman & Shaw 2006). Specifically, these managers have an incentive to manage earnings to MBE in order to increase their firm's share price and maximize their own personal wealth (Warfield & Cheng 2005).

The academic literature is consistent with this assertion. Various studies highlight the use of earnings management to inflate earnings in light of management's equity holdings (Bergstresser & Philippon 2006; Efendi, Srivastava & Swanson 2006; Gao & Shrieves 2002). For example, managers with high equity incentives (stock ownership

and stock options) are more likely to report earnings that meet or just beat analysts' forecasts, and less likely to report large earnings surprises (Warfield & Cheng 2005). These results are consistent with the notion that insider ownership increases managements focus on the analysts' short-term earnings forecast (Bauman & Shaw 2006) and leads to incentives to manage earnings.

The earnings management of firms with high insider ownership is shown to result in negative future consequences, including accounting restatements and insider sales at inflated prices (Warfield & Cheng 2005). Accordingly, the earnings management appears to be opportunistic.

The total level of insider ownership can be measured as a dichotomous variable based on the percentage of shares outstanding held by insiders. Firms with a high level of insider ownership receive a value of one ("1"), whereas firms with a low level of insider ownership receive a value of zero ("0"). A firm is considered to have a high level of insider ownership if its total insider ownership is greater than its industry median.

4.4.1.2. Combining the Factors into the Earnings Nature Score (ENS)

Two approaches are considered to jointly employing the individual components into the ENS:

1. Create a combined score by summing each individual dichotomous variable.
2. Employ a logistic regression to estimate the probability that a firm opportunistically managed earnings.

The following is an analysis of the strengths and weaknesses of each approach. A conclusion is offered based on the analysis.

1) Creating a combined score by summing each variable

The ENS can be calculated by summing the value of each component, as follows:

$$ENS = X_1 + X_2 + X_3 + X_4$$

Where,

ENS = the ENS Composite Score

X = the individual components

This approach is used in prior literature. For example, Bhojraj et al. (2009) develop an Earnings Quality measure with three indicators: 1) Discretionary accruals; 2) change in R&D expense; and 3) change in advertising expense. Each measure is converted into a dichotomous variable. An earnings quality statistic is created by summing the variables.

The strength of this approach lies in its simplicity in capturing the nature of a firm's earnings management. The drawback of this approach is that it is not possible to measure the statistical significance of the individual components, or the model as a whole.

2) Employing a logistic regression analysis

A logistic regression models the different characteristics between two sample cohorts (opportunistic versus informative earnings management). The model is estimated with the dependent variable equal to one if a firm employed opportunistic earnings

management and a value of zero if the earnings management is informative[13]. A logistic regression mitigates the inherent limitations of using OLS regression with a dichotomous dependent variable (Menard 2001).

Using a logistic regression, the ENS can be estimated as follows:

$$ENS = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where,

ENS = the Logit Measure (or ENS-probability)

X = the individual component

β = the estimated coefficient or weight for each component

Logistic regression is commonly utilized in the literature. For example, Bayley & Taylor (2007) and Dechow et al. (2011) both utilize logistic regression in developing predictive models of earnings management.

The advantage of this approach lies in the statistical rigour offered by regression analysis. The coefficients of the independent variables provide a weighting system for jointly employing the components. In addition, the regression analysis provides a statistical method to determine the overall reasonableness of the model in predicting the nature of earnings management.

However, there is a significant limitation. A logistic regression requires a sample of firms with known cases of both opportunistic and informative earnings management. It is very difficult, if not impossible, to build the sample required to calibrate the model and obtain the coefficients.

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[13] It should be noted that an alternative to logistic regression is probit regression. Probit regression uses the area under the normal distribution to linearize a curvilinear relationship, whereas logistic regression relies on the natural log. Despite this difference, probit analysis and logistic regression give essentially equivalent results, making the choice between them one of individual preference (Pampel 2000).

The SEC's "Accounting and Auditing Enforcement Releases (AAERs)" represent the cases of earnings management that are known to be opportunistic with certainty. AAERs have been used to identify samples where earnings manipulations can be reasonably assumed (Bayley & Taylor 2007; Beneish 1999; Dechow et al. 2011; Dechow, Sloan & Sweeney 1995). However, most AAERs pertain to outright fraudulent financial reporting and violations of GAAP (Dechow et al. 2011). These observations are not suitable because this research seeks to identify earnings management that lies within the boundaries of GAAP.

3) Selecting among the alternatives to develop the ENS

Table 2 presents a summary of the strengths and weaknesses of each approach.

Table 2 – Strengths and Weaknesses of alternatives to jointly employing ENS components

	Strengths	Weaknesses
Summing each dichotomous variable	• Does not require a sample of firms that opportunistically managed earnings for calibration. • Utilized in past literature (Bhojraj et al. 2009).	• Lacking statistical significance. • Automatically assigns an equal weight to each of component.
Employing a logistic regression	• Statistical significance of independent variables and model can be assessed. • Weighting system for jointly employing the variables is provided. • Utilized in past literature (Bayley & Taylor 2007; Dechow et al. 2011).	• Sample of firms that opportunistically managed earnings to MBE is needed. This sample is impossible to obtain.

Based on the insurmountable obstacle regarding the calibration sample required to employ a logistic regression, the ENS will be developed by summing each dichotomous variable. This is the same approach employed by Bhojraj et al. (2009).

The ENS model is tested on a stand-alone basis prior to being used to test the hypotheses. The tests are discussed in Chapter 5 and focus on the ENS's ability to differentiate between opportunistic and informative management.

4.4.2. The Extent of Earnings Management

The ENS model measures the nature of earnings management. However, H_2 and H_3 postulate that the abnormal return for firms that MBE is a function of both the nature and extent of earnings management. There are many different models that can be used to measure the extent of discretionary accruals, or earnings management. This section describes the alternative measures of the extent of earnings management, the model selected in this research, and the time-series versus cross-sectional options for estimation.

4.4.2.1. A Survey of the Models used in Similar Studies

Although each model has advantages and disadvantages, the Jones (1991) and Modified Jones (1995) models are the most widely-used models for calculating discretionary accruals.

Table 3 presents a summary of the earnings management measures used in similar past studies:

Table 3 - Earnings management measures used in past studies

Study	Model	Measurement
Balsam, Bartov, and Marquardt (2002)	• Cross-sectional version of the Jones (1991) Model as in Defond and Jiamnalvo (1994)	$TACC_t / A_{t-1} = \alpha_1 (1/ A_{t-1}) + \alpha_2 (\Delta REV_t/ A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \varepsilon_t$
Bartov, Givoly, and Hayn (2002)	• Jones (1991) Model • Alternative measure based on working capital accruals	1) $TACC_t / A_{t-1} = \alpha_1 (1/ A_{t-1}) + \alpha_2 (\Delta REV_t/ A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \varepsilon_t$ 2) Alternative Model: Working Capital Accruals = ΔA/R + Δ Inv. + Δ Prepaids – ΔA/P – Δ Taxes Payable Discretionary Accruals = T.A. – W.C.A. – Depreciation and Amortization
Baber, Chen & Kang (2006)	• Jones (1991) Model	$TACC_t / A_{t-1} = \alpha_1 (1/ A_{t-1}) + \alpha_2 (\Delta REV_t/ A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \varepsilon_t$
Koh, Matsumoto, and Rajgopal (2008)	• Cross-sectional version of the modified Jones model as in Dechow, Sloan, and Sweeney (1995) controlling for performance as in Kothari, Leone, and Wasley (2005).	$TACC_t / A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2 (\Delta REV_t / A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \alpha_4 (EBEIT_t/ A_{t-1}) + \alpha_5$ QTR4
Bhojraj et al. (2009)	• Cross-sectional version of the modified Jones model as in Dechow, Sloan, and Sweeney (1995).	$TACC_t / A_{t-1} = \alpha_1 (1/A_{t-1}) + \alpha_2 ([\Delta REV_t - \Delta AR_t]/A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \varepsilon_t$

The main limitation of the Jones model and Modified Jones model is that they tend to treat some nondiscretionary working capital accruals as discretionary (Bernard & Skinner 1996) and there are some misspecification problems when applied to a sample of firms with extreme performance (Kothari, Leone & Wasley 2005).

4.4.2.2. The Modified Jones Model

This research estimates the extent of discretionary accruals with the Modified Jones (1991) Model as used in Dechow, Sloan, and Sweeney (1995) controlling for

performance as in Kothari, Leone, and Wasley (2005). There are many reasons for selecting the Modified Jones Model:

1. The Modified Jones Model is commonly used in the past studies that investigate earnings management (Bhojraj et al. 2009; Koh, Matsumoto & Rajgopal 2008).
2. Support for the Modified Jones Model can be found in various studies that evaluate discretionary accrual models (Guay, Kothari & Watts 1996).
3. The Modified Jones Model is superior to the original Jones model.
    a. The Jones Model assumes that all revenues are non-discretionary (Dechow, Sloan & Sweeney 1995). The Modified Jones model has a significant advantage over the original Jones model in that it includes the change in accounts receivable. Dechow, Sloan and Sweeney (1995) argued that earnings management was more likely to occur in relation to credit sales rather than cash sales, and therefore justify the inclusion of accounts receivable.
    b. The Modified Jones Model adjusts for misspecification problems that arise when the Jones Model is applied to firms with extreme performance and controls for changes in the firm's economic circumstances (Kothari, Leone & Wasley 2005).

The Modified Jones Model calculates discretionary accruals, which are used as a measure the extent of earnings management. To partition total accruals into its discretionary and non-discretionary components, Kothari, Leone, and Wasley (2005) use the following expectations model:

Equation 1 – Performance Adjusted Modified Jones Model Regression

$TA_q / A_{q-1} = \alpha_1 (1/ A_{q-1}) + \alpha_2 ([\Delta REV_q - \Delta AR_q] / A_{q-1}) + \alpha_3 (PPE_q/ A_{q-1}) + \alpha_4 (ROA_q) + \varepsilon_q$

where,

- TA_q denotes the total accruals in quarter q,
- A_{q-1} denotes the total assets in quarter q-1,
- ΔREV_q is the change in net sales in quarter q,
- ΔAR_q is the change in accounts receivable in quarter q,
- PPE_q is the Property Plant & Equipment in quarter q,
- ROA_q is income before extraordinary items in quarter q divided by lagged total assets,
- ε_q is the error term in quarter q.

The coefficients in Equation 1 are obtained from a regression with total accruals (TA) as the dependent variable. The intercept term, combined with the deflating of all variables by lagged total assets, corrects for heteroskedasticity (Ronen & Yaari 2008). This is the first-stage regression. The discretionary accruals are calculated in second-stage. Equation 2 is used to calculate the level of non-discretionary accruals:

Equation 2 – Non-discretionary Accrual Calculation

$NDA_q = TA_q - \alpha_1(1/A_{q-1}) - \alpha_2 ([\Delta REV_q - \Delta AR_q] / A_{q-1}) - \alpha_3 (PPE_q/ A_{q-1}) - \alpha_4 (ROA_q)$

where,

- NDA_q denotes the non-discretionary accruals in quarter q.
- TA_q denotes the total accruals in quarter q.
- A_{q-1} denotes the total assets in quarter q-1,
- ΔREV_q is the change in net sales in quarter q,
- ΔAR_q is the change in accounts receivable in quarter q,
- PPE_q is the Property Plant & Equipment in quarter q, and
- ROA_q is income before extraordinary items in quarter q divided by lagged total assets.

The industry specific coefficients for $\alpha_1, \alpha_2, \alpha_3, \alpha_4,$ are obtained from the first-stage regression. The discretionary accruals are used as the proxy for the extent of earnings management.

4.4.2.3. Time-series versus Cross-sectional data

The original Jones (1991) model uses time series data in the first-stage regression to estimate the coefficients for Equation 1. The time series relies upon fourteen years of data for each sample firm. The time-series formulation of the Modified Jones model has proven restrictive because of the need for at least ten years of data per sample firm to estimate the first-stage regression parameters (Peasnell, Pope & Young 2000). This requirement raises several concerns:

1. First, issues of survivorship bias and selection bias emerge. These biases occur because mostly large, mature firms with greater reputational capital are likely to survive for ten years. Therefore, they are likely to be selected (Jeter & Shivakumar 1999; Menon & Williams 2004).
2. Second, the assumption that the coefficient estimates on the change in revenue and property, plant and equipment remain stationary over time may not be appropriate (Peasnell, Pope & Young 2000).
3. Third, it is not clear that the sample firms have no incentive to manage earnings in the estimation period (McNichols 2000).
4. Finally, the self-reversing property of accruals may introduce specification problems in the form of serially-correlated residuals (Peasnell, Pope & Young 2000).

Therefore, researchers began estimating the first-stage regression coefficients with cross sectional data. A cross sectional analysis compares companies in the same industry. This implicitly assumes that the coefficients are the same across all companies in the same industry during the estimation period (Jeter & Shivakumar 1999; Menon & Williams 2004).

Cross-sectional versions of the Modified Jones Model dominate the literature (Peasnell, Pope & Young 2000). For example, the following studies have used cross sectional data to investigate: the premium to meeting or beating earnings expectations (Bartov, Givoly & Hayn 2002); the stock market pricing of discretionary accruals (Subramanyam 1996); the market's ability to disentangle the impact of earnings management upon the release of financial statements (Baber, W. R., Chen & Kang 2006); institutional ownership and the reaction to earnings management (Balsam, Bartov & Marquardt 2002); institutional ownership and monitoring (Chung, Jacobs & Tang 2003); the use of expectations management versus earnings management (Koh, Matsumoto & Rajgopal 2008); earnings management to just barely meet or beat expectations (Bhojraj et al. 2009); the underperformance of seasoned equity offerings (Teoh, Welch & Wong 1998a); voluntary disclosure (Kasznik 1999); and debt covenant violations (DeFond & Jiambalvo 1994).

The main limitation of the cross sectional model is the assumption that the benchmark for a firm's accruals is the behaviour of other firms in the industry (McNichols 2000).

This research study employs cross-sectional data as opposed to time series data. The limitations of the cross sectional model are less significant than the limitations of the time series model. In addition, support for the cross sectional analysis can be found in the literature (Peasnell, Pope & Young 2000), and most related past studies use the cross sectional model.

4.4.2.4. Industry Classification Scheme

Two important factors impact the industry classification scheme for the Modified Jones Model. First, an industry classification scheme must be able to group like companies.

Second, the level of categorization within the classification system (e.g., sector, industry group, industry, etc.) must be considered.

There are four broadly available industry classification schemes: 1) Standard Industry Classifications (SIC) codes; 2) North American Industry Classification System (NAICS) codes; 3) The Global Industry Classifications Standards (GICS) system; and 4) the Fama and French (1997) algorithm. The GICS classification is significantly better at explaining stock return co-movements and various other key financial ratios (Bhojraj, Lee & Oler 2003). In addition, the GICS classification system distinguishes non-discretionary from discretionary accruals better than the three alternatives (Hrazdil & Scott 2010).

Many past studies rely upon two-digit SIC codes as they provides a large number of firms in the same industry. However, two-digit SIC codes tend to aggregate firms that have very little in common (Bernard & Skinner 1996). The GICS system is superior for calculating discretionary accruals (Hrazdil & Scott 2010). Therefore, discretionary accruals will be estimated on a cross-sectional basis by grouping firms according to their GICS.

There are various levels of classification within the GICS system. For example, the 2-digit level of the GICS system provides a company's sector, while the 4-digit and 6-digit levels provide the industry group and industry, respectively. A higher level classification (e.g., 2-digit) will result in larger sample size than a lower level classification (e.g., 6-digit); however, the higher level classification is more likely to group unlike companies together than a lower level classification (Bernard & Skinner 1996).

Prior literature reveals much variation in the sample sizes used for the first-stage Modified Jones Model regression. For example, Jones's (1991) time-series analysis relied upon a sample of 23 firms from five different industries. While testing the effectiveness of discretionary accrual models, DeFond and Jiambalvo (1994) tested the cross-sectional Modified Jones Model with samples of 23 and 32 observations. The average sample size for time-series regressions is eight, and 109 for cross-sectional studies. The standard deviation for the cross-sectional study sample size is approximately 68, suggesting that 65% of samples fall between the range of 41 and 169 observations. The minimum of sample was seven observations (Bartov, Gul & Tsui 2000).

With the data in this research, using the 6-digit GICS industry grouping results 58 industries with an average of 7 firms per industry[14]. As expected, a lower level classification results in a large number of small industries. Small industry samples pose a problem as they do not provide enough firm-specific observations to estimate the coefficients from the first-stage regression.

Based on the above considerations, the 4-digit GICS is selected. Using a 4-digit GICS industry grouping results in 22 industry groupings, with an average of 27 firms per industry grouping. Additional details on the industry grouping can be found in Section 5.3.2.

4.4.3. The Control Variables

In addition to the nature and extent of earnings management, additional variables are included in the regression equation as control variables. Several variables are included

[14] Hrazdil and Scott (2010) used the 6-digit level of the GICS system.

in the regressions to control for their effect on the abnormal return (Keith 2005). The control variables are included to provide a more precise estimate of the coefficients for the nature and extent of earnings management. In addition, the control variables are included to control for factors known to be associated with abnormal returns.

The following is a description of the control variables, along with their rationale for inclusion.

1. ***Firm Size:*** Firm size is measured as the log of the firm's total assets. The need to control for firm size, when investigating abnormal returns in an event setting, has been well documented (Cheon, Christensen & Bamber 2001; Kothari & Wasley 1989). Taking the log of the total assets will help achieve a normal distribution of the variable and reduces the potential for heteroscedasticity. The coefficient is expected to be negative, based on the literature that documents a negative relationship between firm size and market returns (Fama 1992).

2. ***Firm Performance:*** The performance of a firm is measured as the return on assets (percentage). Firm performance is included as a control variable because it can impact the earnings response coefficient (Scott 2008). That is, the market pricing mechanism for earnings may vary across firms with different performance.

3. ***Firm Growth:*** The firm's growth potential is measured as the market-to-book ratio (Chen, L. & Zhao 2006; Hovakimian, Opler & Titman 2001). The market-to-book ratio has been shown to have a significant impact on a firm's abnormal return. For example, the market-to-book ratio is the inverse of the book-to-

market ratio, which was used in the Fama-French three factor model (Fama & French 1992).

4. ***Institutional Ownership:*** Institutional ownership is measured as the percentage of shares outstanding held by institutions. Institutional ownership is associated with the time it takes for discretionary accruals to be reflected in equity values (Balsam, Bartov & Marquardt 2002). Hypothesis 3 focuses on the belief revision between the earnings announcement date and financial statement analysis period. Accordingly, the Hypothesis 3 regression includes a control variable for the level of institutional ownership.

Although the information content of earnings is important at explaining the market return (Ohlson 1995; Skinner & Sloan 2002), the earnings surprise (the difference between the actual earnings and the consensus earnings estimate) is not included as a control variable because it is used as a partitioning variable. Excluding the earnings surprise, when it is used as a partitioning variable, is consistent with prior literature (Balsam, Bartov & Marquardt 2002).

4.3.4. Summary of Variable Measurement

Table 4 presents a summary of the variables, along with their measurement.

Table 4 – Summary of variable measures and descriptions

Variable Name	Variable Measure	Description
Dependent Variable		
1. Abnormal return of firms that MBE	Industry-adjusted CAR	The abnormal return is measured by adjusting the firm's observed return for their 2-digit SIC industry return over the same period. The CAR is measured over various short windows around the earnings announcement date, including 1-day, 3-day, and 16-day window.
Independent Variables		
2. The extent of earnings management (discretionary accruals)	Performance adjusted Modified Jones Model	The following model is estimated: $NDA_q = \alpha_0 + \beta_1(1/ASSETS_{q-1}) + \beta_2[(\Delta REV_q - \Delta AR_q)/ASSETS_{q-1}]$ $+\beta_3(PP\&E_q / ASSETS_{q-1}) + \beta_4 ROA_q + \varepsilon_q$ The model is estimated with cross-sectional data. The industry is defined as the 4-digit GICS.
3. The nature of earnings management (the Earnings Management Nature Score)	The ENS is the aggregate score of the following dichotomous variables.	The ENS ranges from 0 (informative) to 4 (opportunistic). It is the sum of the four dichotomous variables that capture aspects of the nature of earnings management.
3.1. Change in gross margin percentage	$GM\%_t - GM\%_{t-1}$	A dichotomous variable that receives a value of 1 if gross margin percentage decreased in the current quarter relative to the prior quarter, and a value of 0 otherwise.
3.2. Meet or beat revenue expectations	Actual Revenue > Revenue expectations	A dichotomous variable that receives a value of 1 if the firm misses their revenue expectations, and a value of 0 otherwise.
3.3. Firms that just barely MBE	Meet or beat expectations by 1¢ or less	A dichotomous variable that receives a value of 1 if a firm meets or beats expectations by 1 cent or less, and a value of 0 otherwise.

	3.4. Level of insider ownership	Total percentage of stocks owned by management divided by total shares outstanding.	A dichotomous variable that receives a value of 1 if the level of a firm's insider ownership is greater than the median level for the company's industry, and a value of 0 otherwise.
Control Variables			
4. Firm Size		The natural log of total assets	A variable that controls for the firm's size.
5. Firm Performance		Return on assets	A variable that controls for the firm's performance.
6. Firm Growth		Market-to-book ratio	A variable that controls for the firm's growth opportunities.
7. Institutional Ownership		% of shares outstanding held by institutions	A variable that controls for the extent of institutional ownership. It is measured as a firm's shares held by institutions.

4.5. Research Design – Testing the Hypothesis

Hypotheses 1 and Hypothesis 2 investigate whether the announcement date abnormal return of firms that MBE is a function of the nature and ex ante expectation of the extent of earnings management. Hypothesis 3 investigates whether the longer-window abnormal return of firms that MBE incorporates an ex post assessment of the extent of the earnings management once the financial statements are analysed. This section develops the regression models that test the hypotheses, and commences with a review of models used in prior studies.

4.5.1. A Survey of the Models used in Similar Studies

Bartov, Givoly, & Hayn (2002) were the first to formally test for the existence of an MBE premium. Using a sample that includes firms that both met and missed their earnings expectations, they estimated the following regression equation:

Equation 3 – Bartov, Givoly, & Hayn (2002) Regression Equation

$$CAR = \beta_0 + \beta_1 ERROR + \beta_2 SURP + \beta_3 DMBE + \beta_4 DBEAT + \beta_5 DMBE * SURP + \varepsilon_i$$

DMBE and DBEAT are dichotomous variables that receive a value of 1 if the firm meets, or meets or beats the earnings expectation, respectively. Note the following difference between the ERROR and SURP variables:

- ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter; standardized by price at the beginning of the quarter.
- SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter; standardized by price at the beginning of the quarter.

Around the same time as Bartov, Givoly, & Hayn (2002) study, Balsam, Bartov, & Marquardt (2002) investigated the market's reaction to discretionary accruals for firms that beat expectations by one cent. The following regression model was estimated:

Equation 4 – Balsam, Bartov, & Marquardt (2002) Regression Equation

$CAR = \alpha_0 + \alpha_1 DACC + \varepsilon_i$

DACC is the extent of discretionary accruals, measured with the Jones Model. Although Balsam, Bartov & Marquardt (2002) did not test for an MBE premium, their sample was structured to include only firms that beat earnings expectations by one cent and had discretionary accruals of at least 1% of total assets. Firms that meet these two criteria are assumed to have undertaken an opportunistic earnings management strategy. Accordingly, the coefficient α_1 is expected to be negative and significant, suggesting that the abnormal return has a negative relationship with opportunistic discretionary accruals.

Baber, Chen & Kang (2006) build on the Balsam, Bartov, & Marquardt (2002) model by investigating whether the market reacts to earnings management on the earnings announcement date when firms disclose BS/CF information. They test the following model:

Equation 5 – Baber, Chen & Kang (2006) Regression Equation

$CAR = \delta_0 + \delta_1 UE + \delta_2 DACC + \varepsilon_i$

UE is the earnings surprise scaled by a firm's market value, and DACC is the extent of discretionary accruals. This regression equation is estimated on two samples, observations where BS/CF information is provided and observations where it is not.

The coefficient δ_2 is expected to be negative and significant for the firms that disclose additional information, and zero for firms that do not disclose additional information.

Recently, Bhojraj et al. (2009) investigated the performance consequences of cutting discretionary expenditures and managing accruals to exceed analyst forecasts. Their sample focuses on firms that beat or missed earnings expectations by one cent in order to maximize the likelihood that a firm that beat (missed) would have missed (beaten) had it not (had it) increased earnings through accruals or changes in discretionary expenditures. They developed an Earnings Quality measure that is based on three indicators (discretionary accruals, change in R&D expense, and change in advertising expense). Their results show that firms that just beat analyst forecasts with low quality earnings exhibit a short-term stock price benefit relative to firms that miss forecasts with high quality earnings.

4.5.2. Hypotheses 1 and 2 – Abnormal Returns at the Earnings Announcement Date

Balsam, Bartov, & Marquardt (2002) proposed the following regression to investigate the impact of the extent of earnings management on the abnormal return for firms that MBE:

$$CAR = \alpha_0 + \alpha_1 DACC + \varepsilon_i$$

Baber, Chen & Kang (2006) extended this model by estimating the following regression:

$$CAR = \delta_0 + \delta_1 UE + \delta_2 DACC + \varepsilon_i$$

This research extends the Baber, Chen & Kang (2006) model by including an additional variable in the regression equation to capture the nature of earnings management, ENS, and the interaction between the extent and nature of earnings management. The ENS is based on four metrics (gross margin, revenue surprise, small beat, and insider ownership), and combined in the same manner as the Earnings Quality measure in Bhojraj et al. (2009).

Essentially, this research merges the Bhojraj et al. (2009) methodology for proxying the nature of earnings management with the Balsam, Bartov, & Marquardt (2002) and Baber, Chen & Kang (2006) regression methodology for the extent of earnings management and adds additional control variables. The merger eliminates the issues associated with the assumption that all firms that MBE by one cent or less employed an opportunistic earnings management strategy (Lee 2007).

The merger is accomplished with an interaction variable that captures the dynamic relationship between the nature and extent of earnings management on the abnormal return. Therefore, the following OLS regressions test Hypotheses 1 and Hypothesis 2:

Equation 6 – Hypothesis 1 Regression Equation

$$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 ENS_{i,Q} + \beta_2 TA_{i,Q} + \beta_3 MTB_{i,Q} + \beta_4 ROA_{i,Q} + \varepsilon$$

Equation 7 – Hypothesis 2 Regression Equation

$$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{t\text{-}1i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{t\text{-}1i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$$

Whereby,

- $CAR\_S_{i,Q}$ is firm i's industry-adjusted cumulative abnormal return in the short window;
- $DACC_{t-1i,Q}$ is firm i's measure of the extent of earnings management (discretionary accruals) in the quarter prior to the earnings announcement quarter, as calculated with the performance-adjusted discretionary accruals model;
- $ENS_{i,Q}$ is the Earnings Nature Score (0, 1, 2, 3 or 4) that measures the nature of earnings management;
- $DACC_{t-1}xENS_{i,Q}$ is the interaction between the nature (ENS) and extent (DACC) of earnings management that measures the change in relationship between DACC and CAR across the different natures of earnings management;
- $TA_{i,Q}$ is the log of firm i's total assets and is a control variable for firm size;
- $MTB_{i,Q}$ is firm i's market-to-book ratio and is a control variable for firm growth;
- $ROA_{i,Q}$ is firm i's return on assets and is a control variable for firm performance.

Equation 6 is used to test Hypothesis 1 as it focuses solely on the relationship between the nature of earnings management and the abnormal return of firms that MBE.

Equation 7 is used to test Hypothesis 2 as it incorporates both the nature and extent of earnings management.

Bhojraj et al. (2009) and Balsam, Bartov, & Marquardt (2002) focus on firms that MBE by one cent or less in order to control for the nature of earnings management. This research controls for the nature of earnings management with the ENS variable, as opposed to analyzing only small beat firms. Therefore, the sample used for the regressions in this research includes all firms that met or exceeded their earnings

expectation. Including all MBE firms allows for an analysis of the market's response to the nature and extent of earnings management in the MBE setting.

Recall that the market requires time to analyze the financial statements in order to determine the extent of the current quarter's discretionary accruals. Therefore, the ex ante expectations of the extent of earnings management is measured as the discretionary accruals in the prior quarter. This assumes that the market uses a firm's prior quarter earnings management as a proxy for the extent of the current quarter discretionary accruals at the earnings announcement date. This assumption is tested by using the current quarter's discretionary accruals in the regression as a sensitivity analysis.

Under the alternate of H_1, the ENS coefficient (β_2) of Equation 6 is of interest. Under the alternate of H_2, coefficients β_2, β_3, and β_4 of Equation 7 are of interest. Including the interaction variable (β_4) makes it difficult to interpret the DACC (β_2) and ENS (β_3) coefficients in isolation. Without the interaction variable, the ENS coefficient (β_3) is expected to be negative and significant, thereby suggesting that abnormal return decrease as the expectation of opportunistic earnings management (ENS) increases. This is consistent with Hypothesis 1.

Without the interaction variable, the coefficient for DACC (β_2) could be positive or negative. For firms that have informative discretionary accruals, β_2 is expected to be positive and significant as high quality discretionary accruals signal strong future performance (Lee 2007; Subramanyam 1996; Xie 2001). However, β_2 is expected to be negative and significant for firms with opportunistic discretionary accruals as the accruals are intended to mislead investors and mask a firm's true performance (Baber,

W. R., Chen & Kang 2006; Balsam, Bartov & Marquardt 2002; Bartov, Givoly & Hayn 2002).

The relationship between DACC and CAR can be interpreted by focusing on the coefficient of the interaction term (β_4). The interaction term allows for an assessment of the impact of both the nature and extent of earnings management on the abnormal return. Hypothesis 2 postulates that the coefficient of the interaction term, β_4, is expected to be negative and significant. A negative and significant interaction coefficient suggests that the relationship (slope) between DACC and CAR decreases as the ENS increases. Stated intuitively, this suggests that the extent of earnings management (DACC) has an increasingly negative relationship with the abnormal return as the earnings management moves from informative to opportunistic (ENS increases).

4.5.3. Hypothesis 3 – Abnormal Returns during the Financial Statement Analysis Period

Hypothesis 3 investigates the abnormal return of firms that MBE during the financial statement analysis period in relation to the earnings announcement date. Hypothesis 3 is tested by estimating the following OLS regression equation:

Equation 8 – Hypothesis 3 Regression Equation

$$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC\_SURP_{i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC\_SURP_{i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon_{i,Q}$$

Whereby,

- $CAR\_L_{i,Q}$ is firm i's industry-adjusted cumulative abnormal return during the financial statement analysis period;
- $DACC\_SURP_{i,Q}$ is firm i's measure of discretionary accruals in the current quarter less the discretionary accruals in the prior quarter, as calculated with the performance-adjusted discretionary accruals model;
- $ENS_{i,Q}$ is the Earnings Management Score (0, 1, 2, 3 or 4) that measures the nature of earnings management;
- $DACC\_SURPxENS_{i,Q}$ is the interaction between the ENS and DACC_SURP variables that measures the change in relationship between DACC_SURP and CAR given the nature of earnings management;
- $TA_{i,Q}$ is the log of firm i's total assets and is a control variable for firm size;
- $MTB_{i,Q}$ is firm i's market-to-book ratio and is a control variable for firm growth;
- $ROA_{i,Q}$ is firm i's return on assets and is a control variable for firm performance;
- $INST\_OWN_{i,Q}$ is a the percentage of common shares outstanding that are owned by institutions.

Hypothesis 3 postulates that firms with a larger (smaller) extent of opportunistic earnings management will experience a negative (positive) abnormal return during the financial statement analysis period. In addition, firms that have a larger (smaller) extent of informative earnings management will experience a positive (negative) abnormal return during the financial statement analysis period. Therefore, the interaction between the DACC_SURP and ENS is expected to be negative and significant because any additional accruals (i.e., $DACC_t - DACC_{t-1}$) are opportunistic at high levels of ENS. This should result in a reduction of the abnormal return during the financial statement analysis period.

4.6. Summary of Chapter's Main Themes

This Chapter develops the research design to test the hypotheses. First, a discussion of the dependent variables (abnormal return) is offered, including alternative methods of calculation and the various windows around the earnings announcement date and financial statement analysis period. Next, the proxy for the nature of earnings management is developed in the form of the Earnings Nature Score. The proxy for the extent of earnings management follows, along with a discussion of the control variables. Finally, the regression equations are outlined.

5. The Data

5.1. Introduction

The purpose of this Chapter is twofold: 1) to present descriptive statistics of the data; and 2) to test the ENS model on a stand-alone basis prior to using it in the hypothesis testing. The Chapter is organised as follows: Section 5.2 explains the data sources. Section 5.3 discusses the population and sample selection method. Section 5.4 explores the MBE phenomenon and MBE premium in the data. Section 5.5 discusses the summary statistics of the first-stage Modified Jones Model regressions. Section 5.6 assesses the ENS's ability to identify opportunistic and informative earnings management. The ENS is analysed on a stand-alone basis prior to being used in the tests of the hypothesis because it is a new model that has not been tested in prior literature. Lastly, Section 5.7 concludes the Chapter by summarising the main themes.

5.2. Data Sources

The data is obtained from the following databases: 1) Thomson Reuter's Institutional Brokers' Estimate System (IBES); 2) Thomson Reuter's Datastream; 3) Standard & Poor's Compustat; 4) Securities and Exchange Commission's Electronic Data Gathering, Analysis, and Retrieval (EDGAR); 5) University of Chicago's Centre for Research on Security Prices (CRSP).

The actual and consensus estimates of the EPS and revenue are obtained from the IBES database. Obtaining both the actual and consensus estimates from the same database is important in order to maintain consistency when determining if expectations are exceeded (Bhojraj et al. 2009).

The Datastream and Computat databases provide the fundamental data: cash, current assets, current liabilities, current maturities of long-term debt, income taxes payable, depreciation and amortization expense, total assets, revenue, accounts receivable, property, plant, & equipment, return on assets, gross margin, operating cash flows, and the market-to-book ratio of equity.

The fundamental data is compared against the actual information filed in EDGAR in order to ensure accuracy. For a random sample of firm observations, the financial statement information from the databases is compared to the actual financial statements filed on Form 10-Q. The same procedure is performed for the earnings announcement dates. Specifically, the earnings announcement dates obtained from the databases (matched between Compustat and IBES) is compared to the actual earnings announcement date (filing date of Form 8-K) in EDGAR.

The CRSP database is used to obtain the cumulative abnormal returns (1-day, 3-days, 17-days, etc.), while the percentage of shares held by insiders and the percentage of shares held by institutions are obtained from the IBES database.

5.3. Sample Selection

The starting point for the sample selection is the United States, Standard & Poor's S&P 500. The S&P 500 has been published since 1957 and is a capitalization-weighted price index of 500 large-cap common stocks actively traded in the United States. The stocks included in the S&P 500 are those of large publicly held companies that trade on either of the two largest American stock markets: the NYSE and the NASDAQ. The S&P 500 is one of the most widely followed indexes of large-cap American stocks and is a bellwether for the American economy.

5.3.1. Time Period Analysed

There are various factors that impact the time period selected:

1. **Global Credit Crisis:** The global credit crisis disconnected market valuations from fundamental valuations. The global credit crisis began in mid-2008.
2. **Availability of First Call Forecasts on the Web:** Analysts' First Call forecasts appeared in the early 1990s and their first appearance on the Internet occurred in 1994. These developments widened the dissemination of analysts' forecast and increased their use as a benchmark for firm performance.
3. **The Beginning of the "Earnings Game":** The research on the earnings game, with respect to meeting or beating analysts' expectations, emerged during the mid-1990s as data on the analysts' expectations became more easily available. However, it is possible that the earnings game has been going on well before the 1990s. Research suggests that the average analysts' forecast error became negative in the mid-1990s (Brown 1997 and 2000).
4. **Past, Related Literature:** Table 5 presents the time periods analyzed in prior literature that investigate earnings management in the MBE setting

Table 5 - Time Periods Analysed by Past Research

Study	Time Period	Years	Observations
Balsam, Bartov, and Marquardt (2002)	1996 to 1998	3	• 613 firm quarters.
Bartov, Givoly, and Hayn (2002)	1983 to 1997	14	• 76,265 firm quarters.
Baber, Chen & Kang (2006)	do not disclose the time period analysed		• 10,248 firm quarters.
Koh, Matsumoto, and Rajgopal (2008)	1987 to 2006	20	• 75,911 firm quarters.
Bhojraj et al. (2009)	1998 to 2006	9	• 1,686 firm quarters that missed by 1 cent and 2,893 firm quarters that beat by 1 cent.

Based on these factors, the time period selected is the ten year period from 1998 to 2007. The time period begins in 1998 as it is safe to assume that the earnings game had begun and First Call forecasts were widely available. The time period ends in the

fourth quarter of 2007 in order to avoid observations during the global credit crisis. This time period is comparable to the time period in Bhojraj et al. (2009).

Two significant events took place during this time period:

1. **Dot-Com Market Bubble:** The Dot-Com bubble involved a period a vastly rising prices, followed by a steep decline.
2. **The Enron Scandal:** Recent trends indicate that firms tend to just barely MBE less often in the post-Enron scandal era and managers are relying less on earnings management. In addition, it appears that the MBE premium changed during the recent accounting scandals in the United States. The MBE premiums to just barely MBE in the post-Enron scandal era has disappeared, while the premium for MBE by larger margins decreased (Koh, Matsumoto & Rajgopal 2008).

Sub-period analysis is conducted to test the sensitivity of the results to these significant events.

5.3.2. Industry Classification and Exclusions

Financial institutions and financial service firms (SIC 6000-6999) are excluded from the population because their accounting is different (Bhojraj et al. 2009; Ronen & Yaari 2008). The next step in the sample selection is to determine each firms industry. Industry classification is required to calculate discretionary accruals with the Modified Jones Model. Industry grouping is based on 4-digit GICS system[15]. Companies that do

[15] The use of the GICS classification, as opposed to the SIC classification, is discussed in section 4.3.2.4.

not form a sufficiently large industry matched sample[16] are removed because it is not possible to estimate the first-stage Modified Jones Model regressions. Table 6 outlines the number of companies excluded because they belong to a small industry.

Table 6 - Small Industries Excluded in the Sample

GICS Industry Grouping (4-digit)	*Companies in Industry*
Automobiles & Components	4
Diversified Financials	4
Food & Staples Retailing	9
Household & Personal Products	6
Real Estate	1
Telecommunication Services	9
Commercial & Professional Services	12
Consumer Services	14
Media	14
Transportation	10
	83

Therefore, a total of 83 companies are eliminated from the population because they do not form sufficiently large industry groupings[17]. Table 7 summarises the companies from the population included in the sample used as the basis for the empirical tests:

Table 7 - Sample size used for empirical tests

Companies in the S&P 500	500
a) Less financials (SIC 6000-6999)	90
	410
b) Less companies in small industries	83
Sample of firms	327

Table 8 outlines the industry groups for the 327 firms that are included in the sample.

[16] The sample size required for the cross-sectional Jones model is discussed in section 4.3.2.4

[17] Although it is possible to use companies from the same industry, whom are not part of the S&P 500, to estimate the cross-sectional regressions, the data was not available for these companies.

Table 8 - Large Industries Included in the Sample

GICS Industry Grouping (4-digit)	*Companies in Industry*
Capital Goods	37
Consumer Durables & Apparel	17
Energy	38
Food, Beverage & Tobacco	22
Health Care Equipment & Services	22
Materials	32
Pharmaceuticals, Biotechnology & Life Sciences	23
Retailing	30
Semiconductors & Semiconductor Equipment	18
Software & Services	31
Technology Hardware & Equipment	24
Utilities	33
	327
Average number of firms per industry grouping	27

Table 8 reveals that the average number of firms per industry grouping is 27. A total of ten of the twelve industry groupings have at least twenty companies and six of the twelve industry groups have at least thirty companies.

It is important to clarify the fact that the sample over the entire ten year period is based on the 500 companies that were included in the S&P 500 at the end of 2007. The firms were not required to survive over the full sample period to be included in the sample. For example, Akamai Technologies was included in the sample beginning in Q1 2000, while Priceline.com was included in the sample beginning in Q1 1999. Accordingly, the dataset is an unbalanced panel data which helps to alleviate any concerns with survivorship bias.

5.3.3. Final Sample of Firm-Quarter Observations for Hypotheses Testing

Table **9** outlines the breakdown of the number of quarterly observations in the sample of 327 firms. The total number of firm-quarter observations in the sample for hypotheses testing is 3,096.

Table 9 – Number of observations in sample

Number of companies in sample	327	
Number of quarters from Q4 1998[18] to Q4 2007	37	
Potential maximum number of observations (327 x 37)		12,099
Number of observations where the data is not available in CRSP, IBES, and Compustat		(4,263)
		7,836
Number of firms that did not meet expectations		(4,032)
		3,245
Number of outliers		(149)
Number of observations in sample		3,096

Consistent with prior studies (Baber, B. M. et al. 2006; Bartov, Givoly & Hayn 2002; Koh, Matsumoto & Rajgopal 2008), the most extreme (top 0.50% and bottom 0.50%) observations for the independent variables are removed from the sample.

Table 10 presents the distribution of observations by year. There are a larger number of observations in the recent years and fewer observations in the earlier years.

Table 10 – Distribution of observations by year

2007	449
2006	488
2005	518
2004	499
2003	362
2002	251
2001	187
2000	168
1999	155
1998	19
Total	3,096

The low number of observations in 1998 is due to nature of the research requiring the calculation of changes over time. Therefore, much of the 1998 data is used for this purpose.

[18] Although the time period beings in the first quarter 1998, the first three quarters are not included in the regression tests as they are used in order to calculate various variables, such as the discretionary accruals, changes in gross margin, etc.

5.4. Meeting, Beating and Missing Expectations

All three hypotheses focus on the market's response to the earnings of firms that meet or beat their analysts' expectations. The following section presents descriptive statistics on the MBE phenomenon and MBE premium for the companies in the sample.

As discussed in Chapter 2, a proxy for the earnings expectation is required to determine whether a firm's earnings meet or beat expectations. The literature suggests that management and the market focus on three expectations (DeGeorge, Patel & Zeckhauser 1999):

(1) An expectation of positive earnings, or avoiding losses (Burgstahler & Dichev 1997);
(2) An expectation of reporting an increase from the prior year's earnings (DeGeorge, Patel & Zeckhauser 1999; Graham, Harvey & Rajgopal 2005); and
(3) An expectation of reporting earnings that exceed the analysts' forecast (Bartov, Givoly & Hayn 2002; Bhojraj et al. 2009; Burgstahler & Eames 2006; Koh, Matsumoto & Rajgopal 2008).

The analysts' forecast is the most widely used proxy of the earnings expectation because it is thought to include the most current information available regarding a firm's earnings. Additionally, managers aim to beat the analysts' forecast (Burgstahler & Eames 2006; Richardson, Teoh & Wysocki 2004). For example, 73.5% of CFOs agree or strongly agree that analysts' consensus EPS forecast is an important benchmark for their company when they report a quarterly earnings number (Graham, Harvey & Rajgopal 2005). Accordingly, this study utilizes the analysts' consensus estimate as the proxy for the market's expectation of earnings.

It is important to note that this section utilizes the full sample of firms that missed, met, and beat expectations are analyzed (unlike the sample of only MBE firms used to test the hypotheses). The full sample is utilized in this section in order to investigate the MBE phenomenon across the time period analyzed in this research.

5.4.1. The MBE Phenomenon

Using the same criteria employed by Koh, Matsumoto, and Rajgopal (2008), Table 11 presents the proportion of firms that meet or beat the analysts' consensus forecast.

Table 11 – Distribution of earnings surprises

MISS		51.45%
MEET	6.65%	
SMBEAT	5.73%	
BIGBEAT	36.17%	
MBE		48.55%

MISS: Firms that did not meet or beat the consensus earnings expectations
MEET: Firms that reported earnings that matched the consensus earnings expectations
SMBEAT: Firms that reported earnings that exceeded the consensus earnings expectations by one cent or less.
BIGBEAT: Firms that reported earnings that exceeded the consensus earnings by more than one cent.

Table 11 reveals that firms reported earnings below their consensus earnings expectation in approximately 51.4% of all quarters analyzed, while firms reported earnings that met or beat the consensus earnings expectation in 48.6% of the quarterly observations. More specifically, firms just met their earnings expectations in approximately 6.7% of the quarters analyzed and reported earnings that exceeded their earnings expectation in approximately 42% of the quarters analyzed.

These results are consistent with prior literature. For example, a negative earnings surprise is documented in 43.08% of their observations for the time period of 1983 to 1997 (Bartov, Givoly & Hayn 2002).

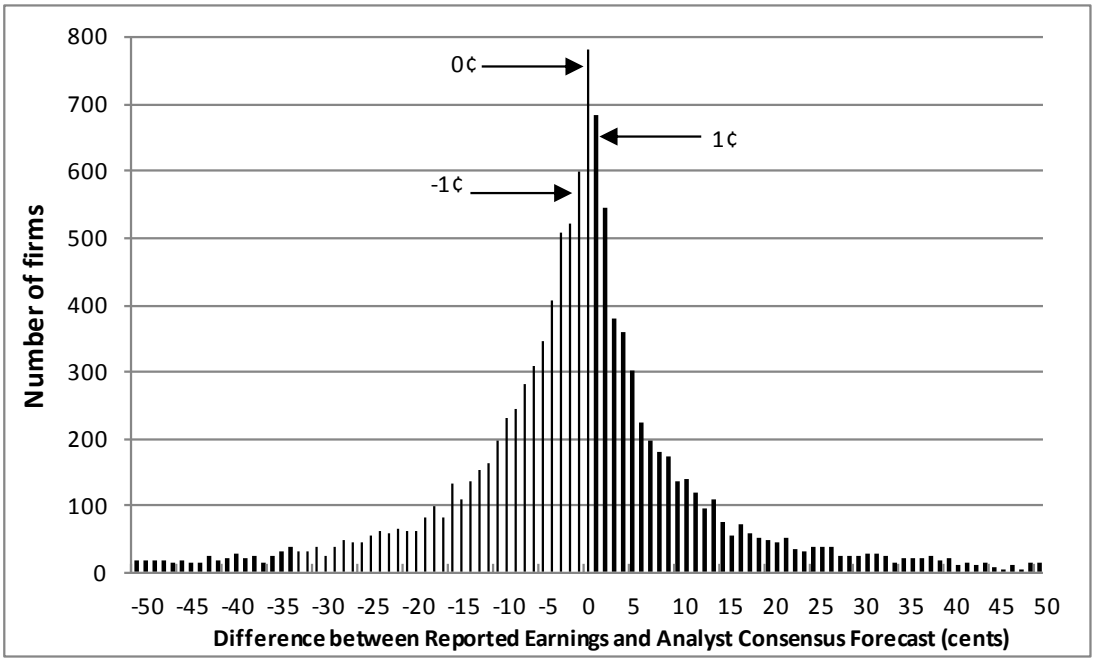
Rees and Sivaramakrishnan (2007) examined 3,577 distinct firms for a period of 1998 to 2001 and found that firms beat their earnings expectations in 74.6% of quarterly observations. The proportion of firms that beat expectations in the Rees and Sivaramakrishnan (2007) study may be greater than the proportion observed in this study because of the time periods utilized. The time period in Rees and Sivaramakrishnan (2007) is entirely in the pre-Enron scandal period. It has been well documented that a larger proportion of firms beat earnings expectations during this time period (Koh, Matsumoto & Rajgopal 2008).

It is also important to note that the sample utilized in this study is drawn entirely from the S&P 500, whereas the Rees and Sivaramakrishnan (2007) and Bartov, Givoly, and Hayn (2002) studies focused on a much larger number of companies. Brown (1997) documented that S&P 500 firms had less optimistic bias in their quarterly earnings forecast and smaller analysts' forecasting errors. This leads to the conclusion that the earnings of S&P 500 firms are easier to forecast than those non-S&P 500 firms.

Table 11 provides a breakdown of the firms that beat their expectations into two categories: 1) firms that beat expectations by 1 cent or less (SMBEAT); and 2) firms that beat expectations by more than 1 cent (BIGBEAT). A total of 36.2% of quarterly observations were BIGBEAT, while 5.8% of quarterly observations were SMBEAT.

Figure 1 shows the distribution of yearly earnings surprises relative to analysts' consensus forecast. The earnings surprise is defined as the difference, in cents, between reported EPS and the IBES consensus forecast EPS. The distribution does not display any earnings surprises that are greater than or less than 50 cents.

Figure 1 – Differences between Reported Earnings and Analyst Consensus Forecast (cents)



This distribution is similar to the distribution presented by Bhojraj et al. (2009), and consistent with the 'kink' documented in past literature (Burgstahler & Eames 2006). That is, the number of firms reporting a negative one cent earnings surprise is lower than the number of firms meeting expectations and reporting a positive one cent earnings surprise.

Table 12 presents equally weighted average descriptive statistics for firms based on their earnings surprises in a given fiscal quarter (Bhojraj et al. 2009). The earnings surprise is defined as the difference, in cents, between reported EPS and the IBES consensus forecast EPS.

Table 12 – Summary Statistics by Earnings per Share Relative to Consensus Forecast

Earnings Surprise (cents)	Statistic	Gross Margin (%)	Total Assets ($000)	Market Value ($000)	Market to Book (Equity)	Return on Assets (%)	n
<-1	Mean	35.40	11,350,836	19,859,213	5.61	7.14	5,338
	Median	33.53	5,182,655	8,593,880	3.09	7.02	
-1	Mean	45.22	8,051,758	19,982,874	7.53	8.32	584
	Median	44.27	3,265,396	6,772,128	3.99	7.67	
0	Mean	45.27	8,134,132	20,911,271	6.25	8.16	749
	Median	44.47	2,965,355	6,605,856	4.22	8.09	
1	Mean	36.74	8,031,711	19,045,319	6.14	8.49	663
	Median	42.97	2,974,145	7,096,330	4.12	8.59	
>1	Mean	38.39	13,787,683	22,023,722	5.97	7.96	4,290
	Median	37.23	6,798,300	9,597,095	3.11	7.54	
All firms	Mean	37.72	11,692,905	20,686,625	5.91	7.64	11,624
	Median	36.32	5,251,438	8,665,826	3.22	7.41	
-1 versus 1	t-stat	0.98	0.03	0.41	1.40*	-0.25	
>1 versus 1	t-stat	0.48	6.61**	0.41	-0.06	-1.01	

**significant at the 5 percent level
* significant at the 10 percent level

Table 12 reveals that there are not many significant differences in firm characteristics across earnings surprise (e.g., meet, beat or miss earnings expectations). It is evident that the larger forecast errors tend to be observed larger firms.

5.4.2. Meeting or Beating Expectations in the Pre- and Post-Scandal Periods

Koh, Matsumoto, and Rajgopal (2008) document a decreased proportion of firms that meet or beat their earnings expectation by a cent in the pre- and post-Enron scandal period. Table 13 presents the proportion of quarterly observations of BIGBEAT and SMBEAT, using the following scandal periods[19]:

- pre-scandal era of Q1 1998 to Q2, 2001, inclusive (PRE);
- the scandal era of Q3 2001 to Q1 2003, inclusive (SCA); and
- the post scandal era of Q2 2003 to Q4 2007, inclusive (POST).

[19] These are the pre- and post scandal periods defined Koh, Matsumoto, and Rajgopal (2008)

Table 13 – Distribution of earnings surprises in the pre, post, and scandal eras

	PRE	SCA	POST	Pre-Post Difference	Pre-Post t-stat
SMBEAT	6.47%	5.40%	5.28%	-1.18%	1.30*
BIGBEAT	31.20%	28.73%	42.57%	11.37%	-4.61**

**significant at the 5 percent level * significant at the 10 percent level

A decrease in the number of SMBEAT is evident with the sample data utilized in this research. The proportion of SMBEAT decreased from 6.47% in the PRE period to 5.40% in the SCA period and 5.28% in the POST period. The decrease is significant at the 10% level, which is consistent with Koh, Matsumoto, and Rajgopal (2008).

The data suggest that there was a decline during the SCA period. However, the proportion of BIGBEATs increased by 11.37% from the PRE to POST period. The increase is significant at the 5% level. The results suggest that the number of SMBEAT has declined in the POST period; however, the number of BIGBEAT has increased.

Figure 2 presents the percentage of BIGBEAT and SMBEAT over the calendar quarters from Q1 1998 to Q4 2008. This is a reproduction of a similar chart originally prepared by Koh, Matsumoto, and Rajgopal (2008).

Figure 2 – Percentage of big beats and small beats over time

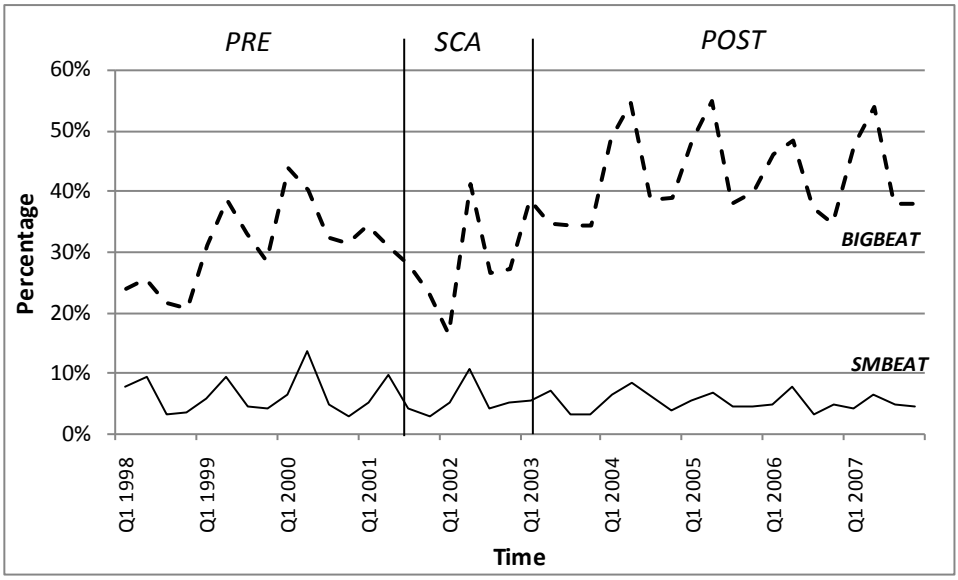
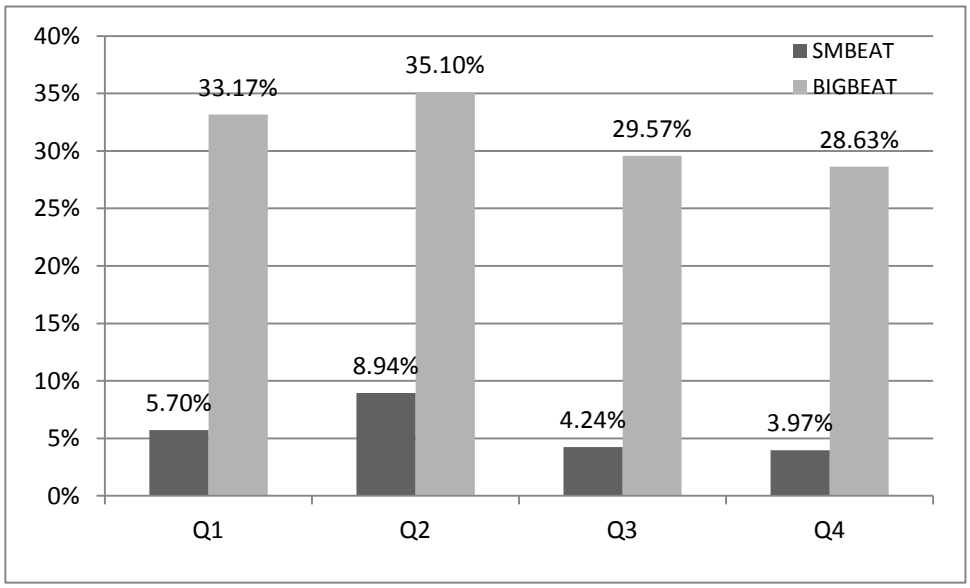


Figure 2 reveals a pattern of consistent ups and downs, suggesting that some quarters result in BIGBEAT and SMBEAT more often than others. In order to investigate the cause of this pattern, Figure 3 presents the distribution of BIGBEAT and SMBEAT by quarter.

Figure 3 – Average percentage of big beats and small beats per quarter



There are a larger number of BIGBEAT and SMBEAT in the first and second quarters than in the third and fourth quarters. The number of BIGBEAT and SMBEAT increases in the second quarter from the first quarter, and then decrease consecutively in the third and fourth quarters. This quarterly distribution explains the 'up-and-down' pattern revealed in Figure 3.

The lower number of BIGBEAT and SMBEAT in the fourth quarter relative to the other quarters is consistent with past literature. It is more difficult to manage accruals in the fourth fiscal quarter due to increased auditor scrutiny (Brown, J. R. 2005; Koh, Matsumoto & Rajgopal 2008; Matsumoto 2002) and firm's tendency to report special items in the fourth quarter (Francis, Hanna & Vincent 1996). In addition, the fourth

quarter earnings forecast tends to be more accurate as the analysts' forecasts are more optimistically biased in the fourth quarter than for other quarters (Basu, Hwang & Jan 1999). Given these fourth quarter differences, additional sensitivity testing is conducted.

Figure 4 presents the percentage of MISS, MEET, and BEAT observations over the calendar quarters from Q1 1998 to Q4 2008.

Figure 4 – Percentage of firm that meet, beat, and missed expectations over time

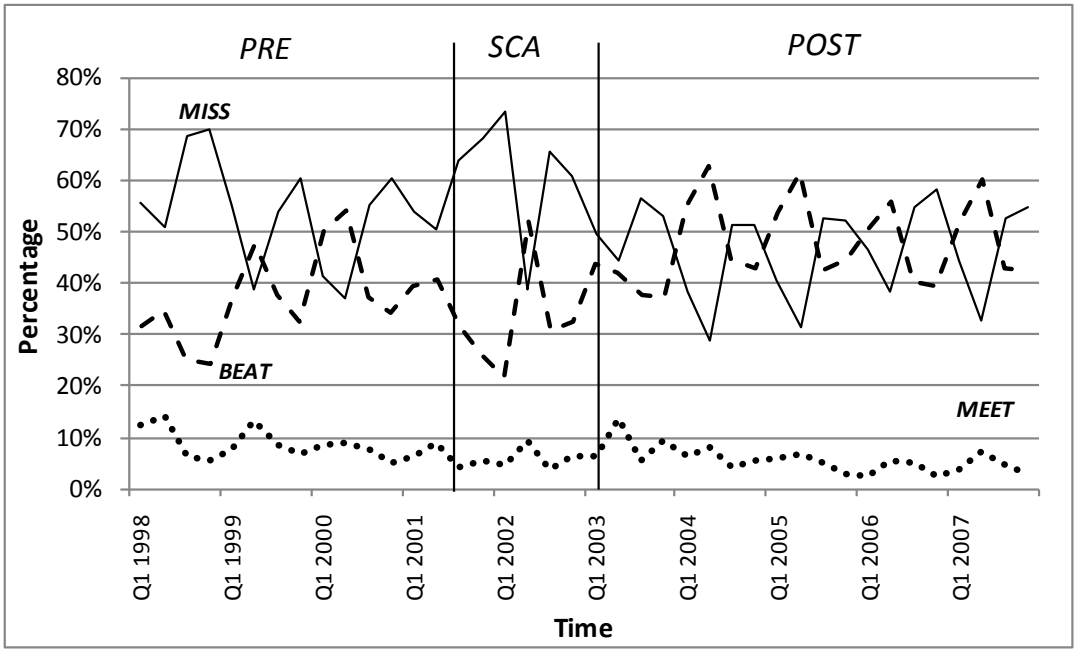


Figure 4 reveals that the number of firms that just meet expectations has decreased over the sample period, while the number of firms beating expectations has increased. The number of firms beating expectations increasing over time from the PRE to POST periods is consistent with the findings in Koh, Matsumoto, and Rajgopal (2008).

5.4.3. The MBE Premium

Table 14 presents the 1-day, 3-days, 17-days, and 3-month CAR following the earnings announcement for firms that missed, met, and beat the analysts' expectation. The results reveal an MBE premium, which is consistent with prior literature (Bartov, Givoly & Hayn 2002; Bhojraj et al. 2009; Koh, Matsumoto & Rajgopal 2008; Lopez & Rees 2002).

Table 14 – Cumulative Abnormal Returns for firm that met, beat, and missed expectations

	Cumulative Abnormal Return				
Earnings Surprise	**(0,1)**	**(0,3)**	**(0,17)**	**(0,63)**	**n[20]**
Beat	0.54%	0.70%	1.19%	2.42%	4,234
Meet	0.42%	0.41%	1.80%	4.48%	612
MBE (Meet or Beat)	0.52%	0.67%	1.27%	2.69%	4,846
Miss	0.04%	0.04%	0.89%	1.93%	5,013
MBE-Miss Diff.	0.49%	0.63%	0.37%	0.75%	
MBE-Miss t-stat	4.97**	5.25**	1.89**	2.04**	

**significant at the 5 percent level
* significant at the 10 percent level

Firms that met or beat their earnings expectations were rewarded with a premium of 0.49% at the earnings announcement date, and 0.63% in the three days surrounding the earnings announcement. The MBE premium grows to 0.75% in the 3 month period after the earnings announcement date. The MBE premiums for all four time periods are significant at the 5% level.

The MBE premium over the three day window of 0.63% is lower that the MBE premium of 0.7% documented by Lopez and Rees (2002) over a similar three day window. In addition, the quarterly MBE premium of 0.75% is lower than the 3%

[20] Note that the number of observations varies from the fundamental data analysis in Table 12 due to various missing observations from the CRSP database.

premium documented by Bartov, Givoly, and Hayn (2002). Both of these studies utilized data over the period of 1983 to 1998, while the data utilized in this study is for the period of 1998 to 2007. The difference in time periods is important because Koh, Matsumoto, and Rajgopal (2008) documented that the MBE premium has diminished in the post-Enron scandal period, which began in the second quarter of 2003. Therefore, the results presented in Table 14 are consistent with the past literature.

Figure 5 presents the S&P 500 over the time period analyzed in this research (1998 – 2007).

Figure 5 – S&P 500 Index from 1998 to 2007

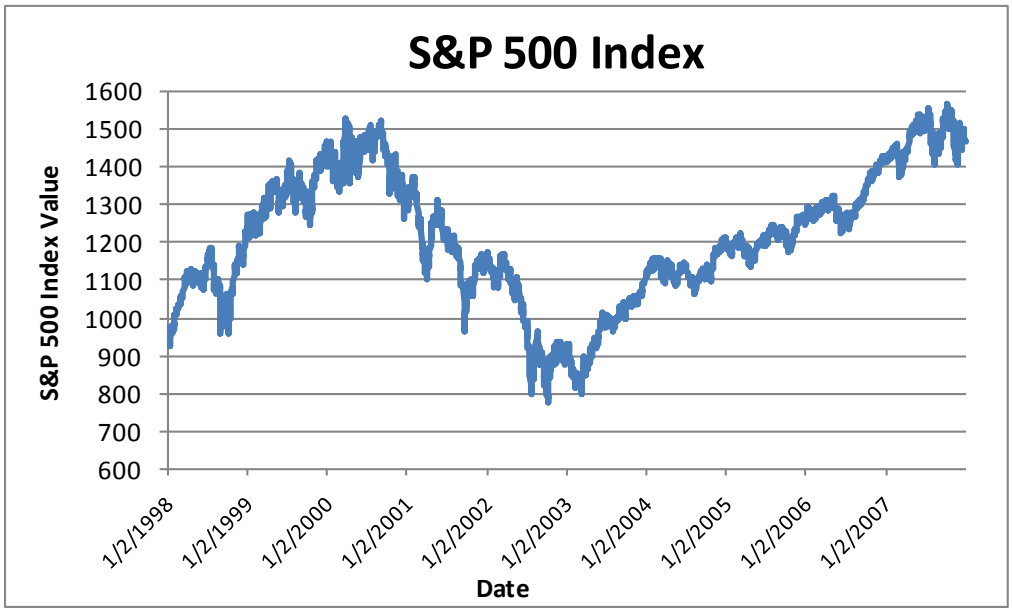


Figure 5 reveals that the S&P 500 had an increasing trend during the period analyzed as it rose from 975.04 to 1,468.36 over the ten year period, or a daily average return of 0.02%. Given that all of the firms in the sample were selected from the S&P 500, the increasing trend in the S&P 500 index helps to explain the positive bias in the CARs presented in Table 14 above. A similar upward bias was also documented in past

studies (Bhojraj et al. 2009; Rees & Sivaramakrishnan 2007). A second factor that helps explain the positive bias in the CARs is the fact that the sample includes only firms that MBE. Share prices are expected to react positively to firms that MBE as they have presented a positive earnings surprise.

Table 15 presents the 1-day, 3-day, 17-day, and 3-month CAR around the earnings announcement date by earnings surprise percentage.

Table 15 – Cumulative abnormal returns by magnitude of earnings surprise

			Cumulative Abnormal Return				
Earnings Surprise	**Statistic**		**(0,1)**	**(0,3)**	**(0,17)**	**(0,63)**	**n**
<-10%	Mean		0.11%	0.07%	0.93%	2.00%	3,739
	Median		-0.05%	-0.07%	0.24%	0.40%	
-10%	Mean		0.05%	0.19%	0.88%	1.46%	1,274
	Median		0.03%	-0.03%	0.39%	0.19%	
0	Mean		0.40%	0.41%	1.77%	4.42%	612
	Median		0.07%	0.02%	1.11%	3.01%	
10%	Mean		0.35%	0.62%	0.78%	1.31%	1,218
	Median		0.09%	0.47%	0.43%	0.67%	
>10%	Mean		0.52%	0.63%	1.28%	2.96%	3,106
	Median		0.17%	0.27%	0.66%	1.30%	
All firms	Mean		0.27%	0.34%	1.06%	2.29%	9,859
	Median		0.06%	0.13%	0.48%	0.79%	

The results in Table 15 are consistent with the prior literature (Bartov, Givoly & Hayn 2002) as it reveals that the MBE premium is a function of the size of the scaled forecast error.

5.5. The Modified Jones Model – First-stage Regression Summary Statistics

Recall that the equation for the first-stage Jones Model regression is as follows:

$$TACC_t / A_{t-1} = \alpha_1 (1/ A_{t-1}) + \alpha_2([\Delta REV_t - \Delta AR_t] / A_{t-1}) + \alpha_3 (PPE_t/ A_{t-1}) + \alpha_4 (ROA_t) + \varepsilon_t$$

Table 16 presents summary statistics for the α_1, α_2, α_3, and α_4 coefficients from the 456 industry first-stage regressions. The 456 regressions arise from the 12 industry classifications across 38 quarters (1998 Q3 to 2007 Q4).

Table 16 – Descriptive Statistics of the Coefficients from the first-stage Modified Jones Model Regressions

	$(1/ A_{t-1})$ (α_1)			**ΔRev-AR (α_2)**			**PPE (α_3)**			**ROA (α_4)**	
Frequency (+)	251	55%		284	63%		86	19%		259	57%
(-)	205	45%		172	37%		370	81%		197	43%
	456	100%		456	100%		456	100%		456	100%
Mean	0.23			0.106			-0.051			0.033	
Standard Deviation	2.54			0.506			0.091			0.220	
Minimum	-17.26			-1.435			-0.678			-1.487	
Maximum	11.91			2.467			0.222			1.696	

The sign of the coefficient on property, plant and equipment coefficient (α_3) should be negative (Ronen & Yaari 2008) because depreciation expense is a negative adjustment to the total accruals calculation. Therefore, discretionary accruals will have an inverse relationship with property, plant and equipment in the regression. As expected, the property, plant and equipment coefficient was negative in 81% of the regressions.

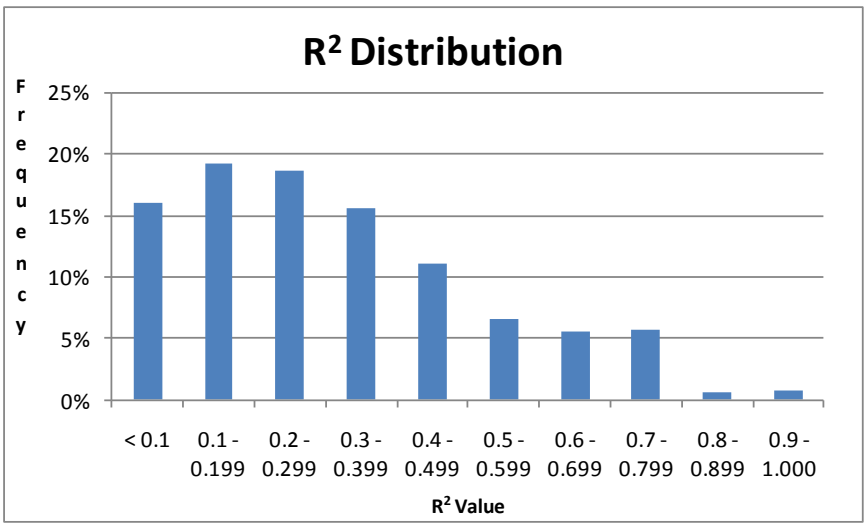
The expectation for the sign of the coefficient for change in sales and accounts receivable (α_2) is much less evident. The consensus is that the coefficient should be positive. The argument is that changes in accounts receivable and accounts payable are related. Since the sales of a profitable firm exceed its expenses, the net working-capital

accruals will be positive if the credit policies of firms and its suppliers are similar (Ronen & Yaari 2008). A total of 63% of the regressions had a positive coefficient for changes in sales and receivables. This is similar to a sensitivity test conducted by Ronen and Yaari (2008) which revealed that the coefficient for the change in sales and receivables was positive in 61% of the regressions.

Controlling for the effect of the current year's return on assets aids in filtering out any performance-related predictable component of accruals (Kothari, Leone & Wasley 2005). The coefficient is expected to be positive, and is positive in 57% of the regressions.

Figure 6 presents the distribution of the R^2 values from the first-stage Modified Jones Model regressions. This figure was prepared by grouping the R^2 values from all of the first-stage regressions from each industry grouping from 1998 to 2007.

Figure 6 – Distribution of R^2 values for the first-stage Modified Jones Model Regressions



The distribution of R^2 values in Figure 6 is similar to an analysis of R^2 values from the first-stage regressions conducted by Ronen and Yaari (2008) who found that 42.68% of

their R^2 values lie between -0.1 and 0.1. The average R^2 value is 0.32, with a standard deviation of 0.21.

5.6. The Earnings Nature Score (ENS)

The ENS builds on prior literature by combining several individual components into a new composite model. Accordingly, the ENS is tested on a standalone basis prior to being used in the regression analysis. The purpose of the testing is to provide insight into the model's ability to capture the nature of earnings management.

The ENS relies upon the four metrics: the change in gross margin, meeting revenue expectations, insider ownership, and beating earnings expectations by one cent or less. A firm can have a maximum ENS of four, which indicates opportunistic earnings management. Conversely, a firm can have a minimum ENS of zero, suggesting informative earnings management.

Table 17 presents the distribution of firms by opportunistic (ENS = 3 or 4) and informative (ENS = 0 or 1) earnings management. An ENS score of two is the mid-point. Most firms (47.2%) have informative earnings management; whereas only 15.7% of firm observations have opportunistic earnings management.

Table 17 – Distribution of firms by High, Medium, and Low ENS Score

ENS Score	Distribution
Opportunistic (3-4)	15.7%
(2)	37.2%
Informative (0-1)	47.2%
	100%

The ENS signals for opportunistic and informative earnings management are compared to a firm's future performance in order to determine if the model is able to differentiate

between opportunistic and informative earnings management. Informative earnings management is expected to be associated with superior future performance, while opportunistic earnings management is expected to be associated with inferior future performance.

Future performance can be measured in terms of both fundamental accounting metrics and equity valuations. Accordingly, the following measures of future performance are utilized as they have been used in prior studies: 1) abnormal returns (Bhojraj et al. 2009; Kasznik 1999; Lee 2007; Subramanyam 1996; Xie 2001), 2) return on assets (Bartov, Givoly & Hayn 2002; Bhojraj et al. 2009; Dopuch, Seethamraju & Xu 2008), 3) market-to-book ratio (Bhojraj et al. 2009), and 4) operating cash flows (Bhojraj et al. 2009; Dopuch, Seethamraju & Xu 2008; Subramanyam 1996).

The remainder of this section is organized as follows. Section 5.6.1 presents a correlation analysis between the ENS components, the composite ENS, and abnormal returns. Section 5.6.2 provides an analysis between future abnormal returns and each ENS component. Lastly, Section 5.6.3 provides an analysis of the ENS and several other measures of future firm performance.

5.6.1. ENS Correlations

Table 18 presents the Pearson and Spearman correlations of the ENS components, the composite ENS, and the CAR (1-day and 3-day).

The correlation analysis provides insights into the relationship between abnormal returns and the ENS and its components. The change in gross margin is shown to be correlated with both the 1-day and 3-day CAR. Meeting or beating revenue

expectations is correlated with the 1-day CAR, while the insider ownership variable is correlated with the 3-day CAR.

Table 18 – Correlations between ENS Components, the ENS, and the CAR

		Spearman Correlations						
		CAR(0,1)	CAR(0,3)	GM	SBEAT	OWN	MBE_REV	ENS Score
Pearson Correlations	CAR(0,1)	**1**	.763**	-.034	.014	-.034	-.037*	-.054**
		.	.000	.064	.433	.062	.044	.003
	CAR(0,3)	.838**	**1**	-.033	.017	-.038*	-.011	-.042*
		.000	**.**	.067	.361	.036	.534	.021
	GM	-.043*	-.042*	**1**	.039*	-.027	-.017	.531*
		.019	.021	**.**	.032	.142	.349	.000
	SBEAT	-.009	.006	.039*	**1**	-.062**	.112**	.369**
		.637	.748	.032	**.**	.001	.000	.000
	OWN	-.030	-.036*	-.027	-.062**	**1**	.030	.535**
		.101	.046	.142	.001	**.**	.096	.000
	MBE_REV	-.036*	-.020	-.017	.112**	.030	**1**	.542**
		.049	.285	.349	.000	.096	**.**	.000
	ENS Score	-.061**	-.050**	.528**	.409**	.527**	.552**	**1**
		.001	.006	.000	.000	.000	.000	**.**

** significant at the 0.01 level (2-tailed).
* significant at the 0.05 level (2-tailed).

As expected, the correlation analysis reveals that all of the individual components are positively correlated (both Pearson and Spearman) with the composite ENS.

Overall, the composite ENS is negatively correlated (Pearson and Spearman) with the 1-day and 3-day CAR. The negative correlation is expected because increasing the ENS suggests opportunistic earnings management. These results suggest that while the market reacts negatively to the majority of the individual components, its reaction to the combined components, in the form of the ENS, is more significant.

5.6.2. Analysis of each ENS Component

Table 19 is based on the analysis conducted by Bhojraj et al. (2009) and shows the 1-day and 3-day CAR for each component of the ENS over the period of 1998 – 2007 for

firm's that missed, met, or beat analysts' expectations. The results are also presented for the composite ENS.

Gross Margin

Table 19 reveals that firms that beat earnings expectations with an increase in gross margin in the current quarter (INCREASE firms) experienced an additional 1-day CAR of 0.38% over firms that beat earnings expectations with a decreasing gross margin in the current quarter (DECREASE firms). The premium increases to 0.50% after 3-days. Both the 1-day and 3-day differential is significant at the 5% level, and suggests that the market analyzes the information in the earnings announcement report pertaining to the current quarter performance.

Table 19 – CAR for each component of the ENS

	Panel A: 1-day CAR					Panel B: 3-day CAR				
	Earnings Surprise					Earnings Surprise				
	All Firms	Miss	Meet	Beat	t-stat Miss-Beat	All Firms	Miss	Meet	Beat	t-stat Miss-Beat
Gross Margin INCREASE	0.56%	0.35%	0.84%	0.71%	2.13**	0.68%	0.34%	0.88%	0.94%	2.94**
Gross Margin DECREASE	0.10%	-0.02%	-0.13%	0.33%	1.99**	0.12%	-0.05%	-0.07%	0.44%	2.25**
Total	0.35%	0.15%	0.42%	0.57%		0.42%	0.13%	0.47%	0.75%	
Difference increase-decrease	-0.47%	0.37%	0.97%	0.38%		-0.55%	0.39%	0.95%	0.50%	
t-stat increase-decrease	-3.90**	-2.18**	-1.66**	-2.19**		-3.84**	-1.87*	-1.45**	-2.39**	
Revenues forecast BEAT	0.55%	0.09%	0.48%	0.72%	3.37**	0.60%	0.01%	0.27%	0.84%	3.58**
Revenues forecast MISS	0.17%	0.16%	0.37%	0.15%	-0.33	0.24%	0.16%	0.67%	0.37%	-0.84
Total	0.35%	0.15%	0.42%	0.64%		0.41%	0.13%	0.47%	0.74%	
Difference beat-miss	0.38%	-0.07%	0.11%	0.57%		0.37%	-0.15%	-0.40%	0.47%	
t-stat beat-miss	3.23**	0.34	0.19	2.65**		2.54**	0.61	0.62	2.00**	
Insider ownership - LOW	0.41%	0.14%	0.61%	0.74%	-3.36**	0.43%	0.02%	0.79%	0.91%	4.05**
Insider ownership - HIGH	0.28%	0.16%	0.23%	0.42%	1.72**	0.38%	0.24%	0.14%	0.56%	-1.60**
Total	0.35%	0.15%	0.42%	0.57%		0.41%	0.13%	0.47%	0.72%	
Difference low-high	0.13%	-0.02%	0.38%	0.32%		0.06%	-0.22%	0.65%	0.35%	
t-stat low-high	-1.29*	0.08	-0.84	-1.97**		0.39	-1.06	0.99	1.75**	
SMBEAT				0.33%					0.52%	
BIGBEAT				0.61%					0.75%	
Difference smbeat-bigbeat				0.28%					0.23%	
t-stat small-big				1.20*					0.81	
ENS HIGH (3-4)	0.07%	0.11%	-0.71%	0.11%	0.01	0.09%	0.10%	-0.62%	0.20%	0.26
ENS MED (2)	0.12%	0.03%	0.31%	0.25%	1.09	0.28%	0.12%	0.52%	0.51%	-0.12
ENS LOW (0-1)	0.62%	0.33%	0.72%	0.79%	2.5**	0.64%	0.16%	0.65%	0.95%	3.74**
Difference High-Low	0.54%	0.22%	1.42%	0.68%		0.55%	0.06%	1.27%	0.76%	
t-stat high-low	-3.08**	-0.94	-1.38*	-2.32**		-2.64**	-0.23	-1.11	-2.21**	

*significant at the 5 percent level

** significant at the 10 percent level

Table 20 presents the distribution of firms with increases and decreases in gross margin that missed, met or beat earnings expectations. Overall, 26.3% of firms that beat earnings expectations had an increase in gross margin, while 16.5% had a decrease in gross margin.

Table 20 – Distribution of firms by Gross Margin Changes

		Gross Margin	
		Increase	Decrease
Earnings Surprise	Beat	26.3%	16.5%
	Meet	3.8%	2.9%
	Miss	23.1%	27.3%
	Total	53.3%	46.7%

Beating Revenue Expectations

A second component included in the ENS is whether firms beat their revenue expectations. Firms that beat revenue expectations earned an additional 1-day CAR of 0.38% over firms that missed revenue expectations. Firms that beat their earnings and revenue expectation experienced an additional 1-day CAR of 0.57% and 3-day CAR of 0.47% over firms that beat their earnings expectations but missed their revenue expectation. All these differences are significant at the 5% level. These results are consistent with past studies that document a significant increase in the market premium to meeting earnings forecasts when the revenue forecasts are also met (Rees & Sivaramakrishnan 2007).

Table 21 presents the distribution of earnings and revenue surprises and indicates that 45.6% of firm observations met or exceed the market's revenue expectation. Only 33.8% of earnings announcements met or exceeded both the earnings and revenue expectations. Rees and Sivaramakrishnan (2007) documented that 46.3% of firms beat both revenue and earnings expectations from a sample spanning 1998 to 2001.

Table 21 – Distribution of Firms by Revenue Surprise

		Revenue Surprise	
		Beat	Miss
Earnings Surprise	Beat	31.5%	11.3%
	Meet	3.3%	3.5%
	Miss	10.8%	39.6%
	Total	45.6%	54.4%

Earnings expectations were met or exceeded but revenue expectations were missed for 14.8% of firm observations. Revenue expectations were exceeded with earnings expectations being missed for 10.8% of observations. Therefore, a total of 25.6% of the observations resulted in conflicting signals with respect to the performance of the firm. Rees and Sivaramakrishnan (2007) found that 37.6% presented conflicting signals. The conflicting signals indicates that these are distinct measures of performance and that better than expected performance with respect to one does not necessarily imply better than expected performance with respect to the other (Rees & Sivaramakrishnan 2007).

Insider Ownership

Another variable included in the ENS is the degree of insider ownership, based on the rationale that firms with a high level of insider ownership have more of an incentive to use opportunistic earnings management to meet or beat earnings expectations. The insider ownership has an average value of 13.11%, a median value of 8.06%, and a standard deviation of 18.12%.

Table 19 reveals that firms with a low level of insider ownership experienced an additional 1-day CAR of 0.32% compared to firms with a high level of insider ownership. The differential is significant at the 5% level.

Small Earnings Beat

Table 19 reveals that big beat firms had an additional 1-day CAR of 0.28% or 3-day CAR of 0.22% over firms that beat earnings expectations by only 1 cent (or less). The 1-day difference is significant at the 10% level, but, the differential is not as large as what has been documented in past literature (Bhojraj et al. 2009).

Composite ENS Measure

When combining each component into the ENS, MBE firms with a high ENS (scores of 3 or 4) had a 1-day (3-day) CAR that was 0.68% (0.76%) less than MBE firms with a low ENS (score of 0 or 1). This difference is significant at the 5% level. The 1-day (3-day) differential between the high and low ENS was 1.42% (1.27%) for firms that just met their earnings expectations. These results are consistent with Hypothesis 1, as they suggests that firms with opportunistic earnings management experience a lower abnormal return at the earnings announcement date than firms with informative earnings management. Multivariate tests of H_1 are presented in Chapter 6.

5.6.3. ENS and Firm Future Performance

Table 22 mirrors the analysis conducted by Bhojraj et al. (2009) by displaying future performance across ENS measures. Future firm performance is measured as abnormal returns (CAR), return on assets (ROA), market-to-book ratio (MTB), and operating cash flows (OCF) deflated by sales.

Panel A explores the cumulative abnormal returns from 1 day, 3 days, 17 days, 3 months, and 1 year after the earnings announcement date. Table 22 reveals that firms classified as having informative (opportunistic) earnings management had higher (lower) abnormal returns for four time periods (significant at the 5% level).

Table 22 – Future Operating Performance of Firms Based on ENS Score

Panel A – Cumulative Abnormal Returns

	CAR (0,1)	**CAR (0,3)**	**CAR (0,17)**	**CAR (0,63)**	**CAR (0,252)**
3-4 (HIGH)	0.13%	0.12%	0.90%	1.51%	6.57%
2 (MED)	0.17%	0.35%	0.98%	1.93%	8.12%
0-1 (LOW)	0.60%	0.62%	1.24%	2.68%	9.94%
High-Low Diff	0.47%	0.50%	0.33%	1.17%	3.37%
t-stat	-2.62**	-2.37**	-1.00	-1.87**	-2.22**

Panel B – Return on Assets

	ROA	**ROA t+1**	**ROA t+2**	**ROA t+3**	**ΔROA t,t+3**
3-4 (HIGH)	8.14	7.00	6.66	6.42	-1.80
2 (MED)	7.65	7.56	7.01	6.71	-0.98
0-1 (LOW)	7.34	7.61	7.43	7.39	0.01
High-Low Diff	-0.80	0.61	0.77	0.97	1.81
t-stat	1.78**	-0.93	-1.81**	-2.65**	-3.65**

Panel C – Market-to-Book Value (Assets)

	MB t	**MB t+1**	**MB t+2**	**MB t+3**	**ΔMB t,t+3**
3-4 (HIGH)	2.35	2.18	2.06	1.92	-0.44
2 (MED)	2.25	2.14	2.02	1.95	-0.30
0-1 (LOW)	2.38	2.30	2.19	2.06	-0.32
High-Low Diff	0.03	0.12	0.14	0.14	0.11
t-stat	-0.30	-1.31*	-1.67**	-1.85**	-1.36*

Panel D – Operating Cash Flows as a percentage of Total Assets

	OCF t	**OCF t+1**	**OCF t+2**	**OCF t+3**	**ΔOCF t,t+3**
3-4 (HIGH)	4.37%	5.50%	3.94%	4.46%	0.21%
2 (MED)	4.20%	4.06%	3.92%	4.40%	0.27%
0-1 (LOW)	4.45%	4.36%	4.33%	3.65%	-0.76%
High-Low Diff	0.08%	-1.14%	0.39%	-0.82%	-0.97%
t-stat	-0.16	1.55*	-0.63	2.00**	1.49*

**significant at the 5 percent level

* significant at the 10 percent level

Panel B presents the return on assets over the next three quarters. Firms with opportunistic earnings management have an average ROA in the following quarter that is 0.61% lower than firms with information earnings management. This difference in ROA grows to 0.97% in the following two quarters.

Panel C presents the market-to-book value of assets of over the next three quarters. The results are similar to the ROA and CAR analysis as firms with opportunistic earnings management had a lower market-to-book value than firms with informative earnings management.

Panel D presents the operating cash flows, as a percentage of sales. Panel D reveals inconsistent results in regards to operating cash flows as firms with opportunistic earnings management have larger one quarter forward cash flows than firms with informative earnings management. However, this reverses two quarters ahead and then reverses again three quarters forward.

Overall, these results suggest that the ENS is able to differentiate between opportunistic and informative earnings management as firms with low ENS had superior future performance in terms of CAR, ROA, and market-to-book.

5.6.4. Conclusion on the ENS's ability to capture the Nature of Earnings Management

The ENS's ability to capture the nature of earnings management was tested by comparing the proxies for informative (ENS of 0 or 1) and opportunistic (ENS of 3 and 4) earnings management against future performance. Future performance is measured by both future fundamental accounting metrics and stock returns.

The correlation analysis reveals that all of the individual components are positively correlated (both Pearson and Spearman) with the composite ENS. This suggests that the individual components are all capturing a certain component of opportunistic earnings management. In addition, the 1-day and 3-day abnormal is shown to be higher for firms with a lower ENS value (informative earnings management) than for firms with a higher ENS value (opportunistic earnings management).

Overall, the results suggest that the ENS is able to differentiate between opportunistic and informative earnings management. Firms with informative earnings management (ENS of 0 and 1) had superior future performance in terms of CAR, ROA, and market-to-book. The ENS is negatively correlated with both the 1-day and 3-day CAR. The negative correlation is expected because increasing the ENS suggests opportunistic earnings management.

5.7. Conclusion of main themes

This Chapter presents descriptive statistics of the data used to undertake this research. An explanation of the data sources and sample selection method is presented. In addition, the MBE phenomenon and MBE premium in the data is analyzed and compared to past studies. An analysis of the MBE phenomenon and MBE premium is important because this research specifically focuses on the market's reaction to earnings management in the MBE setting. The results reveal that this study's data has characteristics similar past studies in regards to both the MBE phenomenon and MBE premium. In addition, the descriptive statistics reveals that sub-set analysis should be conducted to control for the difference in both quarterly beats (Figure 3) and pre- and post-Enron scandal periods (Table 13).

This Chapter also presents an analysis of the Earnings Nature Score (ENS). The analysis of the ENS was conducted because it is a new model that has not been formalized in past literature. Therefore, it is important to test the model on a stand-alone basis prior to its use in the regression tests of the hypotheses. The results presented in this Chapter support the ENS's ability to differentiate between opportunistic and informative earnings management as firms with opportunistic earnings management tend to have inferior future performance, as measured by future abnormal returns, return on assets, and market-to-book ratios, than firms with informative earnings management.

6. Analysis of Results

6.1. Introduction

This Chapter presents the results from the statistical tests undertaken in this research. The Chapter is organised as follows: Section 6.2 presents regression analyses that test H_1 and H_2. Section 6.3 presents the regression analysis that tests H_3. Section 6.4 presents the following three sensitivity tests of H_2 and H_3: 1) the impact of fourth quarter observations; 2) the impact of the Enron scandal; and 3) the impact of the Dot Com Bubble. Section 6.5 concludes the Chapter by summarising the main themes.

6.2. Hypotheses 1 & 2 - The Abnormal Return at the Earnings Announcement Date

The following section provides the results from the regression analysis that test H_1 and H_2. First, descriptive statistics are presented. Next, Pearson and Spearman correlations are a discussed. Finally, the results from the regression estimations are presented.

6.2.1. Descriptive Statistics

Table 23 presents descriptive statistics for the two dependent variables (1-day CAR and 3-day CAR), the independent variables (DACC, ENS, and ENSxDACC), and the control variables (UE, TA, MTB, and ROA) used to model H_1 and H_2. The DACC, ENS and ENSxDACC variables have fairly normal distributions.

The descriptive statistics for the two dependent variables are similar, and indicate a mean return that is positive. The positive mean return is consistent with the increasing trend in the S&P 500 over the sample period, as revealed in Figure 5.

Table 23 - Descriptive statistics for dependent and independent variables

Variable	Min	Max	Mean	Standard Deviation	Median	1st Quartile	3rd Quartile	Skewness
CAR 1	-0.323	0.461	0.005	0.047	0.002	-0.012	0.020	0.895
CAR 3	-0.327	0.396	0.008	0.055	0.004	-0.016	0.028	0.869
$DACC_{t-1}$	-0.175	0.166	0.001	0.032	0.000	-0.014	0.015	-0.037
ENS	0.000	4.000	1.289	0.934	1.000	1.000	2.000	0.365
$DACC_{t-1}$ x ENS	-0.512	0.377	0.000	0.052	0.000	-0.013	0.014	-0.718
TA (logged)	10.384	19.246	15.585	1.262	15.576	14.703	16.538	-0.116
TA (unlogged) ('000,000s)	32	228,315	12,297	18,535	5,813	2,430	15,214	4.68
MTB	0.38	47.060	4.952	4.490	3.700	2.518	5.600	4.162
ROA	0.01	33.900	9.776	5.665	8.415	4.750	12.350	0.763

CAR 1 = the Cumulative Abnormal Return (CAR) from the earnings announcement to one day after the earnings announcement to the date of (0,1).
CAR 3 = the Cumulative Abnormal Return (CAR) from the earnings announcement to three days after the earnings announcement to the date of (0,3).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model, as a percentage of total assets, in the quarter prior to the earnings announcement quarter, as a percentage of total assets, for firm i's industry.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

The three independent variables of interest are the DACC, the ENS, and the interaction between ENS and DACC. The DACC is both positive (income increasing) and negative (income decreasing), with a mean value of 0.001% of total assets and a standard deviation of 3.2% of total assets. The DACC has a skewness of -0.037, which indicates a fairly normal distribution.

The ENS model consists of four dichotomous variables, and ranges from 0 to 4. This reveals that there are firm observations where all four metrics suggests either opportunistic (ENS of 4) or informative (ENS of 0) earnings management. The mean ENS is 1.29,

suggesting that most of the firm observations have a low ENS (i.e. informative earnings management). Furthermore, the standard deviation of 0.93 indicates that approximately 65% of the firm observations have an ENS score between 0 and 2. The skewness value of 0.365 indicates few extreme observations, which is expected given that the ENS is range bound between 0 and 4.

The control variables are the forecast surprise (percentage), firm's size (total assets), growth prospects (market-to-book ratio), and performance (return on assets). The descriptive statistics reveal substantial dispersion for all variables because it is logged.

The MTB and ROA all have minimum values of zero, which makes these variables more prone to skewness. The MTB ratio cannot be negative for firms that are operating as a going concern.

The skewness values for the MTB variables is high. Therefore, an additional robustness test of H_1 and H_2 is conducted after the skewness is reduced by winsorising both variables at the 95^{th} percentile.

6.2.2. Correlations

Table 24 reports the Pearson and Spearman correlation coefficients between all combinations of dependent and independent variables. There are significant correlations between the dependent variables and the control variables. Both the 1-day CAR and 3-day CAR is negatively correlated with the natural log of total assets (TA) and the market-to-book ratio.

There also exist a number of significant correlations between the various independent variables. There is a significantly positive correlation, 0.823, between DACC and the

interaction term, ENSxDACC. Multicollinearity is often thought to be a problem with the individual variables and the interaction term. However, Jaccard and Turrisi (2003) suggest that a concern for multicollinearity is misguided as collinearity between the individual variables and the interaction variable is not problematic, unlike high collinearity between individual variables which can lead to serious complications.

The correlation matrix reveals that the DACC and UE are positively correlated (only Pearson). This suggests that firms with a higher level of discretionary accruals tend to have larger earnings surprises, while firms with informative earnings management tend to have larger earnings surprises.

Table 24 – Pearson and Spearman correlations for 1-day CAR & 3-day CAR and independent and control variables

Spearman Correlation

Pearson Correlation		CAR_1	CAR_3	DACC	ENS	DACC x ENS	TA_ln	MTB	ROA
CAR_1	Correlation	**1.000**	0.769**	0.018	-0.020	0.014	-0.081**	0.052**	0.012
	Sig. (2-tailed)	**.**	0.000	0.309	0.265	0.439	0.000	0.004	0.503
CAR_3	Correlation	0.842**	**1.000**	-0.002	-0.008	-0.018	-0.080**	0.051**	0.018
	Sig. (2-tailed)	0.000	**.**	0.895	0.672	0.329	0.000	0.005	0.321
DACC	Correlation	0.000	-0.003	**1.000**	-0.016	0.873**	-0.046*	0.022	0.051**
	Sig. (2-tailed)	0.979	0.888	**.**	0.359	0.000	0.011	0.212	0.004
ENS	Correlation	-0.030	-0.015	-0.018	**1.000**	0.005	-0.147**	0.088**	0.043*
	Sig. (2-tailed)	0.096	0.416	0.305	**.**	0.780	0.000	0.000	0.017
DACC x ENS	Correlation	-0.024	-0.025	0.823**	-0.021	**1.000**	-0.036*	0.030	0.051**
	Sig. (2-tailed)	0.188	0.169	0.000	0.249	**.**	0.047	0.092	0.004
TA_ln	Correlation	-0.097**	-0.101	-0.047**	-0.147**	-0.028	**1.000**	-0.238**	-0.117**
	Sig. (2-tailed)	0.000	0.000	0.008	0.000	0.118	**.**	0.000	0.000
MTB	Correlation	0.052**	0.044**	0.009	0.103**	-0.007	-0.238**	**1.000**	0.369**
	Sig. (2-tailed)	0.004	0.015	0.616	0.000	0.691	0.000	**.**	0.000
ROA	Correlation	0.000	0.013	0.053	0.040	0.047**	-0.117**	0.301**	**1.000**
	Sig. (2-tailed)	0.983	0.463	0.003	0.024	0.009	0.000	0.000	**.**

* significant at the 0.05 level (2-tailed)
** significant at the 0.01 level (2-tailed)

CAR 1 = the Cumulative Abnormal Return (CAR) from the earnings announcement to one day after the earnings announcement to the date of (0,1).

CAR 3 = the Cumulative Abnormal Return (CAR) from the earnings announcement to three days after the earnings announcement to the date of (0,3).

$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.

ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.

DACCxENS = the interaction effect between DACC and ENS

TA = the log of the Total Assets

MTB = the market-to-book ratio

ROA = the return on assets

6.2.3. Regression Analysis

This section discusses the results obtained from regressing the abnormal returns at the earnings announcement date on the independent and control variables. The first regression is based on the 1-day abnormal return and the second regression is based on the 3-day abnormal return.

It is well known that the inferential OLS model assumes homoscedasticity in the errors (Berry 1993). However, heteroscedasticity is a common problem in cross-sectional data analysis because it is often an unrealistic assumption or clearly violated based on the data available (Hayes 2003; Long & Ervin 1999). If the errors are heteroscedastic, the OLS estimator remains unbiased, but becomes inefficient. More importantly, estimates of the standard errors are inconsistent. The estimated standard errors can be either too large or too small, in either case resulting in incorrect inferences (Berry 1993; Keith 2005; Long & Ervin 1999).

When the form and magnitude of heteroscedasticity are known, using weights to correct for heteroscedasticity is very simple. However, using weights is impractical when the presence of heteroscedasticity is of an unknown form (Long & Ervin 1999). In this situation, tests based on a heteroscedasticity consistent covariance matrix (HCCM) are optimal. The use of HCCM avoids the adverse effects of heteroscedasticity on hypothesis testing even when nothing is known about the form of the heteroscedasticity (MacKinnon & White 1985; White 1980).

White (1980) presents the asymptotically justified form of the HCCM, referred to as HC0. Later, MacKinnon and White (1985) raised concerns about the use of HC0 in small samples, and presented three alternative estimators known as HC1, HC2, and HC3. While these estimators are asymptotically equivalent to HC0, they are expected to have superior properties

in finite samples. The regression results present the HCO of the HCCM as the heteroskedasticity-robust standard errors[21].

Multicollinearity is commonly thought to be an issue with regressions that involve interactions (Jaccard & Turrisi 2003). A review of the correlation matrix reveals some association between the individual variable and the interaction variables. In order to formally test the multicollinearity assumption, Table 25 presents the variance inflation factors (VIF) for each independent variables.

Table 25 – Variance Inflation Factors for Hypothesis 1 and Hypothesis 2

	Hypothesis 1		Hypothesis 2	
	CAR (0, 1)	CAR (0, 3)	CAR (0, 1)	CAR (0, 3)
$DACC_{t-1}$	-	-	3.119	3.119
ENS	1.057	1.057	1.058	1.058
$DACC_{t-1}$xENS	-	-	3.107	3.107
TA	1.081	1.081	1.083	1.083
MTB	1.158	1.158	1.159	1.159
ROA	1.109	1.109	1.113	1.113

Minimum possible value = 1.0
Values > 10.0 may indicate a collinearity problem

The VIF provides an index that measures the degree to which sampling variance, of an estimated regression coefficient, is increased because of consequences of collinearity among the regressors (Fox & Monette 1992; Marquardt 1970). Table 25 reveals that the multicollinearity assumption is satisfied as none of the VIF values are greater than 10.0.

Table 26 and Table 27 present the results from the OLS regression estimation.

[21] Note that HC1, HC2, and HC3 were also calculated, but not presented, as they led to very little change in the heteroskedasticity-robust standard errors. This is as expected given the large data set used in the regression.

Table 26 – Hypothesis 1 and Hypothesis 2 regression estimation with the 1-day CAR

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		Hypothesis 1			Hypothesis 2[22]		
Variable	**Predicted Sign**	**Coefficient**	**t-stat**	**HCO t-stat**	**Coefficient**	**t-stat**	**HCO t-stat**
Intercept	?	0.0640	5.651***	4.578***	0.0638	5.632***	4.569***
$DACC_{t-1}$	?	-	-	-	0.0734	1.606	1.747*
ENS	-	-0.0023	-2.622***	-2.529**	-0.0024	-2.642***	-2.561**
$DACC_{t-1}$ x ENS	-	-	-	-	-0.0616	-2.154**	-2.182**
TA	-	-0.0035	-5.212***	-4.373***	-0.0035	-5.193***	-4.364***
MTB	?	0.0004	2.088**	1.590	0.0004	2.031**	1.548
ROA	?	-0.0001	-1.126	-0.8818	-0.0001	-1.078	-0.8481
n		3,096			3,096		
R^2		*1.28%*			*1.43%*		
F		*6.43*			*7.51*		
Sign. F		*0.00*			*0.00*		

*** significant at the 0.01 level (2-tailed).
** significant at the 0.05 level (2-tailed).
* significant at the 0.10 level (2-tailed).

CAR 1 = the Cumulative Abnormal Return (CAR) from the earnings announcement to one day after the earnings announcement to the date of (0,1).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

[22] Note that the results from the regressions conducted with the winsorised values MTB are consistent with these results.

Table 27 – Hypothesis 1 and Hypothesis 2 regression estimation with the 3-day CAR

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		Hypothesis 1			Hypothesis 2[23]		
Variable	**Predicted Sign**	**Coefficient**	**t-stat**	**HCO t-stat**	**Coefficient**	**t-stat**	**HCO t-stat**
Intercept	?	0.0771	5.790***	4.578***	0.0770	5.778***	4.663***
$DACC_{t-1}$	?	-	-	-	0.0796	1.481	1.464
ENS	-	-0.0018	-1.752*	-2.529**	-0.0018	-1.775*	-1.699*
$DACC_{t-1}$ x ENS	-	-	-	-	-0.0709	-2.105**	-1.847*
TA	-	-0.0043	-5.402***	-4.373***	-0.0043	-5.391***	-4.472***
MTB	?	0.0003	1.277	1.590	0.0002	1.219	0.9201
ROA	?	-0.0004	-0.2492	-0.8818	-0.0001	-0.1957	-0.1491
N		3,096			3,096		
R^2		*1.16%*			*1.21%*		
F		*9.08*			*6.82*		
Sign. F		*0.00*			*0.00*		

*** significant at the 0.01 level (2-tailed).
** significant at the 0.05 level (2-tailed).
* significant at the 0.10 level (2-tailed).

CAR 3 = the Cumulative Abnormal Return (CAR) from the earnings announcement to three days after the earnings announcement to the date of (0,3).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

[23] Note that the results from the regressions conducted with the winsorised values of UE and MTB are consistent with these results.

The F Statistic in both the 1-day CAR and 3-day CAR regressions is statically significant at the 1% level, providing strong evidence that the coefficients of the independent variables are not equal to zero.

The R^2 values for the 1-day CAR regressions are 1.28% and 1.43%, while the R^2 values for the 3-day CAR regressions are 1.16% and 1.21%. Although these R^2 values appear to be low when compared to general wisdom (Keith 2005), these results are consistent with many past studies that investigate fundamental accounting data with capital market equity prices. For example, a review of the OLS regressions that use equity prices as the dependent variables in Koh, Matsumoto, and Rajgopal (2008) reveals a range of R^2 values between 0.046% and 0.828%. A review of Balsam, Bartov & Marquardt (2002) reveals similar R^2 values for regressions with equity prices as dependent variables. The R^2 ranges from -0.14% to 1.60%.

Generally, autocorrelation is not a major issue with cross-sectional data. The Durbin-Watson statistic is calculated to formally test for autocorrelation. The statistic ranges from 0 to 4, with a midpoint of 2. Generally, statistics below 1 or above 3 suggest an autocorrelation issue, while a value of 2 generally suggests autocorrelation is not a problem. The Durbin-Watson statistics in all four regressions (statistic not presented) is near 2.0, suggesting that autocorrelation is not an issue with the models.

In regards to Hypothesis 1, the results in Table 26 and Table 27 indicate that the ENS is negatively related to the abnormal return (-0.0023 and -0.0018). That is, the abnormal return decreases as the earnings management is moves from informative to opportunistic.

In regards to Hypothesis 2, Table 26 and Table 27 reveal that the coefficient for the ENS is negative (-0.0024 and -0.0018) while the coefficient for DACC is positive (0.0734 and 0.0796). If the interaction term was not present in the regression, these coefficients would suggest that the abnormal return would increase as discretionary accruals increase (note that this relationship is not statistically significant). Intuitively, this would suggest that the market believes that all discretionary accruals are informative. The negative ENS coefficient would suggest that the abnormal return would decrease as the expectation that discretionary accruals are opportunistic increases. However, the coefficients of the individual ENS and DACC variables cannot be interpreted in this direct manner because of the interaction effect variable (Jaccard & Turrisi 2003).

The presence of the interaction term requires a slightly different approach to interpreting the intuition of the coefficients. Both Table 26 and Table 27 reveal that there is a significant negative correlation (-0.0616 and -0.0709) between the interaction of ENS and DACC with the abnormal return. Therefore, the coefficients of the individual variables must be interpreted by considering the interaction effects.

An analysis of the three variables of interest can help with the interpretation of the coefficients. Holding all other independent (control) variables constant, the following equation represents the output of the regression with the 1-day CAR as the dependent variable from Table 26:

$$CAR\ (0,1) = \alpha + (\beta_{ENS} x ENS) + (\beta_{DACC} \times DACC) + (\beta_{ENS x DACC} \times [ENS \times DACC])$$

$$CAR\ (0,1) = 0.0638 + (-0.0024 \times ENS) + (0.0734 \times DACC) + (-0.0616 \times ENS \times DACC)$$

Based on this equation, Table 28 presents the predicted abnormal return based on a combination of each of the five possible ENS (0, 1, 2, 3, and 4) and five hypothetical measures for DACC (-20%, -10%, 0%, 10%, and 20% of total assets). It is important to note that the CAR values in Table 28 are calculated to highlight the relationship between the nature (ENS) and extent (DACC) of earnings management on the abnormal return. It does not include the impact of the control variables. Therefore, the abnormal returns are not intended to represent the abnormal returns that the entire model would predict.

Table 28 – CAR for different combinations of ENS and DACC levels

	Informative ENS = 0	ENS = 1	ENS = 2	ENS = 3	Opportunistic ENS = 4
DACC = - 20%	4.91%	5.90%	6.90%	7.89%	8.88%
DACC = -10%	5.65%	6.02%	6.40%	6.77%	7.15%
DACC = 0%	6.38%	6.14%	5.90%	5.66%	5.42%
DACC = 10%	7.11%	6.26%	5.40%	4.55%	3.69%
DACC = 20%	7.85%	6.38%	4.90%	3.43%	1.96%

The results reveal that when the nature of earnings management is informative (ENS of 0 and 1), discretionary accruals have a positive relationship with the abnormal return (CAR). The relationship between the extent of earnings management (DACC) and the abnormal return (CAR) becomes negative as the nature of earnings management becomes opportunistic (ENS of 2, 3, and 4).

It is also evident from Table 28 that the relationship between the abnormal return (CAR) and the extent of earnings management (DACC) becomes increasingly negative as more metrics suggest opportunistic earnings management. Intuitively, this seems to suggest that discretionary accruals are discounted more and more as the market's expectation that the nature of the earnings management is opportunistic increases.

Figure 7 graphs the slope of the extent of earnings management (DACC) on the abnormal return (CAR) when earnings management is most likely opportunistic (ENS of 4) or informative (ENS of 0). It is a graphical representation of the interaction effect between the extent (DACC) and the nature of earnings management (ENS) on a firm's abnormal return (CAR).

Figure 7 – Slope of DACC on CAR for Informative and Opportunistic Earnings Management

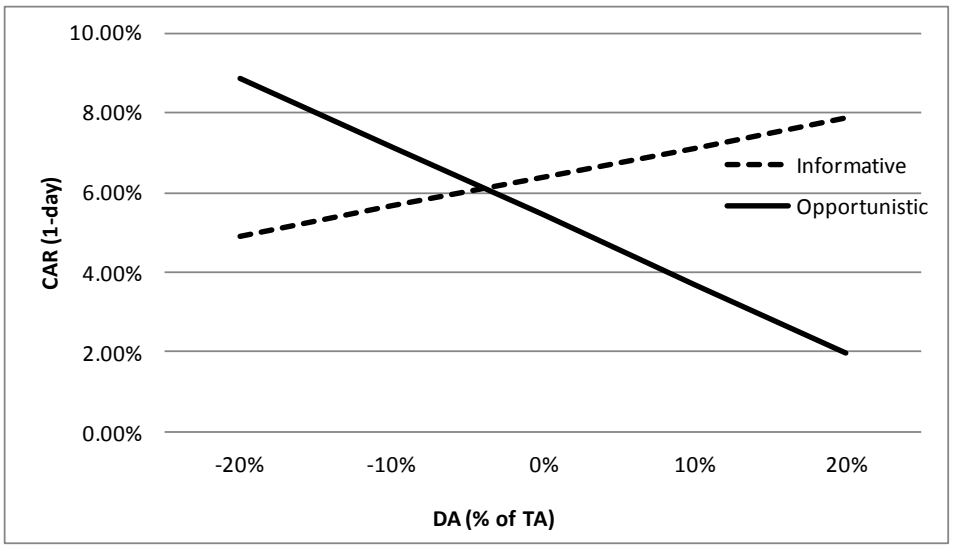


Figure 7 corroborates Table 26 and Table 27 by revealing a negative relationship between the abnormal return and the extent of opportunistic earnings management. In addition, Figure 7 also graphically presents the positive relationship between the abnormal returns and the extent of informative earnings management.

Another way to interpret the interaction effect between the extent (DACC) and nature (ENS) of earnings management on the abnormal return is to analyze a constant level of earnings management (DACC) across different ENS. For example, Table 28 reveals that

when discretionary accruals are 20% of total assets (i.e., a high percentage/large extent), the predicted abnormal return is 8.18% when the earnings management is informative (ENS of 0) versus 1.44% when the earnings management is opportunistic (ENS of 4). Intuitively, these results suggest that discretionary accruals have a positive (negative) relationship with the abnormal return of firms that MBE when the earnings management is informative (opportunistic).

Figure 7 also reveals that the market penalizes firms more for the use of opportunistic earnings management than it rewards firms for the use of informative earnings management. That is, the negative slope between the abnormal return and the extent of discretionary accruals is steeper for opportunistic earnings management than the positive slope for informative earnings management.

6.2.4. Robustness Check 1 – Analysis of Average Returns

An analysis of the raw returns is conducted to further investigate the results obtained for the regressions. Table 29 presents the average returns over the 1-day (Panel A) and 3-day (Panel B) window. The returns are presented by the nature (ENS) and the extent (DACC) of earnings management. The extent of earnings management is presented for cases of high (greater than 3 percent of total assets) and low (less than 3 percent of total assets) discretionary accruals.

Table 29 – The Abnormal Return by ENS and Discretionary Accruals

Panel A – CAR (0, 1)

		Discretionary Accruals as % of Total Assets			
		>3%	<-3%	Difference	t-stat
ENS	3-4	-1.11%	1.10%	-2.21%	-1.78**
	2	0.00%	0.21%	-0.21%	-0.32
	0-1	0.75%	0.47%	0.28%	0.64
	Difference	-1.86%	0.64%		
	t-stat	-1.86**	0.73		

Panel B – CAR (0, 3)

		Discretionary Accruals as % of Total Assets			
		>3%	<-3%	Difference	t-stat
ENS	3-4	-0.83%	1.70%	-2.53%	-1.79**
	2	0.37%	0.30%	0.07%	0.08
	0-1	0.85%	0.68%	0.16%	0.31
	Difference	-1.68%	1.01%		
	t-stat	-1.52*	0.98		

** significant at the 0.05 level (2-tailed).
* significant at the 0.10 level (2-tailed).

The analysis of the raw returns provides further support for the results obtained in the regression analysis. The abnormal return can be viewed by holding the nature of earnings management constant and changing the extent of earnings management. Table 29 corroborates the conclusion that the extent of discretionary accruals has a negative (positive) relationship with the extent of opportunistic (informative) earnings management. For example, the average 1-day (3-day) abnormal return for firms that MBE with a large extent of opportunistic earnings management is -1.11% (-0.83%), whereas the average 1-day (3-day) abnormal return is 1.10% (1.70%) for firms that MBE with small extent of opportunistic earnings management.

The average 1-day (3-day) abnormal return for firms that MBE with a large extent of informative earnings management is 0.75% (0.85%), whereas the average 1-day (3-day)

abnormal return is 0.47% (0.68%) for firms that MBE with small extent of informative earnings management. Although the abnormal return is larger (smaller) for firms with a larger (smaller) extent of informative earnings management, unlike opportunistic earnings management, the differential is not statistically significant. Taken together, these results corroborate the conclusion that the market reacts more significantly to the extent of opportunistic earnings management than informative earnings management.

In addition, the abnormal return can be viewed by holding the extent constant and changing the nature of earnings management. The results corroborate the positive (negative) relationship between the abnormal return and the extent of informative (opportunistic) earnings management. For example, the average 1-day (3-day) abnormal return for firms that MBE with a large extent of opportunistic earnings management is -1.11% (-0.83%), whereas the average 1-day (3-day) abnormal return is 0.75% (0.85%) for firms that MBE with informative earnings management.

6.2.5. Robustness Check 2 – Analysis with Current Quarter Discretionary Accruals

As discussed, the literature offers conflicting results regarding the timing of the market's pricing of discretionary accruals. For example, Baber, Chen & Kang (2006) suggest that the market can disentangle the impacts of discretionary accruals at the earnings announcement date. However, the vast majority of the literature suggests that the market cannot disentangle the impacts of earnings management until sometime after the earnings announcement (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007).

This research postulates that the market's reaction at the earnings announcement date is a function of the nature and ex ante expectation of the extent of earnings management. The ex ante expectation of the extent of earnings management is defined as a firm's prior quarter discretionary accruals. Table 26, Table 27 and Table 29 suggest that the abnormal return at the earnings announcement date is a function of the ex ante expectation of the extent of earnings management.

An additional sensitivity test is conducted to determine if the market relies upon the current quarter's discretionary accruals at the earnings announcement date. The test is conducted by estimating the H_2 equation with the current quarter discretionary accruals as opposed to the prior quarter discretionary accruals:

Equation 9 – Hypothesis 2 Regression with current quarter discretionary accruals

$$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t0)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t0)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$$

Table 30 presents the results of the Hypothesis 2 regression with current quarter discretionary accruals.

Table 30 – Regression results during the earnings announcement date with current quarter discretionary accruals

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t0)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t0)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		CAR (0, 1)		CAR (0, 3)	
Variable	**Predicted Sign**	**Coefficient**	**t-stat**	**Coefficient**	**t-stat**
Intercept	?	0.0657	5.747***	0.0803	5.986***
$DACC_t$	?	0.0229	0.575	0.0642	1.377
ENS	-	-0.0025	-2.783**	-0.0021	-1.929*
$DACC_t$x ENS	-	-0.0102	-0.420	-0.0255	-0.893
TA	-	-0.0037	-5.312***	-0.0046	-5.592***
MTB	?	0.0004	1.970**	0.0002	1.015
ROA	?	-0.0001	-1.015	0.0000	-0.174
n		3,065		3,065	
R^2		*1.36%*		*1.31%*	
F		*7.00*		*6.74*	
Sign. F		*0.00*		*0.00*	

*** Significant at the 0.01 level (2-tailed).
** Significant at the 0.05 level (2-tailed).
* Significant at the 0.10 level (2-tailed).

CAR 3 = the Cumulative Abnormal Return (CAR) from the earnings announcement to three days after the earnings announcement to the date of (0,3).
DACCt, = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter of the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
DACC t_0xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

The results reveal that there is no statistically significant relationship between the interaction of the nature and extent of the current quarter earnings management around the earnings announcement date with either the 1-day or 3-day CAR.

This robustness test supports the conclusion that the market relies upon prior quarters' discretionary accruals as an ex ante expectation of the extent of earnings management at the earnings announcement date. The results are consistent with the past literature that suggests that the market cannot disentangle the impacts of earnings management at the earnings announcement date (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007).

6.3. Hypothesis 3 – The Abnormal return during the Financial Statement Analysis Period

6.3.1. Descriptive Statistics

Table 31 provides the descriptive statistics for the two dependent variables ((CAR 2,17) and (CAR 4,17)), the independent variables (DACC_SURP, ENS, and ENSxDACC_SURP), and the additional control variable (INST_OWN) used to model Hypothesis 3. The UE, ENS, TA, MTB, and ROA variables used to test Hypothesis 3 are the same measures used in H_1 and H_2, as presented in Table 23 (and are therefore not reproduced).

The descriptive statistics for both dependent variables are similar, and reveal a positive mean return in the financial statement analysis period. In addition, the skewness values suggest a reasonably normal distribution.

Table 31 - Descriptive statistics for dependent and independent variables

Variable	Min.	Max.	Mean	Standard Deviation	Median	1st Quartile	3rd Quartile	Skewness
CAR(2, 17)	-0.538	0.923	0.006	0.071	0.004	-0.029	0.035	1.289
CAR(4, 17)	-0.412	0.744	0.004	0.064	0.003	-0.026	0.031	0.934
DACC_SURP	-0.335	0.224	-0.002	0.058	0.000	-0.029	0.028	-0.868
DACC_SURP x ENS	-0.635	0.599	-0.003	0.089	0.000	-0.029	0.026	-0.633
INST_OWN	0.000	141.100	72.484	18.367	73.320	64.650	84.100	-1.106

CAR (2, 17) = the Cumulative Abnormal Return (CAR) from one day after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return (CAR) from three days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.
DACC_SURPxENS = the interaction effect between DACC_SURP and ENS
INST_OWN = the percentage of common shares held by institutional investors

The three independent variables of interest are the DACC_SURP, the ENS, and the interaction between ENS and DACC_SURP. The DACC_SURP is both positive (more DACC than expected) and negative (less DACC than expected), with a mean value of -0.002% of total assets and a standard deviation of 8.9% of total assets. The DACC_SURP has a skewness of -0.63, which indicates a fairly normal distribution. The skewness suggests that there are some observations where the ex post assessment of the extent of earnings management (current quarter discretionary accruals) are much lower than the ex ante expectation of earnings management (prior quarter discretionary accruals).

6.3.2. Correlations

Table 32 reports the Pearson and Spearman correlation coefficients between all combinations of dependent and independent variables. There is a negative correlation between the nature of earnings management and the abnormal returns for firms that MBE in the financial statement analysis period. Negative correlations are expected as a higher ENS indicates opportunistic earnings management, while a lower ENS indicates informative earnings management.

The DACC_SURP has a negative correlation with the abnormal returns for firms that MBE in the financial statement analysis period. However, interpreting the relationship between DACC_SURP and the abnormal returns for firms that MBE in isolation is difficult because the nature of the discretionary accruals is not considered. If the DACC_SURP are informative, a positive relationship with the abnormal returns would be expected; whereas if the DACC_SUPR are opportunistic, a negative relationship with the abnormal returns would be expected.

Table 32 – Correlations for CAR (2, 17) & CAR (4, 17) and independent and control variables

Spearman Correlation

		CAR (2,17)	CAR (4,17)	DA_SURP	ENS	DA_SURP xENS	TA_ln	MTB	ROA	INST_ OWN
CAR (2,17)	Correlation	**1.000**	0.883**	-0.014	-0.022	-0.018	-0.028	0.023	-0.007	0.011
	Sig. (2-tailed)	**.**	0.000	0.425	0.227	0.322	0.115	0.208	0.699	0.532
CAR (4,17)	Correlation	0.908**	**1.000**	-0.023	-0.040**	-0.025	-0.020	0.015	-0.013	-0.001
	Sig. (2-tailed)	0.000	**.**	0.197	0.028	0.170	0.262	0.407	0.457	0.954
DACC_SURP	Correlation	-0.033	-0.045**	**1.000**	-0.018	0.867	-0.027	-0.018	-0.007	0.005
	Sig. (2-tailed)	0.070	0.013	**.**	0.327	0.000	0.136	0.312	0.707	0.802
ENS	Correlation	-0.029	-0.041**	-0.011	**1.000**	-0.044**	-0.146**	0.087**	0.041**	0.047**
	Sig. (2-tailed)	0.106	0.024	0.555	**.**	0.015	0.000	0.000	0.022	0.009
DACC_SURPxENS	Correlation	-0.051**	-0.060**	0.807**	-0.050**	**1.000**	-0.021	-0.016	-0.008	-0.003
	Sig. (2-tailed)	0.005	0.001	0.000	0.006	**.**	0.255	0.383	0.654	0.863
TA_ln	Correlation	-0.067**	-0.057**	-0.034	-0.147**	-0.034	**1.000**	-0.280**	-0.111**	-0.165**
	Sig. (2-tailed)	0.000	0.002	0.058	0.000	0.059	**.**	0.000	0.000	0.000
MTB	Correlation	0.024	0.030	-0.012	0.099**	-0.018	-0.239**	**1.000**	0.367**	0.012
	Sig. (2-tailed)	0.188	0.099	0.516	0.000	0.330	0.000	**.**	0.000	0.505
ROA	Correlation	0.005	-0.005	0.003	0.039**	-0.011	-0.117**	0.297**	**1.000**	0.015
	Sig. (2-tailed)	0.791	0.795	0.854	0.032	0.560	0.000	0.000	**.**	0.420
INST_OWN	Correlation	0.018	0.012	0.013	0.031	0.021	-0.092**	-0.013	-0.007	**1.000**
	Sig. (2-tailed)	0.325	0.514	0.465	0.084	0.252	0.000	0.477	0.689	**.**

Pearson Correlation

* significant at the 0.05 level (2-tailed)

** significant at the 0.01 level (2-tailed)

CAR (2, 17) = the Cumulative Abnormal Return (CAR) from one day after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).

CAR (4, 17) = the Cumulative Abnormal Return (CAR) from three days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).

DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.

ENS = the Opportunistic versus Informative Model (OVIM) Score that ranges from 0 to 4, whereby 0 indicates an ex post assessment of opportunistic earnings management and 4 indicates an ex post assessment of informative earnings management.

DACC_SURPxENS = the interaction effect between DACC_SURP and OVIM

TA = the log of the Total Assets

MTB = the market-to-book ratio

ROA = the return on assets

INST_OWN = the percentage of common shares held by institutional investors

There are significant correlations between the dependent variables and the control variables. Both CAR (2, 17) and CAR (4, 17) are significantly negatively correlated with total assets. There also exist a number of significant correlations between the independent variables. There is a significantly positive correlation, 0.807, between DACC_SURP and the interaction term ENSxDACC_SURP. This correlation may indicate a potential problem with multicollinearity. Although high levels of collinearity between interaction variables and the individual variables is generally not problematic (Jaccard & Turrisi 2003), the VIF test is calculated to formal test for multicollinearity.

6.3.3. Regression Analysis

This section presents the results from regressing the dependent CAR variables during the financial statement analysis period on the independent and control variables.

The VIF is calculated for each variable to test for multicollinearity. Table 33 reveals that the multicollinearity assumption is satisfied as none of the VIF values are greater than 10.0.

Table 33 – Variance Inflation Factors for Hypothesis 3

	Hypothesis 3	
	CAR (0, 1)	CAR (0, 3)
DACC_SURP	2.879	2.879
ENS	1.062	1.062
DACC_SURPxENS	2.885	2.885
TA	1.094	1.094
MTB	1.158	1.158
ROA	1.107	1.107

Minimum possible value = 1.0
Values > 10.0 may indicate a collinearity problem

Table 34 presents the regression results for Hypothesis 3. As discussed for H_1 and H_2, the regressions present the HCO of the HCCM as the heteroskedasticity-robust standard errors.

Table 34 – Hypothesis 3 regression results during the financial statement analysis period

$$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC_{SURPi,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{SURPi,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon$$

		CAR (2, 17)			CAR (4, 17)		
Variable	**Predicted Sign**	**Coefficient**	**t-stat**	**HCO t-stat**	**Coefficient**	**t-stat**	**HCO t-stat**
Intercept	?	0.0694	3.735***	2.914***	0.0565	3.378***	2.654***
DACC_SURP	?	0.0319	0.857	0.791	0.0154	0.460	0.412
ENS	-	-0.0034	-2.443**	-2.319**	-0.0038	-3.044***	-2.877***
DACC_SURP x ENS	-	-0.0614	-2.509**	-1.960*	-0.0549	-2.493**	-1.960**
TA	-	-0.0040	-3.805***	-2.988***	-0.0032	-3.338***	-2.660***
MTB	?	0.0002	0.626	0.419	0.0004	1.272	0.840
ROA	?	-0.0001	-0.333	-0.246	-0.0002	-0.955	-0.727
INST_OWN	+	0.0001	0.769	0.789	0.0000	0.514	0.522
n		3,065			3,065		
R^2		*0.96%*			*1.07%*		
F		*4.24*			*3.20*		
Sign. F		*0.00*			*0.00*		

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

CAR (2, 17) = the Cumulative Abnormal Return (CAR) from two days after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return (CAR) from four days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
DACC_SURPxENS = the interaction effect between DACC_SURP and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets
INST_OWN = the percentage of common shares held by institutional investors

The F Statistic in both the CAR (2,17) and CAR (4,17) regressions is statically significant at the 1% level. This provides evidence that the independent variable coefficients are not equal to zero.

The R^2 values for the CAR (2,17) and CAR (4,17) models are 0.98% and 1.07%, respectively. Although these R^2 values appear to be low, these results are consistent with many past studies that investigate fundamental accounting data with capital market equity prices (Balsam, Bartov & Marquardt 2002; Koh, Matsumoto & Rajgopal 2008).

The Durbin-Watson statistic (not presented in the table) is calculated to formally test for autocorrelation. The Durbin-Watson statistics (not presented) in both regressions is near 2.0, suggesting that autocorrelation is not an issue with the models.

Table 34 reveals a statistically significant interaction between the nature of earnings management (ENS) and the ex post assessment of the extent of earnings management (DACC_SURP). The interaction relationship is statistically significant for both the CAR (2, 17) and CAR (4, 17). The coefficients of the ENS and the ENSxDACC_SURP interaction are both negative, as expected.

These results support the existence of a belief revision process during the financial statement analysis period for the extent of earnings management. Intuitively, the results suggest that firms with a larger (smaller) extent of opportunistic earnings management experience a negative (positive) abnormal return during the financial statement analysis period. In addition, firms that have a larger (smaller) extent of informative earnings management

experience a positive (negative) abnormal return during the financial statement analysis period.

An analysis of the three variables of interest can help with the interpretation of the coefficients. Holding all other independent (control) variables constant, the following equation represents the output of the regression with the CAR (2, 17) as the dependent variable from Table 34:

$$CAR(2,17) = \alpha + (\beta_{ENS} x ENS) + (\beta_{DACC\_SURP} \times DACC\_SURP) + (\beta_{ENS x DACC\_SURP} \times [ENS \times DACC\_SURP])$$

$$CAR(2,17) = 0.0694 + (-0.0034 \times ENS) + (0.032 \times DACC\_SURP) + (-0.0614 \times ENS \times DACC\_SURP)$$

Based on this equation, Table 35 presents the predicted CAR based on a combination of each of the five possible ENS (0, 1, 2, 3, and 4) and five hypothetical measures for DACC_SURP (-20%, -10%, 0%, 10%, and 20% of total assets). It is important to note that the CAR values in Table 35 are calculated to highlight the relationship between the nature (ENS) and extent of additional earnings management (DACC_SURP) on the abnormal return. It does not include the impact of the control variables. Therefore, the abnormal returns are not intended to represent the abnormal returns that the entire model would predict.

Table 35 – CAR for different combinations of ENS and DACC_SURP levels

	Informative ENS = 0	ENS = 1	ENS = 2	ENS = 3	Opportunistic ENS = 4
DACC_SURP = - 20%	6.30%	7.19%	8.08%	8.97%	9.85%
DACC_SURP = -10%	6.62%	6.90%	7.17%	7.44%	7.72%
DACC_SURP = 0%	6.94%	6.60%	6.26%	5.92%	5.58%
DACC_SURP = 10%	7.26%	6.31%	5.35%	4.40%	3.44%
DACC_SURP = 20%	7.58%	6.01%	4.44%	2.87%	1.31%

The results reveal that when the nature of earnings management is informative (ENS of 0 and 1), the additional discretionary accruals have a positive relationship with the abnormal return (CAR). The relationship between the additional discretionary accruals (DACC_SURP) and the abnormal return becomes negative when the nature of earnings management is opportunistic (ENS of 2, 3, and 4).

It is also evident from Table 35 that the relationship (slope) between the abnormal return (CAR) and the additional discretionary accruals (DACC_SURP) becomes increasingly negative as more ENS metrics suggest opportunistic earnings management (ENS increases). Intuitively, this seems to suggest that the additional discretionary accruals are discounted more and more as the as the market's expectation that the nature of the earnings management is opportunistic increases. This is consistent with the results at the earnings announcement date.

Figure 8 graphs the slope of the additional discretionary accruals (DACC_SURP) on the abnormal return (CAR) when earnings management is most likely opportunistic (ENS of 4) and informative (ENS of 0). It is a graphical representation of the interaction effect between the additional discretionary accruals (DACC_SURP) and the nature of earnings management (ENS) on a firm's abnormal return (CAR).

Figure 8 – Slope of Additional Discretionary Accruals on CAR for Opportunistic and Informative Earnings Management

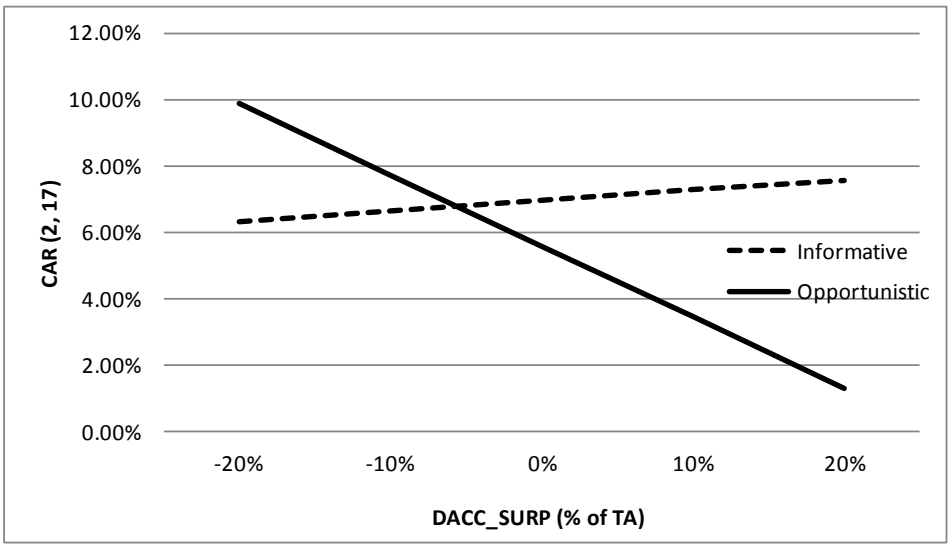


Figure 8 corroborates Table 34 and Table 35 by revealing a negative relationship between the abnormal return and the additional opportunistic earnings management. In addition, Figure 8 also graphically presents the positive relationship between the abnormal returns and the additional informative earnings management.

Another way to interpret the interaction effect between the additional discretionary accruals (DACC_SURP) and nature (ENS) of earnings management on the abnormal return is to analyze a constant level of additional discretionary accruals across different ENS. For example, Table 35 reveals that if additional discretionary accruals are 10% of total assets , the predicted abnormal return is 7.40% when the earnings management is informative (ENS of 0) versus 3.50% when the earnings management is opportunistic (ENS of 4).

Figure 8 reveals that the market continues to penalize firms more for the use of opportunistic earnings management than it rewards firms for the use of informative earnings management during the financial statement analysis period. That is, the negative slope between the abnormal return and the additional discretionary accruals is steeper for opportunistic earnings management than the positive slope for informative earnings management. This relationship is more severe during the financial statement analysis period than at the earnings announcement date.

6.3.4. Robustness Check 1 – Analysis with Prior Quarter Discretionary Accruals

This research postulates that the market's reaction during the financial statement analysis period is a function of the nature and ex post assessment of the extent of earnings management. The ex post assessment of the extent of earnings management is defined as a firm's current quarter discretionary accruals.

Table 34 suggests that the abnormal return during the financial statement analysis period is a function of the ex post assessment of the extent of earnings management, while Table 26 and Table 27 suggest that the abnormal return at the earnings announcement date is a function of the ex ante expectation of the extent of earnings management.

An additional test is conducted to determine if the market also relies upon the prior quarter's accruals during the financial statement analysis period. The sensitivity test is conducted by estimating the H_3 equation with the prior quarter discretionary accruals as opposed to the current quarter discretionary accruals, as follows:

Equation 10 – Hypothesis 3 Regression with prior quarter discretionary accruals

$$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC_{t\text{-}1i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{\,t\text{-}1i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon$$

Table 36 presents the results from the Hypothesis 3 regression with prior quarter discretionary accruals.

Table 36 – Regression results during the financial statement analysis period with prior quarter discretionary accruals

$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)I,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		CAR (2, 17)		CAR (4, 17)	
Variable	**Predicted Sign**	**Coefficient**	**t-stat**	**Coefficient**	**t-stat**
Intercept	?	0.0672	3.615***	0.0542	3.239***
$DACC_{t-1}$	?	-0.0149	-0.286	-0.0135	-0.287
ENS	-	-0.0032	-2.270**	-0.0036	-2.868***
$DACC_{t-1}$ x ENS	-	0.0259	0.754	0.0284	0.915
TA	-	-0.0039	-3.682***	-0.0031	-3.194***
MTB	?	0.0002	0.719	0.0004	1.389
ROA	?	-0.0001	-0.342	-0.0002	-0.980
INST_OWN	?	0.0001	0.739	0.0000	0.488
n		3,065		3,065	
R^2		*0.66%*		*0.69%*	
F		*2.89*		*3.04*	
Sign. F		*0.00*		*0.00*	

*** Significant at the 0.01 level (2-tailed).
** Significant at the 0.05 level (2-tailed).
* Significant at the 0.10 level (2-tailed).

CAR (2, 17) = the Cumulative Abnormal Return (CAR) from two days after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return (CAR) from four days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between $DACC_{t-1}$and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets
INST_OWN = the percentage of common shares held by institutional investors

Table 36 reveals that the interaction effect is not statistically significant during the financial statement analysis period with the prior quarter discretionary accruals. This result provides support for the belief revision process postulated by Hypothesis 3. The market returns are a function of the current quarter discretionary accruals in the financial statement analysis period and a function of the prior quarter discretionary accruals during the earnings announcement date. Taken together, these results provide further support for a belief revision process occurring between the earnings announcement date to the financial statement analysis period as equity valuations change from being a function of the prior quarter discretionary accruals to the current quarter discretionary accruals.

6.4. Additional Analysis

6.4.1. The Impact of Fourth Quarter Observations

Various differences have been documented in the fourth quarter, as opposed to the first three quarters. The following are some differences that have been documented in the fourth quarter:

1. The constraints on earnings management are different in the fourth quarter (Koh, Matsumoto & Rajgopal 2008; Matsumoto 2002; Pincus & Rajgopal 2002). It has been argued that the cost of earnings management is higher in the fourth quarter than in interim quarters because annual statements are audited (Brown, L. D. & Pinello 2007).
2. The analysts' forecasts are optimistically biased in the fourth quarter in comparison to the first three quarters (Basu, Hwang & Jan 1999).
3. Reported earnings differ systematically in the fourth quarter from the earnings in first three quarters (Brown, L. D. 1998; Gu, Z. & Wu 2003).
4. The market reacts differently to fourth quarter earnings than earlier quarter earnings (Collins, Hopwood & McKeown 1984; Mendenhall & Nichols 1988).

In addition, Figure 3 reveals that fewer firms meet or beat expectations in the fourth quarter. An additional robustness check is conducted as a result of the above noted differences with fourth quarter observations. The regression equations to test Hypothesis 2 and Hypothesis 3 are estimated on two subsets of the data: 1) fourth quarter observations, and 2) observations from the first three quarters. The results of regressions testing Hypothesis 2 are presented in Table 37, while the results from the Hypothesis 3 regressions are presented in Table 38.

Table 37 – Hypothesis 2 Regression on subsets of 4th Quarter versus all other Quarters observations

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		1st, 2nd, & 3rd Quarters				4th Quarter			
		CAR (0, 1)		CAR (0, 3)		CAR (0, 1)		CAR (0, 3)	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.0542	4.595***	0.0713	4.989***	0.1104	3.331***	0.1063	2.991***
$DACC_{t-1}$	?	0.0812	1.716*	0.1094	1.910*	0.0410	0.298	-0.0659	-0.447
ENS	-	-0.0031	-3.256***	-0.0030	-2.636***	0.0004	0.171	0.0030	1.102
$DACC_{t-1}$ x ENS	-	-0.0784	-2.644***	-0.1053	-2.931***	0.0233	0.272	0.1018	1.110
TA	-	-0.0030	-4.172***	-0.0040	-4.628***	-0.0064	-3.188***	-0.0061	-2.859***
MTB	?	0.0004	2.059***	0.0003	1.151	0.0003	0.582	0.0003	0.478
ROA	?	-0.0001	-0.450	0.0001	0.700	-0.0006	-1.430	-0.0007	-1.625
N		2,516		2,516		578		578	
R^2		*1.59%*		*1.61%*		*2.35%*		*2.55%*	
F		*6.77*		*6.84*		*2.30*		*2.50*	
Sign. F		*0.00*		*0.00*		*0.06*		*0.02*	

*** significant at the 0.01 level (2-tailed).
** significant at the 0.05 level (2-tailed).
* significant at the 0.10 level (2-tailed).

CAR 1 = the Cumulative Abnormal Return (CAR) from the earnings announcement to one day after the earnings announcement to the date of (0,1).
CAR 3 = the Cumulative Abnormal Return (CAR) from the earnings announcement to three days after the earnings announcement to the date of (0,3).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

Table 38 – Hypothesis 3 Regression on subsets of 4th Quarter versus all other Quarters observations

$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC_{SURPi,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{SURPi,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon$

		1st, 2nd, & 3rd Quarters				4th Quarter			
		CAR (2, 17)		CAR (4, 17)		CAR (2, 17)		CAR (4, 17)	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.0695	3.506***	0.0534	2.951***	0.0702	1.384	0.0733	1.674*
$DACC_{SURP}$	?	0.0283	0.730	0.0191	0.540	0.0684	0.594	0.0077	0.078
ENS	-	-0.0042	-2.800***	-0.0042	-3.061***	-0.0007	-0.185	-0.0030	-0.933
$DACC_{SURP}$ x ENS	-	-0.0634	-2.461**	-0.0611	-2.601***	-0.0634	-0.899	-0.0328	-0.538
TA	-	-0.0041	-3.625***	-0.0030	-2.907***	-0.0037	-1.272	-0.0041	-1.611
MTB	?	0.0003	0.882	0.0005	1.582	-0.0002	-0.243	-0.0002	-0.223
ROA	?	0.0001	0.267	-0.0001	-0.570	-0.0007	-1.200	-0.0006	-1.083
ISNT_OWN	+	0.0000	0.627	0.0000	0.212	0.0001	0.400	0.0001	0.634
n		2,487		2,487		578		578	
R^2		*1.25%*		*1.28%*		*0.65%*		*0.80%*	
F		*4.49*		*4.58*		*0.52*		*0.66*	
Sign. F		*0.00*		*0.00*		*0.87*		*0.77*	

*** Significant at the 0.01 level (2-tailed).
** Significant at the 0.05 level (2-tailed).
* Significant at the 0.10 level (2-tailed).

CAR (2, 17) = the Cumulative Abnormal Return (CAR) from one day after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return (CAR) from three days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
DACC_SURPxENS = the interaction effect between DACC_SURP and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets
INST_OWN = the percentage of common shares held by institutional investors

Table 37 and Table 38 reveal the relationship between the abnormal return and the nature and extent of earnings management does not hold during the fourth quarter at earnings announcement date. In addition, the belief revision process is not documented with fourth quarter observations during the financial statement analysis period. This sensitivity test is consistent with the issues documented during the fourth quarter regarding discretionary accruals, earnings forecasts, and the market reaction to earnings.

The regressions based the first three quarter observations result in highly significant (1 percent level) coefficients for the nature of earnings management and the interaction between the nature and extent of earnings management. This relationship is evident in both at the earnings announcement date (Table 37) and the financial statement analysis period (Table 38). Therefore, the results for the entire sample are driven by the observations from the first three quarters.

Although the tables are not presented, additional sensitivity analysis was conducted by estimating the H2 and H3 regression equations individually on the first, second and third quarter observations. As expected, the results reveal that the interaction between the nature of earnings management (ENS) and the extent of earnings management (discretionary accruals) is significant in the first, second and third quarters in isolation with the 1-day CAR. The results are significant in the first and third quarters with the 3-day CAR.

6.4.2. The Impact of the Pre- and Post-Enron Scandal Periods

As discussed in Chapter 5, the Enron Scandal is a significant event that took place during the time period covered by the dataset used in this research. Significant changes occurred in the financial reporting landscape after the Enron scandal (Koh, Matsumoto & Rajgopal 2008), such as the passage of the Sarbanes-Oxley Act and the establishment of the Public Company Accounting Oversight Board (PCAOB). Therefore, sub-period analysis is conducted to determine the sensitivity of the research results to this significant event.

The regression equation for Hypothesis 2 and Hypothesis 3 are run on three sub-sets of the data. The subsets relate to the pre- and post-Enron scandal periods, and are classified in the same manner as Koh, Matsumoto and Rajgopal (2008) and Cohen, Dey, and Lyz (2005):

- pre-scandal era of Q1 1998 to Q2, 2001, inclusive (PRE);
- the scandal era of Q3 2001 to Q1 2003, inclusive (SCA); and
- the post scandal era of Q2 2003 to Q4 2007, inclusive (POST).

The sub-period regression results for the Hypothesis 2 are presented in Table 39. Table 40 presents the sub-period regression results for the Hypothesis 3.

Table 39 – Hypothesis 2 Regression coefficients on Pre-scandal, Scandal, and Post-Scandal sub-periods

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		Pre-Scandal Period				**Scandal Period**				**Post-Scandal Period**			
		CAR (0,1)		**CAR (0,3)**		**CAR (0,1)**		**CAR (0,3)**		**CAR (0,1)**		**CAR (0,3)**	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.1105	2.553**	0.1291	2.530**	0.0040	0.092	-0.0120	-0.218	0.0667	5.484***	0.0810	5.782***
$DACC_{t-1}$	?	0.0681	0.371	0.1756	0.811	0.1929	1.090	0.0175	0.078	0.0535	1.126	0.0815	1.490
ENS	-	-0.0036	-0.919	-0.0051	-1.100	0.0012	0.323	0.0038	0.786	-0.0029	-3.095***	-0.0025	-2.378**
$DACC_{t-1}$xENS	-	-0.1701	-1.698*	-0.2289	-1.837*	-0.0936	-0.970	0.0563	0.460	-0.0358	-1.144	-0.0786	-2.178**
TA	-	-0.0066	-2.377**	-0.0079	-2.394**	0.0001	0.019	0.0015	0.418	-0.0038	-5.146***	-0.0046	-5.463***
MTB	?	0.0004	0.914	0.0001	0.189	0.0014	1.816*	0.0007	0.709	0.0002	0.893	0.0003	0.822
ROA	?	-0.0004	-0.854	0.0002	0.368	-0.0008	-1.509	-0.0004	-0.669	0.0000	0.188	0.0000	0.002
n		274		274		301		301		2,522		2,522	
R^2		*4.85%*		*4.33%*		*2.01%*		*0.94%*		*1.52%*		*1.64%*	
F		*2.27*		*2.01*		*1.00*		*0.46*		*6.46*		*7.00*	
Sign. F		*0.06*		0.10		*0.48*		*0.82*		*0.00*		*0.00*	

*** Significant at the 0.01 level (2-tailed) ** Significant at the 0.05 level (2-tailed) * Significant at the 0.10 level (2-tailed).

CAR 1 = the Cumulative Abnormal Return from the earnings announcement to one day after the earnings announcement date of (0,1).
CAR 3 = the Cumulative Abnormal Return from the earnings announcement to three days after the earnings announcement date (0,3).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

Table 40 – Hypothesis 3 Regression coefficients on Pre-scandal, Scandal, and Post-Scandal sub-periods

$CAR\_Li\ Q = \alpha_0 + \beta_1 DACC_{SURPi,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{SURPi,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon$

		Pre-Scandal Period				**Scandal Period**				**Post-Scandal Period**			
		CAR (2, 17)		**CAR (4, 17)**		**CAR (2, 17)**		**CAR (4, 17)**		**CAR (2, 17)**		**CAR (4, 17)**	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.1235	1.724*	0.1611	2.446**	0.0865	0.782	0.0549	0.551	0.0421	2.402**	0.0302	1.919*
$DACC_{SURP}$	?	0.1504	0.928	-0.0021	-0.387	0.3108	1.287	0.2693	1.238	0.0030	0.090	-0.0002	-0.008
ENS	-	-0.0021	-0.346	-0.0532	-1.143	-0.0206	-2.345**	-0.0239	-3.023***	-0.0028	-2.246**	-0.0031	-2.790***
$DACC_{SURP}$xENS	-	-0.1182	-1.266	-0.0116	-3.049***	-0.3217	-2.453**	-0.2846	-2.409***	-0.0369	-1.665*	-0.0419	-2.044**
TA	-	-0.0110	-2.597***	0.0002	0.300	-0.0046	-0.679	-0.0032	-0.532	-0.0017	-1.751*	-0.0010	-1.094
MTB	?	-0.0003	-0.325	0.0009	1.325	-0.0030	-1.525	-0.0022	-1.258	0.0003	0.739	0.0002	0.710
ROA	?	0.0012	1.621	0.0005	2.005**	0.0029	2.086**	0.0018	1.450	-0.0006	-2.890***	-0.0006	-3.028***
INST_OWN	+	0.0008	2.757***	-0.0071	-1.416	0.0004	1.003	0.0005	1.601	0.0000	-0.707	-0.0001	-1.026
N		454		454		114		114		2,497		2,497	
R^2		*4.44%*		*4.38%*		*13.08%*		*15.06%*		*0.86%*		*1.17%*	
F		*2.96*		*2.91*		*2.27*		*2.68*		*3.08*		*4.20*	
Sign. F		*0.00*		*0.01*		*0.03*		*0.01*		*0.00*		*0.00*	

*** Significant at the 0.01 level (2-tailed) ** Significant at the 0.05 level (2-tailed) * Significant at the 0.10 level (2-tailed).

CAR (2, 17) = the Cumulative Abnormal Return from one day after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return from three days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
DACC_SURPxENS = the interaction effect between DACC_SURP and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets
INST_OWN = the percentage of common shares held by institutional investors

Table 39 focuses on the abnormal return at the earnings announcement date. The results reveal the relationship between the extent of earnings management and the abnormal return is moderated by the nature of the earnings management in the Pre-Scandal Period with both the 1-day and 3-day CAR, and in the Post-Scandal Period with the 3-day CAR. No relationship is documented during the Scandal Period at the earnings announcement date.

Table 40 focuses on the abnormal return during the financial statement analysis period. The belief revision process for additional earnings management is documented in the Pre-Scandal, Scandal Period and Post-Scandal Period with 3-day CAR, and in the Scandal and Post-Scandal Period with the 1-day CAR.

The results during the Scandal Period are highly significant, resulting in an R^2 value of 13.08% and 15.06% for the CAR (2, 17) and CAR (4, 17), respectively. The increased R^2 value suggests that the model effectively captures the cross-sectional variations in abnormal returns during the Scandal period.

6.4.3. The Impact of the Dot Com Bubble

The Dot Com Bubble was a speculative bubble covering roughly 1995–2000. The bubble reached its climax on March 10, 2000 with the NASDAQ peaking at 5132.52 in intraday trading (Madslien 2010). The stock market crashed from 2000 to the end of 2001. Sub-period analysis is conducted to determine the sensitivity of the results to the impact of the Dot Com Bubble. The sub-periods are investigated are as follows:

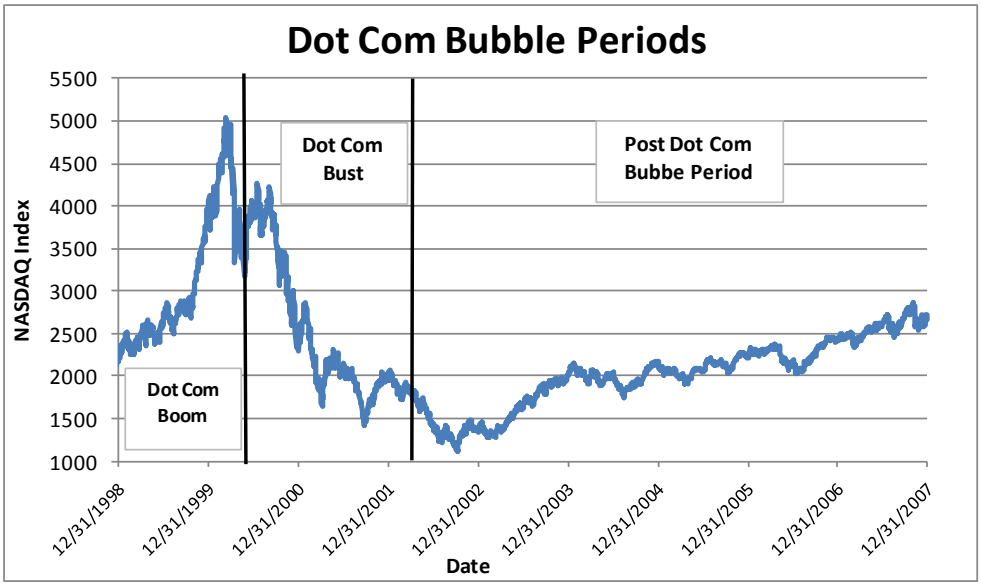
1) Dot Com Boom: Q1 1998 (start of data set) to Q2 2000, inclusive;

2) Dot Com Bust: Q3 2000 to Q1 2002, inclusive;

3) Post-Dot Com Period: Q2 2002 to Q4 (end of data set).

Figure 9 present a chart of Nasdaq from 1998 to 2010, highlighting the dramatic ascent and descent of market values during the three sub-periods.

Figure 9 – Chart of the NASDAQ from 1998 to 2007



The H_2 regression results for the Dot Com Bubble sub-periods are presented in Table 41. Table 42 presents the results for H_3 on the same three Dot Com Bubble sub-periods.

Table 41 – Hypothesis 2 Regression coefficients on Dot Com Boom, Dot Com Bust, and Post-Dot Com Bubble Periods

$CAR\_S_{i\,Q} = \alpha_0 + \beta_1 DACC_{(t-1)i,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{(t-1)i,Q} x ENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \varepsilon$

		Dot Com Bubble Boom				Dot Com Bubble Bust				Post-Dot Com Bubble Period			
		CAR (0,1)		CAR (0,3)		CAR (0,1)		CAR (0,3)		CAR (0,1)		CAR (0,3)	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.1105	2.553**	0.1291	2.530**	0.0047	0.108	-0.0093	-0.169	0.0667	5.484***	0.0810	5.782***
$DACC_{t-1}$	?	0.0681	0.371	0.1756	0.811	0.1830	1.007	-0.0202	-0.088	0.0535	1.126	0.0815	1.490
ENS	-	-0.0036	-0.919	-0.0051	-1.100	0.0013	0.345	0.0041	0.855	-0.0029	-3.095***	-0.0025	-2.378**
$DACC_{t-1}$xENS	-	-0.1701	-1.608*	-0.2289	-1.837*	-0.0888	-0.900	0.0746	0.597	-0.0358	-1.144	-0.0786	-2.178**
TA	-	-0.0066	-2.377***	-0.0079	-2.394**	0.0000	-0.001	0.0013	0.358	-0.0038	-5.146***	-0.0046	-5.463***
MTB	?	0.0004	0.914	0.0001	0.189	0.0014	1.794*	0.0007	0.660	0.0002	0.893	0.0003	0.822
ROA	?	-0.0004	-0.854	0.0002	0.368	-0.0008	-1.509	-0.0004	-0.675	0.0000	0.188	0.0000	0.002
N		274		274		300		300		2,522		2,522	
R^2		*4.85%*		*4.33%*		*1.96%*		*0.97%*		*1.52%*		*1.64%*	
F		*2.27*		*2.01*		*0.97*		*0.47*		*6.47*		*7.00*	
Sign. F		*0.04*		*0.06*		*0.44*		*0.82*		*0.00*		*0.00*	

* Significant at the 0.10 level (2-tailed). ** Significant at the 0.05 level (2-tailed). *** Significant at the 0.01 level (2-tailed).

CAR 1 = the Cumulative Abnormal Return from the earnings announcement to one day after the earnings announcement date of (0,1).
CAR 3 = the Cumulative Abnormal Return from the earnings announcement to three days after the earnings announcement date (0,3).
$DACC_{t-1}$ = cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
$DACC_{t-1}$xENS = the interaction effect between DACC and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets

Table 42 – Hypothesis 3 Regression coefficients on Dot Com Boom, Dot Com Bust, and Post-Dot Com Bubble Periods

$CAR\_L_{i\,Q} = \alpha_0 + \beta_1 DACC_{SURPi,Q} + \beta_2 ENS_{i,Q} + \beta_3 DACC_{SURPi,Q} xENS_{i,Q} + \beta_4 TA_{i,Q} + \beta_5 MTB_{i,Q} + \beta_6 ROA_{i,Q} + \beta_7 INST\_OWN_{i,Q} + \varepsilon$

		Dot Com Bubble Boom				Dot Com Bubble Bust				Post-Dot Com Bubble Period			
		CAR (2, 17)		CAR (4, 17)		CAR (2, 17)		CAR (4, 17)		CAR (2, 17)		CAR (4, 17)	
Variable	**Predicted Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept	?	0.1933	1.931*	0.2079	2.250**	0.0206	0.286	0.0217	0.330	0.0421	2.402**	0.0302	1.919*
$DACC_{SURP}$	?	0.0469	0.220	0.0003	0.037	0.3125	1.828*	0.1989	1.277	0.0030	0.090	-0.0002	-0.008
ENS	-	-0.0012	-0.145	-0.0530	-0.837	-0.0116	-1.914*	-0.0135	-2.444**	-0.0028	-2.246**	-0.0031	-2.790**
$DACC_{SURP}$xENS	-	-0.0537	-0.430	-0.0158	-2.947***	-0.2566	-2.703***	-0.1773	-2.049**	-0.0369	-1.615*	-0.0419	-2.044**
TA	-	-0.0164	-2.772***	0.0002	0.193	-0.0016	-0.368	-0.0022	-0.550	-0.0017	-1.751*	-0.0010	-1.094
MTB	?	-0.0003	-0.294	0.0005	0.572	-0.0013	-1.034	-0.0005	-0.487	0.0003	0.739	0.0002	0.710
ROA	?	0.0012	1.113	0.0007	1.958*	0.0018	2.257**	0.0015	2.067**	-0.0006	-2.890***	-0.0006	-3.028***
INST_OWN	+	0.0010	2.528**	-0.0035	-0.492	0.0004	1.467	0.0004	1.675*	0.0000	-0.707	0.0302	1.026
n		273		273		295		295		2,497		2,497	
R^2		*6.46%*		*5.93%*		*5.92%*		*5.64%*		*1.17%*		*0.86%*	
F		*2.61*		*2.38*		*2.57*		*2.45*		*4.20*		*3.08*	
Sign. F		*0.01*		*0.02*		*0.00*		*0.02*		*0.00*		*0.00*	

* Significant at the 0.10 level (2-tailed) ** Significant at the 0.05 level (2-tailed) *** Significant at the 0.01 level (2-tailed).

CAR (2, 17) = the Cumulative Abnormal Return from one day after the earnings announcement to seventeen days after the earnings announcement to the date (2, 17).
CAR (4, 17) = the Cumulative Abnormal Return from three days after the earnings announcement to seventeen days after the earnings announcement to the date (4, 17).
DACC_SURP = the difference between the cross-sectional discretionary accrual proxy from the Performance Adjusted Modified Jones Model in the current quarter and quarter prior to the earnings announcement quarter.
ENS = the Earnings Nature Score (ENS) Score that ranges from 0 to 4, whereby 0 indicates a low ex ante expectation of opportunistic earnings management and 4 indicates a high ex ante expectation of opportunistic earnings management.
DACC_SURPxENS = the interaction effect between DACC_SURP and ENS
TA = the log of the Total Assets
MTB = the market-to-book ratio
ROA = the return on assets
INST_OWN = the percentage of common shares held by institutional investors

The sub-period analysis reveals that the relationship between the nature and extent of earnings management date is significant in both the Dot Com Boom and Post-Dot Com Periods with the 3-day abnormal return at the earnings announcement. The relationship is significant with the 1-day abnormal return in only the Dot Com Boom period. In regards to the financial statement analysis period, the sub-period analysis reveals that the belief revision process is significant in both the Dot Com Bubble Bust and Post-Dot Com Periods with both the CAR windows.

The results during the Dot Com Bust period are highly significant, resulting in an R^2 value of 5.92% and 5.64% for the CAR (2, 17) and CAR (4, 17), respectively. The increased R^2 value suggests that the model effectively captures the cross-sectional variations in abnormal returns during the Dot Com Bust period.

The relationship between the nature and extent of earnings management and the belief revision process is robust during the Post-Dot Com period. This result is consistent with past literature that suggests that a firm's fundamental characteristics (e.g., accounting metrics) maybe be a less significant valuation factor during a stock market bubble.

6.5. Summary

This Chapter presents the results from the statistical tests undertaken in this research. First, the results from the test that examine relationship between the abnormal return and the nature and ex ante expectation of the extent of earnings management at the earnings announcement are presented. Second, the results from the test that examine the belief revision process between the ex ante expectation and ex post assessment of the extent of earnings management during the financial statement analysis period are

presented. Third, three robustness checks are offered. The robustness checks focus on fourth quarter observations, the Enron scandal, and the Dot Com Bubble. Chapter 7 discusses the conclusions drawn from these results regarding the hypotheses and research questions, along with the implications of this research for theory and practice.

Although the results from Hypothesis 2 and Hypothesis 3 are not directly comparable to prior studies, using both the prior and current quarter discretionary accruals is a major innovation and contribution of this research. This is the first study to use the prior quarter discretionary accruals at the earnings announcement date as an ex ante expectation of earnings management, and the current quarter discretionary accruals in the financial statement analysis period as an ex post assessment of the actual earnings management.

Recall that the unexpected earnings (earnings surprise) variable was not included as a control variable in the regression equation as it was used as a partitioning variable. As an additional sensitivity test, the regression analysis was estimated on the equation that includes the unexpected earnings variable as well. The results of including the UE do not change any of the main outcomes of this research. The only significant change that occurred when including the UE is that the interaction effect is no longer present in the Dot Com Boom period.

7. Conclusions and Implications

7.1. Introduction

This Chapter brings together the discussion in the previous Chapters and provides conclusions and implications from the results discussed in Chapter 6. The Chapter is organised as follows: Section 7.2 draws conclusions about the hypotheses developed in Chapter 3 and tested in Chapter 6; Section 7.3 provides several implications for theory; Section 7.4 identifies implications for practice; Section 7.5 discusses that limitations of this research; and Section 7.6 highlights a number of avenues for future research.

7.2. Conclusion about hypotheses

7.2.1. Hypothesis 1

Past studies have documented a different market response to earnings management in different settings. For example, the market reaction to informative earnings management (Subramanyam 1996; Xie 2001) and opportunistic earnings management (Balsam, Bartov & Marquardt 2002; Bhojraj et al. 2009) has been identified. However, past literature has not provided a direct test of the differing relationship between abnormal returns and the nature of earnings management. Hypothesis 1 was developed to provide this direct test. Recall Hypothesis 1:

> Hypothesis 1 (H_1): At the earnings announcement date, the abnormal return for firms that MBE is lower (higher) for firms with opportunistic (informative) earnings management.

Overall, the regression results in Table 26 and Table 27 provide direct support for Hypothesis 1. The regression results clearly indentify a negative relationship between the abnormal return for firms that MBE and opportunistic earnings management. Further support for Hypothesis 1 can be found in Chapter 5. The analysis between the

ENS and future abnormal returns provides additional support for Hypothesis 1. Additional support is found in the robustness checks based on the first to third quarter observations.

7.2.2. Hypothesis 2

Hypothesis 2 builds on Hypothesis 1 by incorporating the extent of earnings management into the analysis. Recall Hypothesis 2:

> Hypothesis 2: The abnormal return for firms that MBE has a positive (negative) relationship with the ex ante expectation of the extent of informative (opportunistic) earnings management.

Overall, the results in Table 26, Table 27 and Figure 7 provide support for Hypothesis 2. The results reveal that the abnormal return varies based on the nature and ex ante expectation of the extent of earnings management at the earnings announcement date. The abnormal return has a negative relationship with the ex ante expectation of the extent of opportunistic earnings management. Conversely, the abnormal return has a positive relationship with the ex ante expectation of the extent of informative earnings management.

Additional support for Hypothesis 2 is found in the analysis of the raw market returns in Table 29 which reveals that the average abnormal return is higher for firms that have informative earnings management versus firms that have opportunistic earnings management.

The Hypothesis 2 test results reveal that the relationship between the extent of earnings management and abnormal returns is moderated by the nature of the earnings management. This conclusion is consistent with past literature. For example,

informative earnings management can be a device to reduce blockage by allowing management to use discretionary accruals to convey inside information regarding the expected long-run persistence of earnings (Demski & Sappington 1990). Informative earnings management allows for the release of private information about the firm's future cash flows (Healy & Palepu 1993; Holthausen & Leftwich 1983; Jones 1991). Therefore, informative earnings management is expected to have a positive relationship with the abnormal return as the discretionary accruals suggest higher future profits.

Conversely, opportunistic earnings management occurs when managers attempt to mislead investors (Christie & Zimmerman 1994). Investors are concerned with the use of opportunistic earnings management because it can lead to a suboptimal allocation of capital (Healy & Whalen 1999). Therefore, opportunistic earnings management is expected to have a negative relationship with the abnormal return.

The relationship between the abnormal return and the extent of earnings management becomes increasingly negative as more ENS metrics suggest opportunistic earnings management. Intuitively, this suggests that discretionary accruals are discounted more and more as the market's expectation that the nature of the earnings management is opportunistic increases.

The results also reveal that the market penalizes firms more for the use of opportunistic earnings management than it rewards firms for the use of informative earnings management. That is, the negative slope between the abnormal return and the extent of discretionary accruals is steeper for opportunistic earnings management than the positive slope for informative earnings management.

7.2.3. Hypothesis 3

Hypothesis 3 investigates the timing that the extent of discretionary accruals is reflected in equity valuations. Recall Hypothesis 3:

> Hypothesis 3: The abnormal return for firms that MBE has a positive (negative) relationship with the ex post assessment of the extent of informative (opportunistic) earnings management.

The results from the regressions in Table 34 provide statistical support for Hypothesis 3 as a belief revision process in the financial statement analysis period is evident. Intuitively, the results suggest that firms with additional (less) opportunistic earnings management experience a negative (positive) abnormal return during the financial statement analysis period. In addition, firms that have additional (less) informative earnings management experience a positive (negative) abnormal return during the financial statement analysis period.

The market continues to penalize firms more for the use of opportunistic earnings management than it rewards firms for the use of informative earnings management during the financial statement analysis period. This relationship is more severe during the financial statement analysis period than at the earnings announcement date.

In regards to Hypothesis 2 and Hypothesis 3, the results reveal that the market returns are a function of the prior quarter discretionary accruals at the earnings announcement date and the current quarter discretionary accruals during the financial statement analysis period. Taken together, these results support a belief revision process occurring between the earnings announcement date and the financial statement analysis period as equity valuations change from being a function of the prior quarter

discretionary accruals to the current quarter discretionary accruals. This is consistent with past literature suggesting that investors require time to price earnings management into the abnormal return (Balsam, Bartov & Marquardt 2002; DeFond & Park 2001; Gavious 2007).

7.3. Implications for theory

This research extends the prior literature by testing whether the market differentiates between opportunistic and informative earnings management in the MBE setting. Unlike past literature, this research does not assume that all firms that meet or beat expectations by one cent employ an opportunistic earnings management strategy. Rather, it incorporates a composite measure that differentiates between informative and opportunistic earnings management. The research design explicitly allows for an examination of the impact of both the nature and extent of earnings management on the abnormal return for firms that MBE, thereby providing a more robust and comprehensive examination.

This study makes several significant extensions to the extant body of literature. Essentially, this research merges the Bhojraj et al. (2009) methodology for the nature of earnings management with the Balsam, Bartov, & Marquardt (2002) and Baber, Chen, & Kang (2006) regression methodology for the extent of earnings management. The merger eliminates the issues associated with the assumption that all firms that MBE by one cent or less employed an opportunistic earnings management strategy (Lee 2007). The merger is accomplished with an interaction variable that captures the dynamic relationship between the nature and extent of earnings management on the abnormal return.

Accordingly, this is the first known study to formally include variables that proxy for both the extent and nature of earnings management when analyzing the abnormal return for firms that MBE. Second, this is the first known study to use an interaction variable to capture the non-linear relationship between the nature and extent of earnings management on the abnormal return for firms that MBE. Including a variable for the nature of earnings management and examining the non-linear relationship between the nature and extent of earnings management extends prior literature by providing a more robust test of the market pricing mechanism of earnings management in the form of the abnormal return for firms that MBE.

A third contribution is the introduction of gross margin into the MBE setting analysis. Anecdotal evidence indicates that changes in gross margin are a key metric relied upon by the market at the earnings announcement date; however, to the author's best knowledge, there is no academic literature that analyzes the relationship between gross margin and the abnormal return at the earnings announcement date. This research supports the assertion that gross margin is a key metric which the market focuses upon when determining the abnormal return for MBE firms.

The fourth contribution is the insight regarding the timing with which discretionary accruals are reflected in equity valuations. The results reveal that the abnormal return is a function of the prior quarter discretionary accruals at the earnings announcement date and the current quarter discretionary accruals during the financial statement analysis period. Taken together, these results support a belief revision process occurring between the earnings announcement date to the financial statement analysis period as equity valuations change from being a function of prior quarter discretionary accruals to current quarter discretionary accruals.

7.4. Implications for practice

A fifth contribution of this research is significant to practice. A large number of firms rely on earnings management (Bartov, Givoly & Hayn 2002; Graham, Harvey & Rajgopal 2005; Levitt 1998) even though recent trends indicate that its use has declined in the post-Enron scandal era (Koh, Matsumoto & Rajgopal 2008). Given the significant use of earnings management, developing a model to identify the nature of earnings management is important to investors.

This research introduces a composite model that provides insight into whether a firm's earnings management is likely to be opportunistic or informative. Although relatively simple, the model is able to differentiate between the two types of earnings management. This model has potential applications for investors as it may be used in order to make better investment decisions (i.e., identify firms with informative earnings management) and avoid improper allocation of capital to firms that opportunistically manage earnings.

7.5. Limitations

One of the main limitations of this research is the manner by which the ENS was combined. Each component of the ENS has an equal weighting, and the composite score is determined by summing each individual variable. Although this method is commonly employed in the literature (Bhojraj et al. 2009), it lacks the statistical rigor that a logistic regression could provide. As discussed in Chapter 4, employing a logistic regression was not feasible for the purposes of combining the ENS variables.

Another possible alternative to combining the components of the ENS would be to employ principle component analysis (PCA). However, PCA is not suitable for use in developing the ENS because of the following reasons:

- PCA is a method that reduces data dimensionality by performing a covariance analysis between factors. Given that the ENS components are binary variables, PCA is not suitable.
- One of the main applications of PCA is to reduce a larger number of variables that have a high level of correlation into a single factor/measure. The correlation matrixes in the thesis suggest that the correlations between the ENS components are not generally high, or statistically significant. Accordingly, PCA is not optimal with such variables. The lack of correlation between components arises because each component is attempting to measure a different aspect of the nature of a firm's earnings management (i.e., one measure focuses on revenue, another focuses on gross margin, another on the nature of the earnings surprise, and the last on the ownership structure).

An additional limitation of this research is in regards to the ENS assuming that the earnings management is either opportunistic or informative. As discussed in Chapter 2, it is possible that a company's discretionary accruals are concurrently comprised of both informative and opportunistic earnings management. However, it is not possible to break out the discretionary accruals into a definitive mix of informative and opportunistic unless a firm's true income is known (Scott 2008).

Another limitation of the ENS measure is in regards to the quarter-over-quarter variability of the insider ownership component. Although the quarter-over-quarter

variability in insider ownership may not be significant in a single year, there is variability in the measure over the ten year period analysed. In addition, the sensitivity analysis discussed in Section 6.4.1 reveals that the results are robust in each individual quarter, aside from the fourth quarter. This sensitivity analysis suggests that the insider ownership variable is not loading from quarter-to-quarter.

It is also important to note that the market may react differently to firms that MBE given the dispersion of the consensus forecast, and/or the number of forecasts that comprise the consensus. Although it would be ideal to control for the dispersion of the consensus forecast and the number of forecast that comprise the consensus, the required data was not made available from the IBES database. Past literature has not controlled for either of these elements of the consensus forecast.

It is also important to note that given that the dataset is comprised of S&P 500 firms, there is a potential for a bias towards larger firms. This limitation is inherent with any dataset that relies upon the firms included in the S&P 500.

Hypothesis 3 deals with current quarter discretionary accruals at the earnings announcement date. There is a potential limitation when using current quarter accruals at the announcement date because an investor requires data from all the companies in the industry, and until the last company reports, the data is not available. For example, an investor does not know what part of total accruals (known) is discretionary for an early reporter as the investor cannot calculate the parameters of the Jones model to extract the non-discretionary portion until all firms in an industry have reported.

Although the data is available to review the reporting date of each issuer in the industry, it is not practicable or feasible to review the dates of the individual companies

in each industry grouping to determine the timing of the earnings announcement. This issue arises with other past studies that investigate current quarter discretionary accruals, calculated with a cross-section Jones model, at the earnings announcement date. For example, both Baber, Chen and Kang (2006) and Balsam, Bartov, and Marquardt (2002) investigate current quarter discretionary accruals (with a cross-sectional model) at the earnings announcement date in the same fashion as this thesis.

7.6. Future Research

There are many natural extensions of this research. Future research could better develop the link between the nature of earnings management, as identified by the ENS, and long-run future performance of firms that MBE. In this sense, the ENS can be used as a predictive model of long-run future performance. It may be possible to develop a trading strategy based on this model, or based on the time required by the market to price discretionary accruals.

Future research could also focus on further developing the ENS. For example, the impact of earnings guidance could be included as a component of the ENS. This may lead to an even more powerful model.

Finally, future researchers could investigate the MBE premium by using tick-by-tick data (intraday) in order to investigate more narrow belief revision windows. Researchers with intraday data could investigate whether the market reaction to an earnings announcement occurs immediately as the market opens, and whether beliefs are revised during the same day for the extent of earnings management.

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