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# The nexus between earnings management and financial analysts' forecasts

Qazi Ghulam Mustafa Qureshi

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# UNIVERSITÉ CLERMONT AUVERGNE

École Universitaire de Management  
École Doctorale des Sciences Économiques, Juridiques, Politiques et de Gestion  
Clermont Recherche Management (CleRMa)

Sujet de la thèse :

## THE NEXUS BETWEEN EARNINGS MANAGEMENT AND FINANCIAL ANALYSTS' FORECASTS

Thèse présentée et soutenue publiquement le 11 Octobre 2021,  
Pour l'obtention du titre de

### DOCTEUR EN SCIENCES DE GESTION

par

### QAZI GHULAM MUSTAFA QURESHI

devant le jury composé de:

<b>M. Éric Séverin</b>	Professeur, Université Lille	Rapporteur
<b>M. Philippe Touron</b>	Professeur, Université Paris 1 Panthéon-Sorbonne	Rapporteur
<b>Mme. Céline Barredy</b>	Professeure, Université Paris Nanterre	Suffragante
<b>M. François Aubert</b>	Professeur, Université Clermont Auvergne	Directeur de thèse
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*L'université n'entend donner aucune approbation ni improbation aux opinions émises dans les thèses; ces opinions doivent être considérées comme propres à leurs auteurs.*



## **DEDICATION**

*To my parents, who instilled in me the will to pursue my career goals and perseverance to endure the impediments down the road. It is impossible to thank them enough for educating me and infusing all the traditional and moral values in me. They could not see this dissertation completed and be here to witness in person, but I am sure they are with me in spirit and watching over me from above.*

*To my siblings, especially my sisters, who love me unconditionally, who encouraged and supported me emotionally, spiritually, morally and financially throughout this journey.*

*To all my well-wishers, who love me, who pray for me, cheer and celebrate my success.*

*Lastly, to the Almighty, for all the strength and power, endless blessings and a healthy life.*

*Thank you!*





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## **ABSTRACT**

This dissertation is composed of three distinct empirical research essays investigating the quality of the earnings' announcement. There is an extant literature, which uses earnings management to proxy earnings quality; we extend the literature to explore the different dimensions of the effects of earnings management. It is a common belief that the financial analysts are one of the most important users of financial reports prepared by firms. We investigate how earnings quality or firms' discretionary choices on earnings management can affect the financial analysts' forecasting ability to predict firms' earnings and capital markets' reactions.

Our first empirical study posits that earnings' announcement reduces postdisclosure information asymmetry, despite firms' decisions to use discretionary choices to manage earnings. The firms use discretionary powers to manage the earnings, which increases the information asymmetry among the financial analysts. The financial analysts acquire private predisclosure information with differential precision to make forecasts. We believe that earnings announcement provides enough informational value to the market participants to restate their forecasts to achieve consensus. Using the extensive sample with period of 2006-18 from US market Non-Accounting and Auditing Enforcement Releases (Non-AAER) firms, our results suggest that the magnitude of earnings management has higher positive and significant relationship with predisclosure forecasts' dispersion than with the postdisclosure forecasts' dispersion. This means that the earnings announcement reduces the information asymmetry.

In the second empirical research analysis, we examine the financial analysts' predictions including their postdisclosure brokers' actual estimates to determine their intentions to predict

managed or unmanaged earnings. According to numerous reports, accurate predictions reward financial analysts in order to preserve their credibility, while others claim that financial analysts predict unmanaged earnings. In the literature, accurate forecasts are described as those that accurately predict reported earnings in order to minimize earnings surprises. Using the extensive sample with period of 2006-18 from US market Non-Accounting and Auditing Enforcement Releases (Non-AAER) firms, our findings indicate that the analysts predict reported earnings (managed earnings) in order to be more reliable and accurate and avoid unexpected earnings. The findings also show that brokers' actual estimates closely represent managed earnings, and managed earnings forecast errors are distributed closer to zero than forecast errors from unmanaged earnings.

Our third empirical research investigates the effects of earnings management and the earnings surprises on the firms' stock returns adjusted with market returns. Earnings management is the management's discretionary decision to manipulate earnings in order to meet financial goals. Earnings surprise is the disparity between a firms' announced earnings and Wall Street estimates, which has an effect on the firms' stock prices in the immediate aftermath of the announcement and in the long run. In this paper, we claim that, depending on the success of the firms, earnings announcements have an effect on their stock prices. Capital markets respond to the bottom line of financial statements, and firms manipulate their earnings to achieve a constructive and favorable response. Earnings surprise has a similar effect on market share. Positive earnings surprises, or good news, lead to higher market returns, whereas negative earnings surprises, or poor news, lead to lower market returns. The magnitude of earnings management has a favorable and important relationship with the market-adjusted return of firms, according to our findings by using the extensive sample with period of 2006-18 from US market Non-Accounting and Auditing Enforcement Releases (Non-AAER) firms. Similarly,

good news reveals a positive relationship, while bad news reveals a major negative relationship. As a result, the earnings report has a huge impact on the market-adjusted returns of firms.

Overall, this thesis deals with three research analyses on the nexus between earnings management and financial analysts. Our studies discuss the inability of financial analysts' to predict earnings accurately comes down to the unavailability of the precise information, which prompts firms to use this opportunity to manage their earnings in order to achieve financial targets and minimize the earnings shocks or bad news. In turn, this leads market participants, including potential investors, to make their investing decisions.

**Keywords:** Earnings Announcement, Earnings Management, Information Asymmetry, Wall Street Estimates, Earnings Surprise, Market-Adjusted Returns

## RÉSUMÉ

Cette thèse comprend trois essais de recherche empirique qui examinent la qualité de l'annonce des bénéfices. Il existe une littérature existante, qui utilise la gestion des bénéfices pour évaluer la qualité des bénéfices ; nous étendons cette littérature pour explorer les différentes dimensions des effets de la gestion des bénéfices. Il est communément admis que les analystes financiers sont l'un des plus importants utilisateurs des rapports financiers préparés par les entreprises. Nous étudions comment la qualité des bénéfices ou les choix discrétionnaires des entreprises en matière de gestion des bénéfices peuvent affecter la capacité des analystes financiers à prévoir les bénéfices des entreprises et les réactions des marchés financiers.

Notre première étude empirique postule que l'annonce des bénéfices réduit l'asymétrie d'information, malgré les décisions des entreprises d'utiliser des choix discrétionnaires pour gérer les bénéfices. Les entreprises utilisent des pouvoirs discrétionnaires pour gérer les bénéfices, ce qui augmente l'asymétrie d'information entre les analystes financiers. Les analystes financiers acquièrent des informations privées pré-divulgateur avec une précision différentielle pour faire des prévisions. Nous pensons que l'annonce des bénéfices fournit suffisamment de valeur informationnelle aux participants du marché pour qu'ils reformulent leurs prévisions afin d'atteindre le consensus. En utilisant l'échantillon étendu sur la période de 2006 à 2018 des entreprises non-AAER (Non-Accounting and Auditing Enforcement Releases) du marché américain, nos résultats suggèrent que l'ampleur de la gestion des bénéfices a une relation positive et significative plus élevée avec la dispersion des prévisions avant la divulgation qu'avec la dispersion des prévisions après la divulgation. Cela signifie que l'annonce des résultats réduit l'asymétrie d'information.

Dans la deuxième analyse de recherche empirique, nous examinons les prévisions des analystes financiers, y compris les estimations réelles de leurs courtiers après la divulgation, afin de déterminer leurs intentions de prévoir des bénéfices gérés ou non gérés. Selon de nombreux rapports, les prévisions exactes récompensent les analystes financiers afin de préserver leur crédibilité, tandis que d'autres affirment que les analystes financiers prédisent des bénéfices non gérés. Dans la littérature, les prévisions exactes sont décrites comme celles qui prédisent avec précision les bénéfices déclarés afin de minimiser les surprises liées aux bénéfices. En utilisant l'échantillon étendu avec la période de 2006 à 2018 des entreprises du marché américain non concernées par des mesures disciplinaires en matière de comptabilité ou d'audit (Non-AAER), nos résultats indiquent que les analystes prédisent les bénéfices déclarés (bénéfices gérés) afin d'être plus fiables et précis et d'éviter les bénéfices inattendus. Les résultats montrent également que les estimations réelles des courtiers représentent étroitement les bénéfices gérés, et que les erreurs de prévision des bénéfices gérés sont distribuées plus près de zéro que les erreurs de prévision des bénéfices non gérés.

Notre troisième recherche empirique étudie les effets de la gestion des bénéfices et des bénéfices inattendus sur les rendements boursiers des entreprises, ajustés aux rendements du marché. La gestion des bénéfices est la décision discrétionnaire de la direction de manipuler les bénéfices afin d'atteindre des objectifs financiers. La surprise des bénéfices est la disparité entre les bénéfices annoncés par une entreprise et les estimations de Wall Street, qui a un effet sur les prix des actions des entreprises immédiatement après l'annonce et à long terme. Dans ce document, nous affirmons que, selon le succès des entreprises, les annonces de bénéfices ont un effet sur leurs cours boursiers. Les marchés financiers réagissent aux résultats des états financiers et les entreprises manipulent leurs bénéfices pour obtenir une réponse constructive et favorable. La surprise des bénéfices a un effet similaire sur la part de marché. Les surprises positives en matière de bénéfices, ou bonnes nouvelles, entraînent une hausse des rendements



du marché, tandis que les surprises négatives en matière de bénéfices, ou mauvaises nouvelles, entraînent une baisse des rendements du marché. L'ampleur de la gestion des bénéfices a une relation favorable et importante avec le rendement ajusté au marché des entreprises, selon nos résultats en utilisant l'échantillon étendu avec la période de 2006 à 2018 des entreprises du marché américain non concernées par des mesures disciplinaires en matière de comptabilité ou d'audit (Non-AAER). De même, les bonnes nouvelles révèlent une relation positive, tandis que les mauvaises nouvelles révèlent une relation négative majeure. Par conséquent, l'information sur les bénéfices a un impact considérable sur les rendements ajustés au marché des entreprises.

Dans l'ensemble, cette thèse traite de trois analyses de recherche sur le lien entre la gestion des bénéfices et les analystes financiers. Nos études discutent de l'incapacité des analystes financiers à prédire les bénéfices avec précision en raison de l'indisponibilité d'informations précises, ce qui incite les entreprises à utiliser cette opportunité pour gérer leurs bénéfices afin d'atteindre leurs objectifs financiers et de minimiser les chocs ou les mauvaises nouvelles. En retour, cela conduit les participants au marché, y compris les investisseurs potentiels, à prendre leurs décisions d'investissement.

Mots-clés : Annonce des bénéfices, gestion des bénéfices, asymétrie de l'information, estimations de Wall Street, surprise des bénéfices, rendements ajustés au marché.



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## GENERAL INTRODUCTION

Protecting capital markets' interests, especially investors, is one of the major focuses for the firms and the governments alike. Investors are one of the fund generating sources for firms and essential part of the overall economy and its growth. A country prospers when its economy is growing steadily. For that purpose, countries apply strict regulatory policies to ensure that the firms follow these measures for smooth operations and firms strive to perform better for their own existence in the economy, its stability and prosperity. Othman and Zeghal (2006) discuss the different socio-economic environments where an accounting system and governmental policies in one country can be different and demanding from another and with varying interests thereof. Levitt Jr (1998) stresses on the capital market reactions based on the economic performance of the firms. He explains that the firms are wary about the decision-making of potential investors in the market and its resulting effects on their market share capital. As a result, there is often pressure on firms to perform better or demonstrate better and greater results in order to satisfy not only all shareholders but also other stakeholders' interests (including capital markets).

Vast literature provides the empirical evidences for the significant effects of firms' operational performances and the quality of the financial reporting on the firms' capital market performances (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2003, 2006; Keung et al., 2010). While, it has also been observed that the capital markets suffer due to the major corporate scandals. Agrawal and Chadha (2005) provide evidence that the corporate governance mechanism influences the financial reporting decision-making of the firms. They find that the independent boards can largely reduce the earning restatements. Good governance oversight leads to the better financial reporting and poor governance oversight may lead to corporate

frauds and scandals<sup>1</sup>. Prior studies also document the relationship between corporate governance and the financial analyst's information (Byard, Li, and Weintrop, 2006). They find that better quality of corporate governance improves the quality of information provided by the financial reporting to the financial analysts. While, Cormier and Magnan (2014) find that better governance leads to the lower dispersion in the financial analysts' earnings forecasts. This thesis deals with the study of the quality of financial analysts' forecasts and firms' financial reporting and its impacts on their performances in capital market. This thesis mainly focuses on the determinants of the earnings management as the proxy for earnings quality reported in financial statements. Our research contributes to the different aspects of the literature, first we introduce the post-disclosure information asymmetry to the financial analysts and their predictability i.e. earnings surprises literature, and secondly, we study the post-disclosure forecast errors in a comparative study with the pre-disclosure forecast errors. Our research also contributes to the earnings management literature with the study of earnings quality i.e. earnings management and its effects on the stakeholders' (especially capital market investors) decision-making. We further contribute to the financial market reactions literature by empirically analyzing the effects of the quality of financial analysts' predictions i.e. forecast surprises (good news) or forecast shocks (bad news) on the economic performances of the firms.

This introductory chapter discusses the financial reporting, the various users of financial reports and its importance to bring the focus to the research questions of this thesis. This chapter further talks about the quality of these financial reports and existence of earnings management. We also discuss the growing needs of users for the additional informative statements and reports to make economic decisions. Finally, we review the existing relevant literature on the nexus

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<sup>1</sup> (Beasley, 1996) conducts the empirical analysis between the fraud and no-fraud firms to test the impacts of boards' independence on the financial statement frauds.

between earnings management and financial analysts' forecasts to formulate the research questions of this dissertation.

## **1 Evolution and Importance of Financial Reporting and Earnings Management**

### **1.1 Historical background of Financial Reporting**

Patton and Hutchison (2013) relay the early history of the modern financial reporting. They claim that, in United States, the traces of modern day financial reporting go back to late 1800s. Arnold Toynbee first coins the term industrial revolution in 19<sup>th</sup> century to describe the change in manufacturing processes, from an agrarian and handicraft to machine and industrial manufacturing<sup>2</sup>. The industrial revolution begins in the 18<sup>th</sup> century, which continues well into the 19<sup>th</sup> century, and it is responsible for the transformation of predominantly agricultural societies in Europe and America into industrialized and urban societies. Cleveland (1909) explains how large-scaled growths in technology and socioeconomic cultures during the industrial revolution necessitates the financial accountability. This financial accountability, after the industrial revolution, evolves into what it is financial reporting in the modern times.

Since information is such an important component of financial reporting, regulators or standard setting bodies such as the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) require firms to provide the disclosures required to provide valuable information to financial information consumers, such as market participants or governments and other stakeholders. IASB is established to replace the International Accounting Standards Committee (IASC) in 2001, while FASB is established in 1973 along with IASC to provide the financial accounting and reporting standards for profit and not-for-

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<sup>2</sup> Arnold Toynbee (23 August 1852 – 9 March 1883) was a British Economic Historian (Montague, 1889).

profit organizations including public and private firms. FASB and IASB provide accounting and reporting standards or accounting languages, i.e. Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) respectively, to transcribe the firms' operations into more presentable format of financial statements. The firms report the performance of their operations for a specified period (generally annually) in the form of annual reports. Respective country's laws and regulatory policies mandate every business structure to issue annual reports. These annual reports may include the financial statements, disclosures, footnotes, regulatory filings, and other management discussion and analysis along with management forecasts, press releases, corporate reports, conference calls and analysts' presentations (Healy and Palepu, 2001).

## **1.2 Importance and Quality of Financial Reporting**

The general purpose of preparing financial reporting documents is to inform the shareholders and stakeholders about the performances of the firms, i.e. the financial health or the potential of the firms. This explains three different parties to the corporate governance i.e. firms (management of the firms), its shareholders (owners) and its stakeholders (for example, governments, employees, potential investors etc.). Berle and Means pioneer a theory explaining how owners are separate from the management of the firms<sup>3</sup>. While Jensen and Meckling (1976) extend this theory and introduce agency theory in which they say that the management of the firm is the agent and performs the management duties on behalf of the owners (principal). Furthermore, Freeman (1984) explains the third party i.e. stakeholders in connection with the firms and its operations and proposes stakeholder theory<sup>4</sup>. He emphasizes on the relationship

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<sup>3</sup> Berle and Means (1991) is the 10<sup>th</sup> edition book "The Modern Corporation and Private Property" introduced by Weidenbaum and Jensen.

<sup>4</sup> Stakeholder Theory: A Libertarian Defense by Freeman and Phillips (2002).

between firms and its stakeholders who have a stake or interest in the firms' performance including employees, customers, suppliers, potential investors, governments, communities etc. He argues in the theory that firms should not only create value for shareholders but also for all stakeholders.

The shareholders and stakeholders, in other words users of financial information, usually evaluate the financial conditions of the firms through their financial statements in the annual reports to make the economic decisions. By regulation, each firm must issue annual reports in accordance with GAAP and IFRS. Regardless of the general purpose of annual reports, which is to provide financial informational value to all the users, not all users of financial information are equally able to interpret and derive the conclusions and make better decisions in the capital markets. Concurrently, it is also assumed that the annual reporting provides a mere approximation of the economic conditions of the firms because accounting system provides various alternative accounting principles to report economic events and estimate financial transactions. Hence, some of the users, i.e. potential investors, rely heavily on those users with financial acumen, i.e. financial analysts, to provide the financial analysis of the performance of the firms. They rely on expert opinions and financial information by the financial analysts, which are often accessible through the media and internet. This analysis by the expert analysts also includes the financial forecasts of the firms' earnings. Since these financial analysts work independently, they are reliable and they provide reasonably dependable information<sup>5</sup>. This dependence on expert financial analysts from potential investors can also be associated with corporate scandals in recent times<sup>6</sup>. However, these corporate and accounting scandals brought the changes in the multiple provisions in the laws and enactment of the bill Sarbanes-Oxley Act

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<sup>5</sup> Lin and McNichols (1998) examine the effect of affiliation of financial analysts on their forecasting and recommendations.

<sup>6</sup> Major corporate and accounting scandals occurred in the period of 2001-02 when big firms like Enron, WorldCom (including others) were involved in major financial frauds along with one of the big audit firm Arthur Andersen, which was dissolved after criminal investigations.



of 2002 (hereafter SOX). After this major financial crisis, United States federal law enacted SOX, with the sole purpose of protecting the investors by putting higher responsibilities on the management of the firms to provide high quality annual reports or else face severe penalties for fraudulent activities.

Singhvi and Desai (1971) point out that the quality of the annual reports has important effect on decision-making; however, Kirkpatrick (2009) concludes that these standards have been insufficient. For example, Catanach Jr and Rhoades-Catanach (2003) study the case of Enron and conclude that incorrect annual financial statements led investors to consider that the firm is performing well. It does not necessarily mean that the financial standards were lacking the true and fair view but the basic question is that the financial statements may not be showing the firms' performance and financial health 100% accurately; therefore, there is a need to have some disclosures showing its impact on current position and performance of the firms. Thus by introducing SOX, US federal law and standard-setting bodies have put greater responsibilities on the strategic management to oversight financial reporting and also allow external auditors independence to review the accuracy of these financial annual reports.

### **1.3 Earnings Management or Accounts Manipulation**

Schipper (1989) coins the term earnings management to explain the firms' discretionary choices in order to manipulate the earnings. Stolowy and Breton (2004) use the term accounts manipulation to describe this phenomenon of managements' abuse of discretionary power to alter the financial reporting to project results that are favorable to the firms' goals. While firms have been practicing earnings management or accounts manipulation for a very long time, they discuss multiple techniques including earnings management, big bathing and window dressing among others. For the purpose of our thesis, all following techniques fall under the broader

heading of earnings management. Figure 1 provides the graphical representation of the earnings management framework.

### *1.3.1 Earnings Management*

Healy and Wahlen (1999) define earnings management as the use of judgmental power by the firms' managers to alter financial reports for two reasons. First, to mislead stakeholders about economic performances of the firms, secondly to affect contractual outcomes, which are dependent on these economic results. Dechow and Skinner (2000) further explain earnings management based on the firms' motivation to manage earnings. They also differentiate between the fraud and earnings management. They define fraud as an activity of manipulating the financial reports with clear demonstration of the intent to deceive the users of financial reports (i.e. stakeholders and shareholders).

### *1.3.2 Big Bath Accounting*

The objective of the big bath is to reduce the earnings significantly or overstate the restructuring charges (Levitt Jr, 1998). Moore (1973) discusses this income reducing technique and defines it as the managements' use of discretionary decision-making power in order to reduce the earnings in the financial reports. He studies this phenomenon with the sample of firms with management changes and firms with no management change.

### *1.3.3 Income Smoothing*

Income smoothing is the accounting technique that firms use to level out the fluctuations in net earnings from one period to the next period. This accounting technique is not illegal if the firms follow the processes, which are under generally accepted accounting principles (GAAP) or international

financial reporting standards (IFRS). Firms use this technique because they know the investors invest in the stock/shares with low volatility or those, which are stable and predictable. Literature also considers that this technique is opportunistic but not as harmful, and provides more information and predictability (see Stolowy and Breton (2004) and further references therein).

#### *1.3.4 Window Dressing*

Window dressing is an accounting technique where firms use the special sales discounts to enhance the sales to improve financial statements for that period. The purpose of this technique is to provide the better picture of the firms' accounts. Generally, this technique does not violate any accounting standards and investors need to, cautiously, be paying attention while making economic decisions.

#### *1.3.5 Creative Accounting*

Similarly as in window dressing, the purpose of creative accounting is to improve financial reporting and increase/decrease the earnings in order to achieve their financial targets. The firms use this technique to take advantage of the loopholes in the accounting standards (GAAP or IFRS) to reform their financial reporting.

### **1.4 Modalities of Earnings Management**

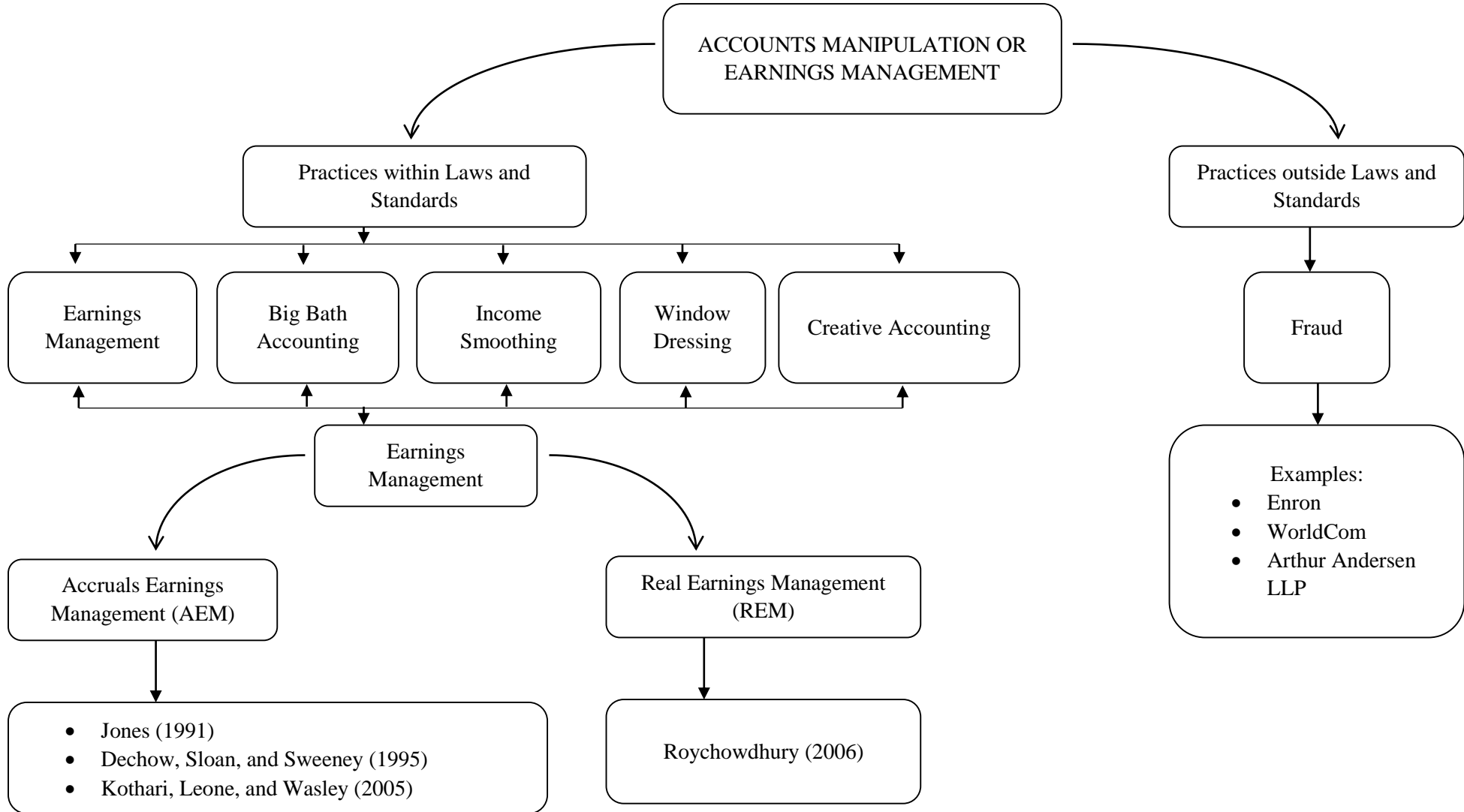
While differentiating between earnings management and fraud, Dechow and Skinner (2000) discuss the use of provisions or reserves and real cash flow choices within accounting standards

to manage earnings and the accounting choices which are not in compliance with these accounting standards concoct the fraud. Jones (1991) describes a model based on accrual accounting system, which uses the accounting provisions and the reserves, in other words accrual earnings management (AEM) is policy-based. There have been multiple modifications to the accrual model given by Jones (1991), which was itself based on the discretionary accrual model by Healy (1985). Most notable modifications come from Dechow et al. (1995) and Kothari et al. (2005). While the earnings management that uses the real cash flow choices is transaction-based, also known as the real earnings management (REM) (Roychowdhury, 2006). Figure 1 gives modified framework of accounts manipulation from Stolowy and Breton (2004).

### **1.5 Motivation for Earnings Management**

Stolowy and Breton (2004) and Shen and Chih (2005), suggest that there are several possible explanations for the nature of earnings management. When discussing financial statements and disclosures on which investors may base their decisions, one needs to consider few factors including firm accounting practices, mandated or proposed legislations by standard-setting or regulatory bodies and whether investors consider fundamental values when making decisions. Lobo and Zhou (2001) conclude that there is strong inverse relationship between the disclosures and earnings management. They explain that the firms, which produce fewer disclosures have high tendency of earnings management and vice-versa. Houqe and Islam (2011) explain the need for stakeholders to understand the potential existence of earnings management and apply due diligence and multiple approaches in making economic decisions.

**Figure 1: Accounts Manipulation or Earnings Management Framework**



**Figure 1: Accounts Manipulation or Earnings Management Framework**  
 Source: Adapted from Stolowy and Breton (2004)

Managers make the economic decisions in the firms and they are the most important players who are running the business and making strategic plans for the firms. As we have already explained that, the owners are separate entity and the management runs the business for them to maximize the wealth of the firm and its owners. The management's role is to make strategical and economic decisions; for example, which business market to enter, how to beat the competition to have advantages over the competitors, budgeting, partnerships and other strategical decisions, which are high stake decisions affecting all parties involved in the business including shareholders and other stakeholders. These are motivations for the management to decide, which information they are willing to disclose to the users of financial reports. Management considers few factors before making the decisions. According to economic and agency theories, management is the agent of shareholders and they have to maximize the utility not only for their own interest but also in the best interest of their shareholders. Most often, this leads to the management using their discretionary powers to manage the financial reports to disclose the information, which is in the best interest of themselves and for the owners. However, issue of conflict of interest often takes the critical turn and convinces the management to make certain decisions using the discretionary power for their own benefit.

Management often uses accruals (policy-based) or real cash flow (transaction-based) approach, depending on the situation and the motives, to manage the earnings by using their discretionary powers. Healy and Wahlen (1999), Stolowy and Breton (2004) and Shen and Chih (2005) discuss multiple reasons or purposes, which lead management to make these decisions of managing the earnings including:

1. Hiding leverage;
2. Illiquidity problems;
3. Avoiding any violation of the rules;

4. Encouraging investors to increase firm's market value;
5. Wealth transfers, among others.

What makes the financial statements useful? The shareholders and stakeholders need financial information through financial statements with other disclosures and reports to make their financial, economic or investing decisions. These reports might include the information from financial analysts in the capital markets. Investors in the capital market usually evaluate the financial conditions of the firms through their financial statements and financial disclosures. These include statements, reports and other regulatory filings, which often have many details such as management discussions and analysis in addition to the financial statements (Healy and Palepu, 2001). Healy and Palepu (2001) also explain that other forms of financial disclosures include firms' websites containing many corporate reports and their press releases, which sometimes show the internal forecasts and analysis. Since, financial statements are indeed the general approximation of the economic and financial positions of the firms because of their choices of earnings management and accounting systems. Therefore, it is imperative for investors to require other financial information through financial analysts' reports and predictions, discussions and other disclosures in addition to the financial statements.

## **2 Financial Analysts Forecasts, Information Asymmetry, Forecast Errors and Market Returns**

Levitt Jr (1998) discusses the intentions of the firms, during his speech, that firms manage earnings to match the Wall Street Journal Estimates or forecasts<sup>7</sup>. He further explains the reason behind firms' such discretionary choices to manage the earnings is that the firms, which fail to

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<sup>7</sup> In September 1998, Arthur Levitt, the then-Chairman of the Securities and Exchange Commission, gave a speech about Earnings Management at New York University School of Law and Business, explaining the relevance of Wall Street Forecasts and their effect on the market value of firms and their decisions.

achieve these targets suffers in the capital markets. Therefore, the firms when they are unable to meet the market expectations (i.e. the Wall Street Estimates or financial analysts' forecasts) with their pre-managed earnings, they use their discretionary powers and manage the earnings to meet or beat the financial targets<sup>8</sup>. Existing literature also discusses the potential relationship between the earnings management and the market reaction (Beaver, 1968). Burgstahler and Eames (2006) provide evidences that if firms achieve zero or positive earnings surprise or in other words meet or beat the financial targets, they can avoid significant economic consequences, similarly Brown and Caylor (2005) explain why firms avoid publishing quarterly losses in their financial statements. Keung et al. (2010) talk about the market reactions based on the earnings surprise, they say that the investors are rightly skeptical when they observe small positive earnings surprises.

Since, not all investors are financial or accounting experts, they often rely on the expertise of the financial analysts or consultants in the financial markets to help make their financial investing decisions on their behalf. Hong and Kubik (2003) calls this as the age of the analysts because for a reason and that is the investors' exceeding reliance on the financial analysts. Financial analysts are experts in the financial markets who provide the Wall Street journal estimates or forecasts and other relevant information on the firms' financial performances.

Financial analysts predict the financial performance of the firms on a regular basis throughout the period before and after the earnings announcement<sup>9</sup>. The predictions (i.e. Wall Street Journal Estimates) before the earnings announcement often become the financial targets for the firms (Levitt Jr, 1998). Atiase and Bamber (1994) discuss the reason behind the possible varying level of predicted values from various analysts is because of the information asymmetry. For the purpose of research questions in our thesis, we define these estimates before

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<sup>8</sup> Abarbanell and Lehavy (2003) discuss firms' intentions to manage earnings to meet or beat the financial targets.

<sup>9</sup> Figure 3 provides the graphical representations of the timing of the forecasts before and after earnings announcement.



earnings announcement as predisclosure forecasts or ex-ante forecasts. There has been a very little emphasis put on the restatements or readjustments by the financial analysts on the financial performance of the firms after the earnings announcement, which is, in our thesis, postdisclosure forecasts or ex-post forecasts. Aubert and Grudnitski (2012) discuss this postdisclosure or ex-post forecast and call it the convergent consensus, where they consider this forecast to be the true reflection of the unmanaged earnings of the firms. Prior literature has mainly focused on the latest earnings forecasts on I/B/E/S, while literature also suggests that the firms, most likely, target the financial analysts' forecasts. In this regard, most recent earnings estimates do not give firms enough time to manage their earnings in order to meet or beat their financial targets. After considering all of the recent and pertinent information, these estimates may produce a number that is closer to reported earnings. As a result, we believe that the 45-days window provides firms with a reasonable time and incentive to manage their results in order to meet or beat expectations and avoid earnings surprises and unfavorable market reactions. While it is also important to talk about the postdisclosure or ex-post forecasts and since not many researchers have spoken about it, we assume that the 180-days window is sufficient and reasonable time for financial analysts to collect the information and analyze the financial reporting by the firms to restate or readjust their previous forecasts.

The forecasts errors are the difference between the reported earnings from the day of earnings announcement and predisclosure or postdisclosure forecasts. There has been a large and extant literature, which deals with forecast errors and the quality of the financial statements (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2003; Courteau et al., 2011; Embong and Hosseini, 2018). This also explains these information asymmetries from before and after the earnings announcement i.e. predisclosure and postdisclosure information asymmetry.

## **2.1 Information Asymmetry**

Atiase and Bamber (1994) explain this phenomenon of information asymmetry as the availability of the financial information with the differential precision. They define information asymmetry as the financial analysts having asymmetrical information due to the differential private information. Some financial analysts will have higher level of private information with greater degree of precision, who will be able to predict the financial performance of the firms more accurately than others who will have lower level of private information with lower degree of precision. The financial analysts have varying degree of private financial information about the firms they follow; with the help of this private information, they can predict firms' financial performance with precision. Since not all financial analysts have same private information, hence, there is asymmetry of information and they predict the firms' earnings with relative precision.

Richardson (2000) discusses the connection between the earnings management and the information asymmetry. He provides evidence that, firms are motivated to manage the earnings when there is high level of information asymmetry. Similarly, Dechow and Dichev (2002) also talk about the quality of financial information from the financial statements provided by the firms. They provide evidence that the earnings management affects the informational value of the financial reports.

Our study focuses on the comparative empirical analysis of the effect of earnings management on the predisclosure and postdisclosure information asymmetry. Our research contributes to the literature to explain the two information asymmetries separately and the effect of earnings announcement on the postdisclosure information asymmetry, especially taking into account the quality of financial information provided by the firms in their financial reporting.

## **2.2 Forecasts Errors**

Abarbanell and Lehavy (2003) say the forecasts errors occur when firms try to meet or beat the financial targets or analysts' forecasts (i.e. Wall Street Journal Estimates). Forecasts errors are calculated as the difference between the reported earnings and the analysts' forecasts. In the literature, forecast accuracy is also, synonymously, used to describe the similar phenomenon of the forecast errors. Embong and Hosseini (2018) use this term forecast accuracy and provide evidence of the endogenous relationship between the earnings management and the forecast accuracy. They explain that there is positive association between analysts' forecast accuracy and earnings management. Kasznik and McNichols (2002) find that when firms meet or beat the financial targets, they achieve higher stock returns. Huang, Pereira, and Wang (2017) find that the firms get higher level of attention from the financial analysts when they manage to beat the financial targets. Mensah, Song, and Ho (2004) also work on the forecast errors and accounting policy of the firms. They find that accounting conservatism elevates the forecast errors and forecast dispersion.

Our study focuses on earnings management and its effects on the forecast errors, to find if financial analysts are able to anticipate earnings management and incorporate it when they make these forecasts. This research deals with the intentions of the financial analysts. We use ex-post forecasts as the criterion or indicator to inspect the intentions of the financial analysts whether they try to incorporate the earnings management while predicting the forecasts.

## **2.3 Earnings Quality and Market Returns**

It is a common belief that greater financial performances of the firms generate higher market returns. The firms, which perform better and provide the better financial information through their financial reporting, i.e. earnings quality, to their potential investors tend to receive positive

reactions from the capital markets. Several studies have concluded that the firms, which achieve their financial targets, tend to outperform those, which do not achieve their financial targets (Ebaid, 2012; Keung et al., 2010; Lyle et al., 2019; Mindak, Sen, and Stephan, 2016; Shih, 2019).

Ebaid (2012) finds that the firms engage in the earnings management to achieve the earnings thresholds in order to avoid reporting the accounting losses, which firms incur during the years. While it is also argued by Keung et al. (2010) that the small positive earnings surprises might alarm the market participants about the existence of the earnings management, which makes them skeptical. Literature also provides evidences about the markets' reaction towards the small negative earnings surprises (Frankel, Mayew, and Sun, 2010). Negative earnings surprises means when the firms are unable to meet the financial targets or analysts' forecasts. Financial markets tend to perceive this negative earnings surprise as a bad news and consequently firms lose in the stock returns in the market.

Our research investigates the effects of earnings management and earnings surprises on the stock returns of the firms adjusted with the market return and the systematic risk against the market. This study uses multiple market return windows and it provides variables techniques to replicate the results for the robustness check. This study also uses the separate techniques of the earnings management to describe the availability of discretionary choices with the firms.

## **2.4 Literature Review and Theoretical Framework**

The research studies, within this thesis, focus on the firms' financial reporting or earnings quality. Existing literature uses earnings management as the proxy for the earnings quality. Higher level of earnings management represents the low quality of the financial reporting or earnings and vice versa, notwithstanding, any aggressive or conservative approaches firms

employ based on their financial targets. However, our studies mainly focus on the magnitude of the earnings management, which reflects the earnings quality. While, literature provides two different techniques of measuring earnings management and we incorporate both in our studies, sparsely applied in literature, to compare and analyze the effects of each of them<sup>10</sup>.

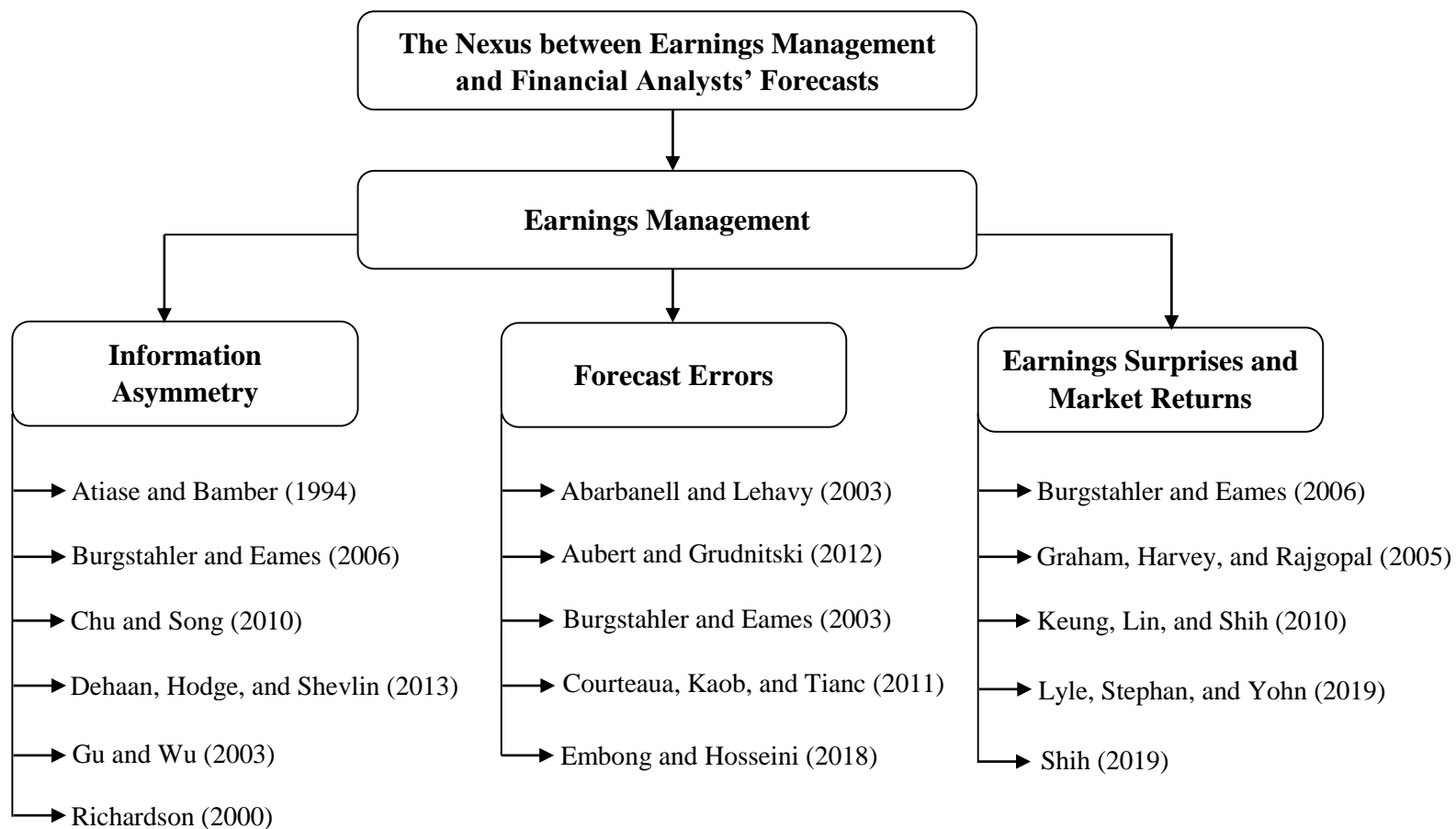
Figure 2 presents the various relevant literature that motivate our studies. Since this thesis comprises three studies on the relationship between earnings management and the financial analysts' predictions, we have three distinct research questions and in this section, we provide the results, to explain how our studies contribute to the literature.

Atiase and Bamber (1994) explain the information asymmetry in detail and explains that the investors' trading behavior is in direct relationship with earnings announcement and the availability of financial information i.e. information asymmetry or unavailability thereof. They find that when there is high level of predisclosure information asymmetry, earnings announcement affects the investors' trading behavior greatly. While, Richardson (2000) talks about the reason why firms are motivated to manage the earnings and, he provides evidence that firms manage earnings because of lack of information availability i.e. information asymmetry. He further explains that firms manage earnings because they know that stakeholders or investors lack the required relevant information or resources to monitor their actions. Similarly, Chu and Song (2010) also provide evidence of the relationship between information asymmetry and earnings management in the case of Malaysian firms. They suggest that the information asymmetry is the prerequisite condition for the earnings management to exist, which in turn affects the external shareholders' investing behavior and makes their investment inefficient.

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<sup>10</sup> Figure 1 shows the two techniques of earnings management and the literature thereof.

**Figure 2: Relevant empirical literature for results**



*Figure 2: Relevant empirical literature*

Our research substantially differs from prior studies in a way that we primarily focus on the comparative study of predisclosure and postdisclosure information asymmetries. Since, Richardson (2000) only uses predisclosure information asymmetry and provides evidence on the its relationship with earnings management, our study, additionally, investigates and provides evidence that the earnings announcement reduces the information asymmetry. While, it is also observed that literature sporadically uses both measures of earnings management, consequently this study will provide motivation to the researchers to more focus on comparative analysis on the two measures of earnings management.

Extant literature provides evidences about the firms' intentions that why they are motivated to manage their earnings. Abarbanell and Lehavy (2003) suggest that firms are more likely to engage in the practices of earnings management to meet or beat the financial targets or analysts' forecasts when they are rated buy and vice versa. They say that firms are motivated by the equity market incentives. Furthermore, they also provide evidence that the financial analysts are unable to anticipate or are not motivated to anticipate the earnings management when they make their predictions. While, Aubert and Grudnitski (2012) also commend this argument and consider the ex-post forecasts to be convergent consensus that is a proxy of unmanaged earnings or true earnings before firms use earnings management techniques. Porter and Kraut (2013) also believe that financial analysts predict unmanaged earnings, while there are other studies like Burgstahler and Eames (2003) and Courteau et al. (2011), who suggest that financial analysts try to predict the earnings which are closer to reported earnings.

Earnings announcement affects the investors' trading behavior (Atiase and Bamber, 1994). There have been many studies, which deal with the market reactions or stock returns including Beaver (1968), who suggests that there exists the relationship between earnings announcement and investors' reaction. Lyle et al. (2019) also provide evidence that earnings announcement significantly affects the market reaction based the on the study of post-close (hereafter PC) and

pre-open (hereafter PO) announcements<sup>11</sup>. They suggest that PC announcements have faster market reaction in comparison to PO announcements because they offer investors sufficient time to process the earnings news and make investing decisions. Keung et al. (2010) and Shih (2019) discuss the relationship of earnings or sales surprises and market share returns. They find that when investors see zero or small positive surprises, they become more skeptical. On the other hand, there are studies, which talk about the adverse effects of earnings surprises (Burgstahler and Eames, 2006; Frankel et al., 2010; Graham et al., 2005). Burgstahler and Eames (2006) and Graham et al. (2005) find that the negative earnings surprises turn off the investors and this lead firms to face significant economic consequences.

While our study provides the major contribution to the literature by using multiple two-days and three-days rolling windows to measure market adjusted returns and both techniques of earnings management. Our study also contributes to the literature by introducing beta return (i.e. systematic risk) to analyze the effects of earnings management or earnings quality and earnings surprises on the firm's market returns (including beta returns). We find that the higher earnings management positively affects firms' MAR, in other words when firms achieve their financial targets by employing earnings management, they observe higher stock returns and we observe similar results when there are positive earnings surprises.

### **3 Research Questions**

The main objective of this thesis is to analyze the nexus between the earnings management and the financial analysts' prediction or in other words the effects of earnings management on the

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<sup>11</sup> Lyle et al. (2019) use PC and PO abbreviations to describe post-close and pre-open announcements.



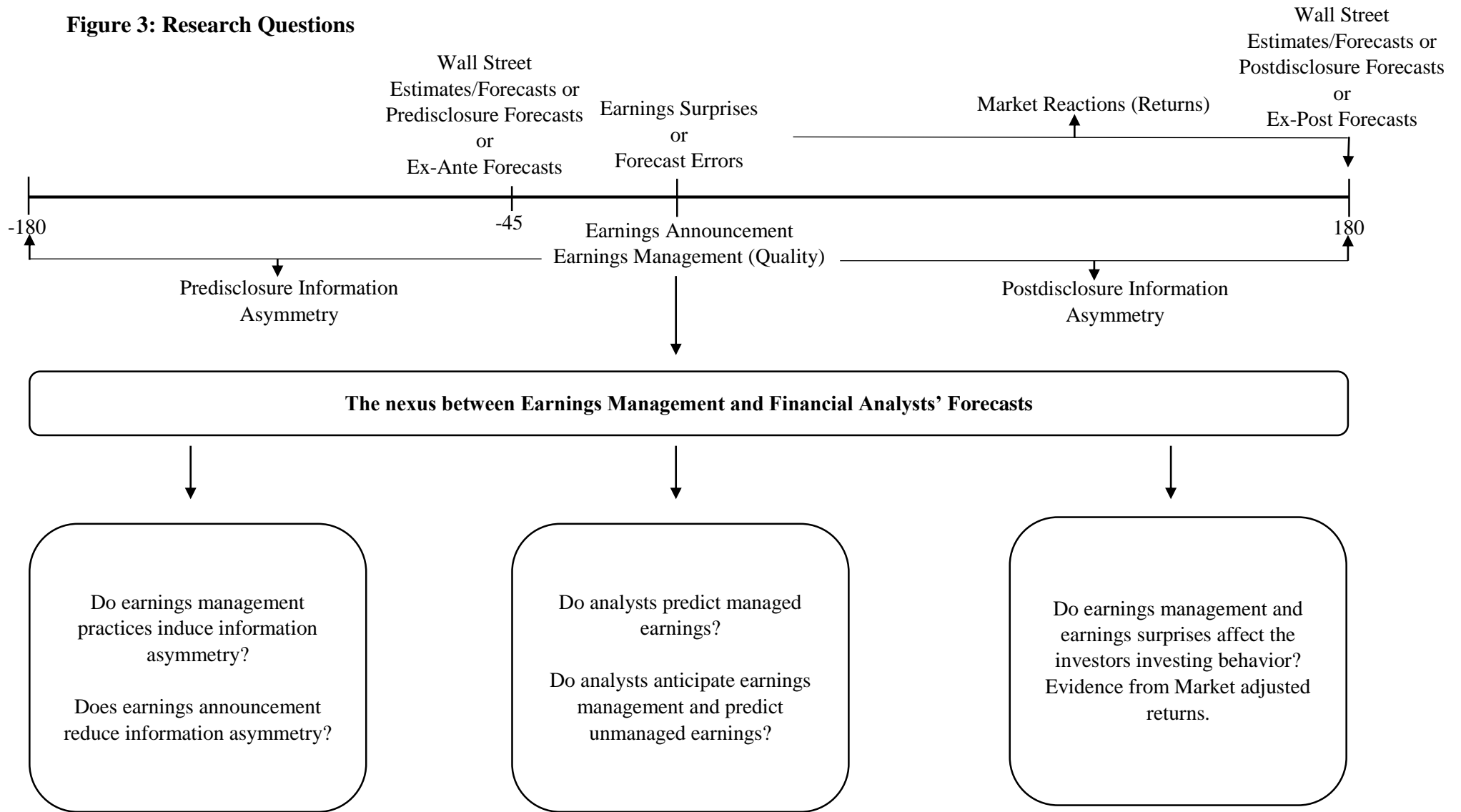
different aspects of financial analysts' predictions. Since this thesis comprises three essays, each essay discusses different aspect of financial analysts' predictions.

Figure 3 depicts the detailed overview of this thesis. Similarly, our horizontal lines shows the earnings announcement as the focal point when the firms announce their financial performance and report their earnings. This also represents the earnings management or quality of financial reporting along with any earnings surprises or forecast errors.

Earnings management represents a measure of the quality of earnings. Higher earnings management is considered as the low quality financial reporting and vice versa. While we define information asymmetry as the availability of the information with varying level of precision. Not all financial analysts have the same level of financial information about the firms. It is because of the reason that there are some analysts, who have higher level of private information than others do and they will be able to predict the financial performance of the firms with precision.

The first research question of this thesis relates to the information asymmetry and the earnings management. In this research questions we deal with the effects of earnings management on the availability of public and private information. We assume that higher earnings management practices lead to higher level of information asymmetry, i.e. private information then plays huge role defining the precise predictions. Analysts with higher degree of private information will be able to predict accurately. While in the same study, we also try to provide evidence that the earnings announcement decreases the postdisclosure information asymmetry because the firms publish all their financial and economic information through their financial reporting which becomes public information for all market participants.

**Figure 3: Research Questions**



**Figure 3: Research Questions**  
 —|— Represents the number of days

In the second part of this thesis, we try to provide the evidences for analysts' intentions to predict managed or unmanaged earnings. We analyze the predisclosure (ex-ante) and postdisclosure (ex-post) forecasts to perform comparative empirical study. We assume that financial analysts try to predict earnings correctly because they are concerned about their reputation and they often get rewards for their accuracy. We also provide evidence that the analysts predict managed earnings i.e. reported earnings while making postdisclosure forecasts because it is the best estimate of their intentions.

Lastly, following extant literature, we assume that the Wall Street Journal Estimates or financial analysts' predictions are the firms' financial targets and when firms report their earnings, the information becomes available to the market participants that whether firms achieved their targets. This information of firms achieving their financial targets is known as the earnings surprises or earnings shock. If the firm achieves the target, it is good news and in case firm does not achieve the target, it is considered bad news or earnings shock. In case of firms achieving the targets, the market will react positively and firms may have higher stock returns in the market while in case of firms missing their financial targets, they may suffer in the stock markets.

This thesis extends to three separate chapters, and finally general conclusion will follow. The following first chapter will answer the premiere research questions of this thesis. The research questions of our first chapter relate to the effects of earnings management and earnings announcement on the information asymmetry. The second chapter primarily deals with the financial analysts' intentions to predict either managed or unmanaged earnings. Chapter three extends the research horizon to investors' investing decisions. We analyze the behavior of the capital market (investors) based on the financial analysts' forecasts and firms' earnings announcements. Finally, last section of this thesis concludes this extensive empirical study with findings, contributions, implications and limitations.



## **CHAPTER 1: EARNINGS ANNOUNCEMENT, INFORMATION ASYMMETRY AND EARNINGS MANAGEMENT**

**Abstract:** We use standard deviation of EPS forecasts as the proxy for dispersion among the analysts forecasts which suggests there is difference in the information available to all the market players. Some use the private information during their forecasting process while others have to rely on market information. We apply the comparative approach and observe the effects of earnings management on the predisclosure and postdisclosure information asymmetry.

We argue in this study that earnings' announcement reduces information asymmetry, despite firms' decisions to use discretionary choices to manage earnings. The firms manage earnings and their use of discretionary powers to manipulate the earnings increases the information asymmetry among the market participants. The market participants acquire private predisclosure information with differential precision to make forecasts. We believe that earnings announcement provides enough informational value to the market participants to restate their forecasts to achieve consensus.

Our results suggest that the magnitude of earnings management has higher positive and significant relationship with predisclosure forecasts' dispersion than with the postdisclosure forecasts' dispersion. This means that the earnings announcement reduces the information asymmetry.

**Keywords:** Standard Deviation, Analysts Forecasts, Earnings Management, Earnings Announcement, Discretionary Accruals, Real Earnings Management

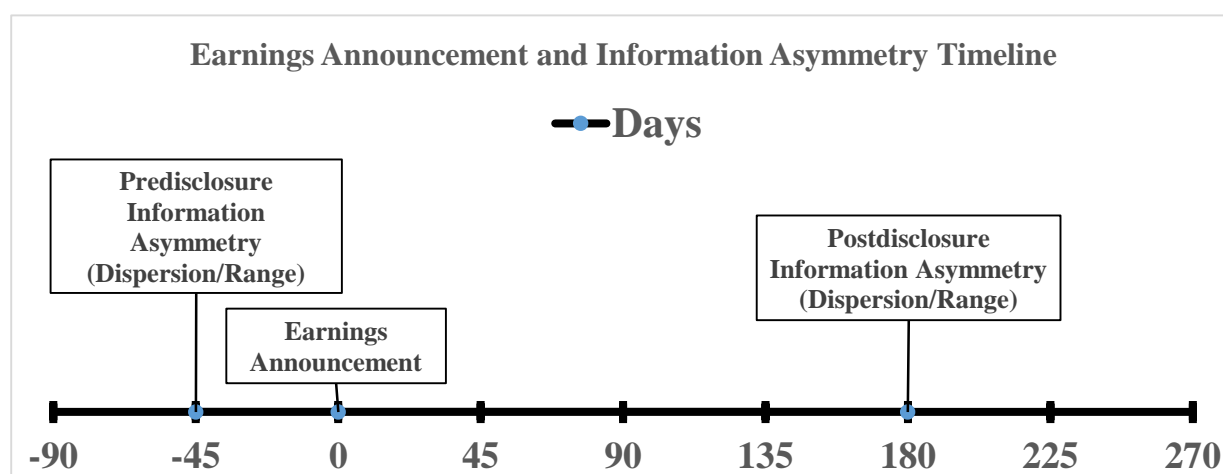
**JEL Classification:** M1; M4; M41

## 1 Introduction

### 1.1 Research Question and Importance

There have been many recent research studies based on the predisclosure information asymmetry and the market share prices and the trading volume thereof (Atiase and Bamber, 1994; Gu and Wu, 2003). This research emphasizes on the existence of the earnings management and information asymmetry that affect the analysts' ability to predict the firms' earnings. Market participants with private information might be able to generate a number that is closer to firm's earnings than those only with public information, this phenomenon creates the information asymmetry, which results in higher dispersion in the analysts' forecasts (Atiase and Bamber, 1994)<sup>12</sup>. What it means, in other words, is that the forecasts from financial analysts will vary from each other. The analysts who acquired the private information might be able to predict the firms' earnings with precision as compared to those who use the public information, which is publicly available and generally accessible by all the analysts in the market.

In this study, we apply the comparative approach and observe the effects of earnings management on the predisclosure and postdisclosure information asymmetry. The figure 1.1 shows the timeline chart of the two information asymmetries and the expected effect of earnings



*Figure 1.1: Earnings Announcement and Information Asymmetry timeline*

<sup>12</sup> Atiase and Bamber (1994) use the term investors acquiring the precise private information while explain the term information asymmetry.

announcement on the postdisclosure information asymmetry. We assume that the earnings announcement should be able to reduce the information asymmetry and provide enough public information to all the market participants. For this purpose, we investigate the relationships of earnings management separately with predisclosure information asymmetry and with postdisclosure information asymmetry, and compare the results. Our results suggest that the earnings announcement reduce the information asymmetry because analysts then have more information that is public; we find a decrease in the information asymmetry from preannouncement to postannouncement period.

Embong and Hosseini (2018) use the forecast errors as the proxy for forecast accuracy to answer the similar question of earnings management and its effects on the predicting capabilities of the financial analysts. While Atiase and Bamber (1994) discuss the effects of information asymmetry on the reactions to trading volume and the market share price. They use the standard deviation of the forecasts i.e. “dispersion” to proxy the information asymmetry. In this study, we follow (Atiase and Bamber, 1994) in using dispersion because this method closely reflects to our research question than using the forecast accuracy for information asymmetry.

Literature puts a very little emphasis on the informational value of the financial reports by the firms, and the effect of the quality of the financial reports on the information asymmetry (i.e. postdisclosure information asymmetry). This study provides a contribution to the existing literature in introducing the different dimension to analyze the relationship between the earnings management and information asymmetry and the effects of earnings announcement, i.e. supply of public information by the firms, on the postdisclosure information asymmetry. Our study answers the question with the comparative analysis of the predisclosure forecasts and the restatements by the financial analysts, i.e. postdisclosure forecasts. This study helps in alleviating the gap in the extant literature within information asymmetry and earnings management, which focuses heavily on the predisclosure information asymmetry.

## 1.2 Background

Ever since Beaver (1968) suggested the existence of relationship between the earnings announcement and the reaction of potential investors towards the informational value of the announcements. There have been several studies from quality and informational value of the financial reporting to the effects on market price and trading volume (Atiase and Bamber, 1994; Chu and Song, 2010; Dehaan et al., 2013; Embong and Hosseini, 2018). Then there have been contemporaneous studies related to the ability of the financial analysts to predict, accurately, the earnings of the firms or the effects of earnings management on their forecasting capabilities (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2003; Chen, Krishnan, and Sami, 2015). As Hong and Kubik (2003) sophisticatedly describe this as the “Age of the analysts”, we believe that there has always been the need for the complete and equal information to all the participants of the capital market including the potential investors and the financial analysts along with other stakeholders.

Since information is the pivotal element of the financial reports, the policymakers like International Accounting Standards Board (IASB) and Financial Accounting Standards Board (FASB) require firms to produce the disclosures necessary to provide useful information to the users of the financial information i.e. market participants. Having said that, not all users of this financial information are equally able to interpret and derive the conclusions and make better decisions in the capital markets. Hence, some of these users, i.e. potential investors, rely heavily on those users with financial acumen, i.e. financial analysts, to provide the financial analysis of the performance of the firms. This analysis by the expert analysts also includes the financial forecasts of the firm’ earnings. Since these financial analysts work independently, they are reliable and they provide the reasonably dependable information<sup>13</sup>.

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<sup>13</sup> Lin and McNichols (1998) examine the effect of affiliation of financial analysts on their forecasting and recommendations.



In this age of the analysts, value of the information has greatly expanded and the analysts with greater level of information have the higher chances of providing the better analysis of the firms. Consequently, their accurate forecasting analyses generate information that is more valuable and reward them with better commission and incentives, career developments and reputation (Hong and Kubik, 2003). Since, they have higher level of risks in making the analyses; they attempt to acquire the information with the highest degree of reliability. This not only includes the public information but also the private information. Not all analysts are able to acquire the private information with equal precision; some might be able to gather meticulous information while other may end up with inaccurate information<sup>14</sup>. This creates the information asymmetry. While literature also documents the analysts' bias in making their forecasting analysis of the performance of firms (see Gu and Wu (2003) and further references therein). They discuss selection and cognitive biases, under which the analysts behave differently depending on their rationale towards the firms and processing information.

Financial analysts, with all their varied reasons and availability of differential information among them, predict the performance of the firms, hereby earnings per share (EPS). This information asymmetry creates the heterogeneous forecasts of EPS from different analysts in the market and hence there is deviation within these forecasts. Therefore, for the purpose of our study and following extant literature within this academic research field, we use the standard deviation of analysts' forecasts as our proxy for the information asymmetry (Atiase and Bamber, 1994; Richardson, 2000). Our study however uses two measures of information asymmetry; differentiated by the firms' announcement of their earnings. The first measure is the predisclosure information asymmetry and the second is postdisclosure information asymmetry.

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<sup>14</sup> Atiase and Bamber (1994) call this phenomenon as the information of differential precision.

This study, empirically by using these two measures, answers the question that whether the earnings announcement reduces the predisclosure information asymmetry.

Our study emphasizes on the quality of the information that financial statements and disclosures provide. As the earnings' announcements or the financial reports of the firms should potentially be able to provide the useful information to the market participants and so should be able to eliminate any information asymmetry that may exist before<sup>15</sup>. The quality of the earnings or the financial reports depends on the actual portrayal of the firms' performance. Dechow and Dichev (2002) discuss about the effect of earnings management on the quality of the information provided by the firms through the financial reports. They use standard deviation of the discretionary accruals and assume higher standard deviation to signify lower quality of the reported earnings. Similarly, we use the standard discretionary accruals as the proxy for the quality of the reported earnings. The literature defines earnings management as a deliberate restructuring of the financial reports by the management (Healy and Wahlen, 1999; Richardson, 2000). They use their discretionary choices within the scope of accounting standards given by the financial reporting bodies.

Our study analyzes the effect of quality of the financial reports on the predisclosure and the postdisclosure information asymmetry. We assume if the quality of the financial reports is higher (i.e. lower earnings management), then it reduces the predisclosure information asymmetry i.e. standard deviation of predisclosure forecasts (dispersion from now onwards). Richardson (2000) believe earnings management is the function of information asymmetry, but in this study; we assume that magnitude of earnings management has direct effect on the magnitude of predisclosure and postdisclosure information asymmetries. The management use their discretionary powers to manage earnings regardless of the existence of information

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<sup>15</sup> Healy and Palepu (2001) explain management communicates the information of the firm's performance through financial reporting and disclosures.

asymmetry. They manage earnings because of their choices and incentives including to meet/beat financial targets (Abarbanell and Lehavy, 2003). We argue that earnings management has positive relationship with the predisclosure information asymmetry and that relationship should reduce in magnitude with the postdisclosure information asymmetry. If the financial reports provide better quality information, the financial analysts should be in better position to restate their forecasts and these forecasts should have lower dispersion. That will suggest the lower level of information asymmetry in their postdisclosure forecasts.

Our results suggest that the earnings' announcement reduce the predisclosure information asymmetry and in fact, our results show that the earnings management have higher positive relationship in magnitude with the predisclosure information asymmetry than the postdisclosure information asymmetry. This suggests that the earnings' announcement provide quality information and there exists the earnings management that reduces the overall financial reporting quality but provides enough informational value to financial analysts to reach a convergent consensus. We provide evidences with different statistical analyses including univariate tests (T-Test and Wilcoxon tests of differences) and multivariate ordinary least square (OLS) and dynamic generalized method of moments (GMM) due to the possibility of the existence of endogeneity problem (Richardson, 2000).

The following section extends the review of relevant literature about earnings management and information asymmetry. Section 3 develops the hypotheses of our research study. The data sampling, research methodology and variable definition are part of section 4. Section 5 and 6 present the empirical data analyses including descriptive statistics, correlation, univariate and multivariate results along with tests of endogeneity. While the last section 7 concludes this empirical study with summary and limitations.

## 2 Literature Review

The incentive for the firms to provide the informational value to its financial reporting is to protect potential investors because they are one of the sources of generating funds for them. There are countries with stricter policies on the investor protection in contrast to the ones with weaker policies because they need to have a stable economy for the overall growth of the society (Othman and Zeghal, 2006). For that purpose, firms strive to perform better and better for their own existence in the economy and for the economy's stability and prosperity, and countries apply strong regulatory policies to ensure that the firms follow certain steps for smooth operations. This creates a pressure on firms to show better performances to serve every stakeholder and in doing that firms often use some tools to portray that the firms are performing well to keep everyone interested in the firms whether or not they are in fact performing well.

Extant literature observes the existence of earnings restatements that, in other words, is the earnings management. Schipper (1989) comments in detail about the existence of earnings management and the reasons or incentives for management to use the discretionary powers to manage the earnings. While she explains the earnings management, (Jones, 1991) and (Roychowdhury, 2006) reform the methodology and give techniques to measure accrual-based earnings management and real earnings management, respectively. Levitt Jr (1998) explains how earnings management works and managers react to the analysts' forecasts on the firms' performance. Healy and Wahlen (1999) also define earnings management as management's use of discretionary choices to hide the actual financial performance of the firm, to restructure and alter the financial reports to achieve targets. Literature also suggests meeting or beating analysts' forecast is one of the most important incentives for firms (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2006). It also amplifies the need to meet or beat these targets when the analysts following the firms (or analysts coverage) are higher (Huang et al., 2017). Higher number of financial analysts places great emphasis on the financial targets but existing

literature also identifies that not all analysts possess the same information and acquiring private information affects the forecasting inferences (Atiase and Bamber, 1994).

Potential investors require the information to make their investing decisions. They heavily rely on the expertise of financial analysts to process the information that is available to all the users of financial reporting including the investors. Since financial analysts have the access to the publicly traded and reported financial information of the firms, they still acquire private information to make the financial predictions about the performance of the firms including forecasts<sup>16</sup>. However, the information available to all the financial analysts may not be of the equal quality taking into consideration the private information. Some analysts might be able to acquire the information with more precision and make better analyses about the firms' performance than those with low level of precision<sup>17</sup>. This private information is extremely necessary for financial analysts to acquire to make forecasts because analysts expect firms' to manage the earnings and earnings management can induce higher level of information asymmetry. Richardson (2000) explains how the level of information asymmetry between the firm's management and its shareholders affects monitoring. He suggests that with higher information asymmetry, monitoring the firms' management and their accounting choices by these analysts will be low because they will not have sufficient information.

Prior studies on information asymmetry focus more on the relationship of information asymmetry on the trading volume (Atiase and Bamber, 1994), equity prices (Chan, Menkveld, and Yang, 2008), disclosure policies (Welker, 1995) and corporate governance (Cormier, Ledoux, Magnan, and Aerts, 2010). Information asymmetry induces the dispersion (Brown and

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<sup>16</sup> Atiase and Bamber (1994) suggests that the investors who have varied predisclosure information because of the private information, they produce the differing forecasts as a result. They use the term investors, while in our study we differentiate the financial analysts from investors. However, in cases, it is possible the financial analysts are the potential investors.

<sup>17</sup> Atiase and Bamber (1994) refers the investors with high level of private information as the well-informed investors.

Han, 1992). They argue that the financial analysts likely to converge on consensus for firms' performance if the information asymmetry decreases. Similarly, we also find researches on the effects of earnings management on forecast accuracy (Burgstahler and Eames, 2006; Embong and Hosseini, 2018) and information transparency (Dai, Kong, and Wang, 2013), information asymmetry in uncertain environments (Cormier, Houle, and Ledoux, 2013) and geographically dispersed firms (Shi, Sun, and Luo, 2015). Shi et al. (2015) have interestingly analyzed the effect of geographic dispersion on the discretionary choices of the firms to use accrual or real earnings management.

All these papers, specifically, focus on the predisclosure information asymmetry that is before the firms have announced their earnings (or reported earnings). Hence, there is a gap in the literature to explain the effect of financial reporting quality (or earnings management) on the postdisclosure information asymmetry. Therefore, there is a need of more research on the relationship between the information asymmetry and the earnings management especially taking into account the level of informational value of the financial reports after announcement.

### **3 Hypotheses Development**

Our study's primary focus is to analyze empirically, comparatively, the relationship between the magnitude of earnings management with the magnitude of predisclosure and postdisclosure information asymmetry. By this comparison, we answer if the earnings announcement reduces the postdisclosure information asymmetry. Richardson (2000) discusses the two factors affecting the earnings management, one of these two factors affecting the magnitude of earnings management is the information asymmetry and the other factor being the GAAP (in other words accounting standards including IFRS). While, we argue that the information asymmetry is the function of earnings management. The extent of information asymmetry depends on the quality

of information available to the financial analysts, especially private information. Firms manage earnings, and the public information that is available to the market participants do not necessarily include the information about the firms' intentions on using discretionary choices to manage earnings, which creates the information asymmetry. Therefore, in this study, our argument is that the firms' choices to manage earnings, i.e. earnings management, create the information asymmetry. Furthermore, we also argue that the firms' earnings announcements provide enough informational value to the financial analysts and reduce the information asymmetry i.e. the relationship between magnitude of earnings management with the magnitude postdisclosure information asymmetry is lower than the relationship with predisclosure information asymmetry.

Considering the above discussion, we develop following hypotheses:

**H1: Predisclosure information asymmetry is higher than Postdisclosure information asymmetry.**

**H2: Earnings management has positive relationship with information asymmetry.**

**H3: Earnings announcement decreases the relationship between information asymmetry and earnings management and consequently reduces information asymmetry.**

The discussion above and considering the work by ((Richardson, 2000) and the references therein) indicate that the relationship between information asymmetry and earnings management is not exogenous and there is a possibility of simultaneity. In other words, because firms, practicing earnings management, provide low quality of information and financial analysts, using the private information, create the information asymmetry. Simultaneously lower level of information asymmetry likely reduce the dispersion and increase the consensus among the financial analysts, which will lead to firms using less earnings management

techniques<sup>18</sup>. Previous studies have focused on the relationship between earnings management and predisclosure information asymmetry, our study incorporates the use of postdisclosure information asymmetry. Since literature does not provide any evidence of reciprocity between earnings management and postdisclosure information asymmetry, our study uses two-fold empirical analysis that we present in the following section.

## **4 Data Sampling and Methodology**

### **4.1 Data Sampling**

Our sample, comprising non-AAER (Accounting and Auditing Enforcement Release) firms from US market, consists 83,798 firm-years observations across 13 years (6,446 firms/year) from 2006 to 2018. We extract the data from the Factset Database based on Excel Connect including Factset Fundamentals, Factset Actuals, Factset Estimates and Reuters Global Fundamentals. Following (Fama and French, 1992; Payne and Robb, 2000), we exclude the financial firms because they use accounting techniques and rules that are special and also because estimation of discretionary accruals is difficult. We also remove unidentified and miscellaneous firms because of insufficient data to make the analysis.

We further apply the trimming to the remaining data:

- We remove the firms followed by less than three financial analysts.
- We winsorize all variables at the 1<sup>st</sup> and 99<sup>th</sup> percentile.

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<sup>18</sup> Abarbanell and Lehavy (2003) argues that firms use earnings management techniques to meet or beat the financial targets including the analysts' forecasts. While Brown and Han (1992) discuss lower level of information asymmetry increases the consensus among the financial analysts about firm's performances.



The table 1.1 shows the final sample (unbalanced panel data) of firm-year observations after removing the firms and the application of trimming criteria.

**Table 1.1: Sample Selection**

<b>Firms</b>	<b>Firm-Year Observations</b>
Total number of firms (6446 * 13)	83,798
Firms from financial industry (1219 * 13)	(15,847)
Firms from Miscellaneous industries (774 * 13)	(10,062)
Unidentified Firms (70 * 13)	(910)
Remaining Firms (4383 * 13)	56,979
Firms with less than 3 number of followers in any year	(37,586)
Remaining total number of firm-year observations	19,393
Final common sample of firm-year observations	6,669

## 4.2 Methodology

### 4.2.1 Model Specification

Not many studies have used both measures of earnings management. Shi et al. (2015) use the accrual management and real earnings management in a comparative study for the geographically dispersed firms. This is not the comparative study for the two measures of earnings management, but for the robust results we are using the both measures of the earnings management, i.e. accrual management (Dechow et al., 1995; Kothari et al., 2005) and real earnings management (Roychowdhury, 2006). Jones (1991) uses a model to calculate the discretionary accruals from the total accruals. Kothari et al. (2005) use the performance-matching approach to estimate the earnings management i.e. equation (1). Dechow et al. (1995) experiment various versions of the model proposed by (Jones, 1991) and provide the modified model exhibiting the most power to detect earnings management i.e. equation (2) below. We

estimate discretionary accruals (i.e. residuals  $\epsilon_{it}$ ) by regressing the two modified models, (eq: 1) and (eq: 2), cross-sectionally for the firms within the same 2-digit SIC code each year.

$$TA_{it} = \alpha_0 + \alpha_1(1/A_{it-1}) + \alpha_2 (\Delta S_{it} - \Delta REC_{it}) + \alpha_3(PPE_{it}) + \alpha_4(ROA_{it}) + \epsilon_{it} \quad (1)$$

$$TA_{it} = \beta_0 + \beta_1(1/A_{it-1}) + \beta_2 (\Delta REV_{it} - \Delta REC_{it}) + \beta_3(PPE_{it}) + \epsilon_{it} \quad (2)$$

*Where i represents firm and t years*

Similarly, following are the three equations from (Roychowdhury, 2006). He considers the firms use real earnings manipulation in order to achieve benchmarks and avoid reporting any annual losses. We estimate the following three equations, and calculate the abnormalities (i.e. residuals  $\epsilon_{it}$ ) in cash flow from operations (eq: 3), production costs (eq: 4) and discretionary expenses (eq: 5).

$$CFO_{it} = \gamma_0 + \gamma_1(1/A_{it-1}) + \gamma_1(S_{it}) + \gamma_2 (\Delta S_{it}) + \epsilon_{it} \quad (3)$$

$$Prod\_Cost_{it} = \mu_0 + \mu_1(1/A_{it-1}) + \mu_1(S_{it}) + \mu_2 (\Delta S_{it}) + \mu_3 (\Delta S_{it-1}) + \epsilon_{it} \quad (4)$$

$$DisExp_{it} = \varphi_0 + \varphi_1(1/A_{it-1}) + \varphi_2(S_{it-1}) + \epsilon_{it} \quad (5)$$

*Where i represents firm and t years*

Since our hypotheses focus on the magnitude of earnings management, we calculate the absolute values of accruals management and abnormalities in the real earnings management. We use these absolute values of earnings management ( $|EM|$ ) separately in equation (6) and (7). We use the following two equations (6 and 7) to test our hypotheses empirically. We are using two different measures of the information asymmetry (1) Standard deviation of forecasts i.e. dispersion and (2) Range i.e. the difference between the highest and the lowest forecast.

$$|Pre\_IA_{it}| = \alpha_0 + \alpha_1 |EM_{it}| + \alpha_2 [GWI_{it}] + \alpha_3 [OLC_{it}] + \alpha_4 [RetOA_{it}] + \alpha_5 [LOSS_{it}] + \alpha_6 [PBValue_{it}] + \alpha_7 [LEV_{it}] + \alpha_8 [Log\_AF_{it}] + \alpha_9 [AQ_{it}] + \epsilon_{it} \quad (6)$$

$$|Post\_IA_{it}| = \alpha'_0 + \alpha'_1 |EM_{it}| + \alpha'_2 [GWI_{it}] + \alpha'_3 [OLC_{it}] + \alpha'_4 [RetOA_{it}] + \alpha'_5 [LOSS_{it}] + \alpha'_6 [PBValue_{it}] + \alpha'_7 [LEV_{it}] + \alpha'_8 [Log\_AF_{it}] + \alpha'_9 [AQ_{it}] + \epsilon'_{it} \quad (7)$$

*Where i represents firm and t years*

We construct our multivariate models to explain how firms' choices of managing earnings can lead to information asymmetry. Atiase and Bamber (1994) explain information asymmetry as the imbalance between the public and private information available to the financial analysts with differential precision. Given past studies in earnings management and information asymmetry literature, our models include several control variables. Goodwill Impairment (GWI) and Operating Lease Commitments (OLC) are the discretionary choices firms use and the information related to such management decisions is only available through financial reports. We believe the financial analysts with highest precision level of private information will be able to incorporate the information about these choices in their forecasts. Thus, we assume that these variables have positive relation to information asymmetry. The variables Return on Asset, Price-to-Book value and Analysts Following (RetOA, PBValue and Log\_AF respectively) explain the size of the firm, and literature expects the size of the firm to have negative effect on information asymmetry (Embong and Hosseini, 2018; Richardson, 2000). The reason behind this negative relationship is that the bigger sized firms attract more followers (including all stakeholders), which generates public information for all analysts to produce consensus forecast with low dispersion. We include LOSS to control for the firms with losses because they are more likely to engage in the earnings management activities (Burgstahler and Dichev, 1997). One of the two incentives to manage earnings is to avoid debt covenant violation (Richardson, 2000). Therefore, we include the Leverage (LEV) to control for the firms' leverage risk. Firms engage less with earnings management when they are audited by big four firms, thus we expect Audit Quality (AQ) to have negative sign with information asymmetry (Clinch, Stokes, and Zhu, 2012).

The table 1.2 defines and explains the variables involved in our empirical analyses.

**Table 1.2: Variable Definition**

Variable Code	Definition	Data Source	Extraction
<b>Panel A: Accruals Models</b>			
TA	Total Accruals calculated by the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization	Derived	$TA = (\Delta CA - \Delta CL - \Delta Cash + \Delta STD - D\&A)$
A	Total Assets	Factset Database	
$\Delta S - \Delta REC$	Change in Sales minus change in Receivables at year T	Derived	$\Delta S - \Delta REC = (Sales(t) - Sales(t-1)) - (Rec(t) - Rec(t-1))$
PPE	Gross value of Property Plant and Equipment	Factset Database	
IBE	Income before Extra Items	Factset Database	
$\Delta REV - \Delta REC$	Change in Revenue minus change in Receivables at year T	Derived	$\Delta REV - \Delta REC = (Rev(t) - Rev(t-1)) - (Rec(t) - Rec(t-1))$
<i>Note: All variables are scaled by lagged total assets except Total Assets "A"</i>			
<b>Panel B: Real Earnings Management Models</b>			
CFO	Cash flow from Operations	Factset Database	
S	Total Sales	Factset Database	
$\Delta S(t)$	Change in Sales at year T	Derived	$\Delta S = Sales(t) - Sales(t-1)$
Prod_Cost	Production Cost calculated by adding change in Inventory to the Cost of Goods Sold	Derived	$Prod\_Cost = COGS + \Delta INV$
$\Delta S(t-1)$	Change in Sales at year T-1	Derived	$\Delta S = Sales(t-1) - Sales(t-2)$
DisExp	Discretionary Expenses calculated by adding three expenses: Research and Development, Advertising and Selling, General and Administrative Expenses	Derived	$DisExp = R\&D + SG\&A + ADV$
<i>Note: All variables are scaled by lagged total assets</i>			
<b>Panel C: Information Asymmetry Models</b>			
Pre_Dispersion	Absolute values of the Standard Deviation of analysts' forecasts before reported earnings are announced.	Factset Database	$Pre\_Dispersion =  exante\_SD / Share\ price_{t-1} $
Post_Dispersion	Absolute values of the Standard Deviation of analysts' forecasts after reported earnings are announced.	Factset Database	$Post\_Dispersion =  expost\_SD / Share\ price_{t-1} $
Pre_Range	Absolute values of the difference between highest and lowest analysts' forecasts before reported earnings are announced.	Derived	$Pre\_Range =  exante\_highest - exante\_lowest / Share\ price_{t-1} $
Post_Range	Absolute values of the difference between highest and lowest analysts' forecasts after reported earnings are announced.	Derived	$Post\_Range =  expost\_highest - expost\_lowest / Share\ price_{t-1} $

Variable Code	Definition	Data Source	Extraction
Pre_IA	Predisclosure Information Asymmetry = Predisclosure Dispersion and Range	Derived	Pre_IA = Pre_Dispersion, Pre_Range
Post_IA	Postdisclosure Information Asymmetry = Postdisclosure Dispersion and Range	Derived	Post_IA = Post_Dispersion, Post_Range
Abs_Kothari	Absolute values of the discretionary accruals from Kothari Model	Derived	Abs_Kothari =  Residuals
Abs_Dechow	Absolute values of the discretionary accruals from Dechow Model	Derived	Abs_Dechow =  Residuals
Abs_CFO	Absolute values of the abnormalities from CFO Model of Roychowdhury	Derived	Abs_CFO =  Residuals
Abs_Prod	Absolute values of the abnormalities from Production Cost Model of Roychowdhury	Derived	Abs_Prod =  Residuals
Abs_Disexp	Absolute values of the abnormalities from Discretionary Expense Model of Roychowdhury	Derived	Abs_Disexp =  Residuals
EM	Earnings Management Component = Discretionary Accruals calculated by Residual Values in Kothari and Dechow Models and Abnormalities in Roychowdhury Models of Cash Flow from Operations, Production Costs and Discretionary Expenses	Derived	EM = Abs_Kothari, Abs_Dechow, Abs_CFO, Abs_Prod and Abs_Disexp
GW	Goodwill Impairment	Factset Database	
OLC	Operating Lease Commitments	Factset Database	
RetOA	Return on Assets calculated as Net Income before Extras scaled by Total Assets	Derived	RetOA = NIBE / Total Assets
LOSS	LOSS is the dummy variable based on earnings	Derived	LOSS = 1 for negatives earnings LOSS = 0 otherwise (positive earnings),
PBVALUE	Price to Book Value	Factset Database	
LEV	Leverage is ratio of Long Term Debt to Total Assets	Derived	LEV = LTD/Total Assets
Log_AF	Log of Number of Analysts Following the firms	Factset Database	Log_AF = log(AF)
AQ	Audit Quality is the dummy variable based on the Big Four Audit Firms	Derived	AQ = 1 for Big Four Firms, AQ = 0 otherwise

**Note:**

1. *Standard Deviation of Analysts' Forecasts before reported earnings (referred as Pre\_Dispersion in our study) have been collected at 45 days prior to; while Standard Deviation of Analysts' Forecasts after reported earnings (referred as Post\_Dispersion in our study) have been collected at 180 days after the reported earnings.*
2. *All variables except Return on Assets, Loss, Price to Book Value, Leverage, Analyst Following and Audit Quality; are scaled by the Number of Shares and Share Price at the start of the year.*

#### *4.2.2 Endogeneity Bias*

One of the reasons endogeneity bias may occur is when there is a possibility of interdependence of dependent and independent variables. When there is reciprocity effect between interested and explanatory variables. In these occasions, ordinary least square (OLS) regressions generate biased or inconsistent results. Following the discussion above and the possibility of endogeneity bias in the relationship between information asymmetry and earnings management, our empirical analysis is two-fold. Since we are also using the postdisclosure information asymmetry and its sparse literature does not provide enough evidence of any endogeneity bias with earnings management. However, Richardson (2000) uses two-stage least square (2SLS) predisclosure information asymmetry, but we follow Embong and Hosseini (2018) for generalized method of moments (GMM) application and include the lagged values of earnings management and information asymmetry as the instrument variables. Hence, we use the OLS regressions for our primary tests and then apply dynamic GMM to reduce any effects of endogeneity caused by the bi-direction or reciprocity between the earnings management and information asymmetry.

## **5 Descriptive Statistics and Correlation**

### **5.1 Descriptive Statistics**

The table 1.3 presents the summary of statistics for the variables used in our empirical study. Following Atiase and Bamber (1994), we use the two proxies of dispersion and range to measure the divergence in analysts' forecasts which is the basis for information asymmetry. Panel A of table 1.3 shows our interested variables (proxies) of two information asymmetries (i.e. Predisclosure and Postdisclosure). Predisclosure information asymmetry includes the Pre\_Dispersion and Pre\_Range, while postdisclosure includes the Post\_Dispersion and

Post\_Range. We use the two measures of information asymmetry from each side of the earnings announcement. Dispersion, i.e. standard deviation of the analysts' forecast, is our primary data analysis variable and range, i.e. the difference of the most optimist and the most pessimist analysts' forecast, for the sensitivity analysis. We use the absolute values of our interested variables to measure the magnitude of the information asymmetry because we do not concern for the direction or the optimistic or pessimistic behavior of the analysts. The mean (median) values of the Pre\_Dispersion are 0.0029 (0.0010) significantly higher than the values of the Post\_Dispersion 0.0022 (0.0004), while similar results are observed with Pre\_Range and Post\_Range values. We see higher Pre\_Range values than Post\_Range. This phenomenon, of higher predisclosure information asymmetry proxies than the postdisclosure information asymmetry proxies, suggests that the earnings announcement does actually provide informational value and reduces the information asymmetry.

Panel B of the table 1.3 reports the statistics for five separate Earnings Management components (EM) where the mean and median values in Discretionary Accrual Models are lower than Real Earnings Models. Since, these are absolute values and show the magnitude of the earnings management and these non-negative values suggest that managers use real earnings techniques more than the accrual techniques in order to manage earnings.

Panel C of the table 1.3 presents the list of control variables, which we commonly found in the relevant literature. Including these is the Goodwill Impairment (GWI) which affects reported incomes with capitalized amounts (Kothari et al., 2005). The interesting point to notice here is that all the control variables are positive and right skewed. Most values of GWI, OLC, LOSS and LEV lie within fourth quartile. AQ reflects 91.56% of the sample firms in our study with big four audit firms as their external auditors. Log\_AF is the proxy for firm size; it represents the number of analysts following a firm. The bigger firms will attract more followers.

**Table 1.3: Descriptive Statistics**

<i>n = 6,669</i>	Mean	Std. Dev.	Median	Min	Max	Quartile 1	Quartile 3
<b>Panel A: Standard Deviation and Range</b>							
<b>Pre_Dispersion</b>	0.0029	0.0067	0.001	0.0000	0.0785	0.0004	0.0027
<b>Post_Dispersion</b>	0.0022	0.0072	0.0004	0.0000	0.0906	0.0001	0.0015
<b>Pre_Range</b>	0.0074	0.0154	0.0028	0.0000	0.1578	0.0011	0.0074
<b>Post_Range</b>	0.0059	0.0168	0.0014	0.0000	0.1914	0.0004	0.0048
<b>Panel B: Earnings Management Component (EM)</b>							
<b>Abs_Kothari</b>	0.0437	0.0538	0.0256	0.0000	0.3354	0.0107	0.0541
<b>Abs_Dechow</b>	0.0438	0.0540	0.0255	0.0000	0.3402	0.0107	0.0544
<b>Abs_CFO</b>	0.0621	0.0710	0.0401	0.0000	0.4626	0.0188	0.0755
<b>Abs_Prod</b>	0.1349	0.1842	0.0721	0.0000	1.0415	0.0313	0.1502
<b>Abs_Disexp</b>	0.1065	0.1403	0.0573	0.0000	0.7866	0.0234	0.1276
<b>Panel C: Control Variables</b>							
<b>GWI</b>	0.0069	0.0371	0.0000	0.0000	0.3413	0.0000	0.0000
<b>OLC</b>	0.0443	0.1179	0.0082	0.0000	1.1471	0.0026	0.027
<b>RetOA</b>	0.0371	0.1137	0.0516	-0.9381	0.2784	0.0186	0.0862
<b>LOSS</b>	0.1705	0.3761	0.0000	0.0000	1.0000	0.0000	0.0000
<b>PBValue</b>	4.8989	7.1749	2.8934	0.0190	55.0065	1.5926	5.2101
<b>LEV</b>	0.2248	0.1700	0.2127	0.0000	0.9421	0.0925	0.3264
<b>Log_AF</b>	1.0583	0.2722	1.0792	0.4771	1.5185	0.8451	1.2788
<b>AQ</b>	0.9156	0.2780	1.0000	0.0000	1.0000	1.0000	1.0000

*Please refer table 1.2 for variable definitions.*

## 5.2 Correlation Matrix

Table 1.4 shows the correlation among the various variables used within our analyses. The purpose is to identify the correlation of the explanatory variables; we expect lower to moderate correlation as high correlation may suggest biased and unreliable results.

Since we do not use all Earnings Management components [Discretionary Accruals (Abs\_Kothari and Abs\_Dechow) and Real Earnings Management (Abs\_CFO, Abs\_Prod and Abs\_Disexp)] simultaneously, their inter-correlation is not to be taken into consideration (i.e. Discretionary Accruals and Real earnings management are highly and significantly correlated).



**Table 1.4: Correlation Matrix****Pairwise Pearson Correlation**

<i>n</i> = 6,669	Abs_Kothari	Abs_Dechow	Abs_CFO	Abs_Prod	Abs_Disexp	GWI	OLC	RetOA	LOSS	PBValue	LEV	Log_AF	AQ
<b>Abs_Kothari</b>	1												
<b>Abs_Dechow</b>	0.991***	1											
<b>Abs_CFO</b>	0.377***	0.377***	1										
<b>Abs_Prod</b>	0.341***	0.343***	0.476***	1									
<b>Abs_Disexp</b>	0.316***	0.314***	0.347***	0.756***	1								
<b>GWI</b>	0.108***	0.112***	0.0777***	0.0873***	0.0953***	1							
<b>OLC</b>	0.168***	0.169***	0.230***	0.345***	0.357***	0.0777***	1						
<b>RetOA</b>	-0.210***	-0.212***	-0.157***	-0.0394***	-0.0917***	-0.387***	-0.0341***	1					
<b>LOSS</b>	0.223***	0.227***	0.166***	0.0475***	0.0654***	0.349***	0.0621***	-0.656***	1				
<b>PBValue</b>	-0.0932***	-0.0933***	-0.109***	-0.0687***	-0.0490***	-0.0426***	-0.0570***	0.0834***	-0.0507***	1			
<b>LEV</b>	0.128***	0.132***	0.162***	0.0985***	0.0505***	0.0674***	0.0564***	-0.129***	0.0964***	0.0314**	1		
<b>Log_AF</b>	-0.137***	-0.139***	-0.0778***	-0.111***	-0.135***	-0.0636***	-0.0497***	0.166***	-0.135***	0.128***	0.0179	1	
<b>AQ</b>	-0.0120	-0.0115	0.0184	0.0235*	0.0190	0.0152	0.0191	0.0766***	-0.0660***	0.0752***	0.127***	0.219***	1

1. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

2. This correlation matrix gives the information about the correlation among the independent variables.

3. Please refer table 1.2 for variable definitions.

We observe, as expected, that GWI and OLC are positively correlated with Abs\_Kothari (0.108\*\*\* and 0.168\*\*\* respectively) and with Abs\_Dechow (0.112\*\*\* and 0.169\*\*\* respectively). LOSS has higher negative correlation with RetOA, which is expected as they reflect the opposite nature of the performance of a firm. All other variables, except AQ, show significant levels and they are not highly correlated with each other that determines that the predictors used in our models do not show multicollinearity problem that can lead us to believe that our regressions will show robust results. Even though AQ shows weak significance but shows correct signs i.e. the negative sign as expected with EM proxies along with Log\_AF. For further robustness check of the bivariate inter-correlation or multicollinearity, we use Variable inflation factor (VIF) technique<sup>19</sup> for each of our models and the results are similar and show no sign of significant multicollinearity among the explanatory variables to question the reliability of the model.

## **6 Results and Discussions**

Our hypotheses focus on the empirical analysis to identify the effects of the magnitude of earnings management on the magnitudes of information asymmetry (pre and postdisclosure). Unlike (Richardson, 2000), where he argues that when there is high information asymmetry, there is low level of monitoring from market participants and this gives rise to the earnings management during the equity offering season. On the other hand, this study claims that the information asymmetry exists because of the firms' choices to manage earnings to achieve respective targets, where private information with different level of precision among the market participants contributes to it. Furthermore, our research provides evidence that the earnings management does contribute to postdisclosure information asymmetry but earnings

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<sup>19</sup> Results from Variation Inflation Factor show maximum value of 1.90.

announcement provides enough informational value and does indeed reduce the information asymmetry.

Our empirical analyses include two approaches to achieve the robust results, Univariate testing and Multivariate (Ordinary Least Square and General Method of Moments) regression methods.

## **6.1 Univariate Results**

The first set of empirical analyses is the t-test and Wilcoxon test on the two proxies of information asymmetry. For first proxy of information asymmetry “Dispersion”, we apply the t-test and Wilcoxon test on the Pre\_Dispersion and Post\_Dispersion series. We replicate the same tests on the second proxy of the information asymmetry “Range” i.e. on the Pre\_Range and Post\_Range under the robustness check or sensitivity analyses. The purpose of using these tests is to make sure that these two series of dispersions and ranges are not equal and that there are significant differences between the two series of each proxy. Since these series do not have normal distribution, which is evident from significant difference between the mean and median values in table 1.3, parametric t-test is useful when comparison is between two independent groups. Statistically, when the two series have normal distribution, z-values from non-parametric Wilcoxon tests infer better results. We expect the predisclosure information asymmetry to be higher than the postdisclosure information asymmetry because we assume that the information that earnings announcement provides to the financial analysts shall reduce information asymmetry.

Table 1.5 includes the results from both univariate tests for both proxies of information asymmetry. Panel A of table 1.5 shows the results from t-tests that the difference between the means of Pre\_Dispersion and Post\_Dispersion is 0.0007 and is at less than 1% significance level. The two series from other proxy of Range return the similar results with difference of

0.0015 at less than 1% significance level. The higher t-values show greater difference between the two series.

**Table 1.5: Univariate Tests**

<b>Panel A: T Tests</b>		
<i>n</i> = 6,669	<b>Difference</b>	<b>t-value</b>
Pre_Dispersion – Post_Dispersion	0.0007	8.8206***
Pre_Range – Post_Range	0.0015	7.5327***
<b>Panel B: Wilcoxon Tests</b>		
<i>n</i> = 6,669	<b>Difference</b>	<b>z-value</b>
Pre_Dispersion – Post_Dispersion	0.0006	35.009***
Pre_Range – Post_Range	0.0014	27.414***
1. $p < 0.10$ , ** $p < 0.05$ , *** $p < 0.01$		
2. Please refer table 1.2 for variable definitions.		

Panel B of table 1.5 shows the results from Wilcoxon tests. This test measures the difference of medians between the two series. We have positive differences with both proxies (0.0006 and 0.0014) at very high z-values (35.009 and 27.414) giving test results at less than 1% significance level. The results from table 1.5 suggest that predisclosure information asymmetry (Pre\_Dispersion and Pre\_Range) is higher than postdisclosure information asymmetry (Post\_Dispersion and Post\_Range), which satisfies our H1<sup>20</sup>. Our statistical results from initial univariate data analysis support our hypothesis H1. It suggests that the earnings announcement helps alleviating the information asymmetry that is significantly lower postdisclosure than predisclosure. It means that even after the firms have managed earnings, but quality of financial reports still provide enough informational value to the financial analysts and they are able to generate a convergent consensus.

<sup>20</sup> The results were not any different when using Coefficient of Variation (CV) of forecasts. The CV is the ratio of standard deviation of forecasts and the mean of the series.

## 6.2 Multivariate Regression Results

As discussed earlier, our multivariate analyses is two-fold and since there is not enough evidences in the literature for endogeneity bias for the postdisclosure information asymmetry and EM, our primary tests comprise of OLS regressions and secondary test includes GMM technique of EM on the predisclosure and postdisclosure information asymmetry. Following the approach used by Atiase and Bamber (1994) of using two proxies for information asymmetry, we have dispersion and range for each side of the earnings announcement. We use range for robustness check.

In the second set of empirical data analyses, the first issue is to measure the earnings management (EM) component from two different earnings management techniques i.e. Accruals Management and Real Earnings Management. This is not the comparative study on the earnings management techniques but uses both techniques in data analyses. We use the cross-sectional approach to measure the EM for each firm in the same 2-digit SIC industry code each year of the sample size<sup>21</sup>. By using the equations 1 through 5 as in section 4.2.1 under Model Specification, we calculate the five separate EM proxies and use them as our predictors in equation 6 and 7.

For hypothesis H2, which states that the EM has positive relationship and induces the information asymmetry, the table 1.6 shows the results from OLS regressions on equations 6 and 7 on the first proxy of information asymmetry (i.e. Dispersion) from each EM component. The results from each EM component is significant and show positive relationship with predisclosure dispersion as well as postdisclosure dispersion<sup>22</sup>. This positive relationship is

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<sup>21</sup> Dechow et al. (1995) use the time series approach to measure the accruals but we apply the cross-sectional approach as done by (Kothari et al., 2005) to all our EM calculations including real earnings management (Roychowdhury, 2006) for coherency.

<sup>22</sup> The results were not any different with use of EM calculated as time series (Tables 1.15-1.23 in appendix). Richardson (2000) also uses the similar analysis of using EM with both approaches.

consistent with our hypothesis 2, which says that the magnitude of earnings management causes the information asymmetry. Since our study does not research for any directional earnings management, on the contrary we focus on the magnitude of earnings management, thus we use the absolute values of our interested variables. We also notice that the relationship of each EM component with Pre\_Dispersion is higher in magnitude than the relationship with Post\_Dispersion. We also control our equations with number of relevant variables from the literature. We expect positive relationship of GWI and OLC with Dispersion because of their nature. We expect the relationship of these variables with postdisclosure information asymmetry to be lower than predisclosure information asymmetry that is, interestingly, only consistent in case of OLC but not with GWI. The variables (RetOA, PBValue and Log\_AF) explain the size of the firm, and literature expects the size of the firm to have negative effect on information asymmetry and our results are consistent with (Embong and Hosseini, 2018; Richardson, 2000; Yu, 2008). On the other hand, we expect LOSS to have positive relationship with information asymmetry. Since LOSS shows positive correlation with EM in table 1.4, it is expected the firms with losses are more likely to engage in the earnings management activities (Burgstahler and Dichev, 1997) and our results are consistent with Embong and Hosseini (2018). In their study, they predict forecast accuracy and show negative relation, while in our study, we use information asymmetry and these two variables are contrasting in nature. Relevant literature also gives evidence of positive sign of LEV and is consistent with Richardson (2000). Firms engage less with earnings management when they are audited by big four firms, thus we expect AQ to have negative sign with information asymmetry and our results are consistent with Clinch et al. (2012).

Table 1.6: Multivariate Pooled OLS regression for Dispersion

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
<b>Abs_Kothari</b>	<b>0.026***</b>	<b>0.016***</b>								
<b>Abs_Dechow</b>			<b>0.026***</b>	<b>0.017***</b>						
<b>Abs_CFO</b>					<b>0.022***</b>	<b>0.015***</b>				
<b>Abs_Prod</b>							<b>0.006***</b>	<b>0.003***</b>		
<b>Abs_Disexp</b>									<b>0.005***</b>	<b>0.002</b>
<b>GW</b> I (+)	0.006	0.027***	0.006	0.027***	0.007	0.028***	0.005	0.027***	0.006	0.027***
<b>OLC</b> (+)	0.003**	0.002	0.003**	0.002	0.002	0.001	0.002	0.001	0.003	0.002
<b>RetOA</b> (-)	-0.011***	-0.007**	-0.011***	-0.007**	-0.011***	-0.007**	-0.012***	-0.008***	-0.011***	-0.007***
<b>LOSS</b> (+)	0.002***	0.001**	0.002***	0.001**	0.002***	0.001***	0.002***	0.002***	0.002***	0.002***
<b>PBValue</b> (-)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000**	-0.000
<b>LEV</b> (+)	0.002**	0.002*	0.002**	0.002*	0.002*	0.001	0.002**	0.002**	0.003***	0.002**
<b>Log_AF</b> (-)	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
<b>AQ</b> (-)	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
<b>Constant</b> (?)	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***	0.004***	0.004***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	18.12%	11.27%	18.39%	11.43%	19.13%	11.99%	16.46%	10.52%	15.50%	10.12%
<b>Adjusted R<sup>2</sup></b>	18.01%	11.15%	18.28%	11.31%	19.02%	11.87%	16.35%	10.40%	15.38%	10.00%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Pre\_D* is the abbreviation for *Pre\_Dispersion* and *Post\_D* is for *Post\_Dispersion*.
3. Please refer table 1.2 for variable definitions.

The results have consistently shown the positive relationship across each EM component under accrual and real earnings management with dispersion. We observe the higher relationship of accrual earnings management with information asymmetry than real earnings management, this might suggest that the private information that financial analysts are able to acquire compensate the effects of real earnings management more than the effects of accrual management. Furthermore, these results also give evidence and support our hypothesis H1, showing the decreasing nature of relationship in magnitude of EM with information asymmetry from predisclosure to postdisclosure. It suggests that the information asymmetry decreases from predisclosure to postdisclosure and since EM is constant, it shows decreasing relationship.

For hypothesis H3, which states that the earnings announcement provides enough informational value and decreases the relationship between earnings management and information asymmetry. Financial reporting quality is defined differently within extant literature by unbiased application of standards, investor protection, audit quality, reporting incentives and earnings management (Dehaan et al. (2013), and see Jeanjean (2012) for further references therein). Higher earnings management is synonymous to low quality of earnings (Lo, 2008). The results from tables 1.5 to 1.6 suggest that the earnings management exists and henceforth the lower earnings quality, but what we also find from these tables is that there is lower information asymmetry (lower Post\_Dispersion) after the firms report their earnings i.e. earnings announcement. Therefore, we find the lower relationship of EM with Post\_Dispersion in comparison to EM with Pre\_Dispersion. This lower postdisclosure information asymmetry and lower level of relationship with EM suggest that regardless of lower earnings quality, earnings announcement still produces informational value to financial analysts and they are able to converge on a consensus in their postdisclosure analysis of performance of the firms



and have lower dispersion and variation<sup>23</sup>. Explanatory power of the regression equations is consistent throughout our analyses, by an adjusted R<sup>2</sup> ranging from 10.00% to 19.02%.

From the inferences, univariate and multivariate results (tables 1.5 through 1.6), we posit that the earnings announcement does indeed provide the informational value to the financial analysts and information asymmetry decreases from predisclosure to postdisclosure.

### **6.3 Tests of Endogeneity**

As discussed earlier, our secondary tests include GMM technique in order to reduce endogenous effect that is any bi-directional causality or reciprocity effect between dependent and independent variables. Atiase and Bamber (1994) uses the Froot's (1989) procedure as additional test to assess the potential cross sectional correlation and serial dependence, while Richardson (2000) uses the simultaneous equations i.e. the two-stage least squares (2SLS). Following (Embong and Hosseini, 2018), we apply the dynamic system GMM estimator technique proposed by Blundell and Bond (1998).

In the extant literature, researchers have used different techniques, as discussed above, to solve the endogeneity issue of reciprocity and simultaneity that leads to consistent and unbiased analysis estimates (see (Embong and Hosseini, 2018) and more references therein). They argue the underlying assumption of the OLS regression is the non-existence of the bi-directional causality or reciprocity between the dependent and explanatory variables. If there is an endogeneity issue, OLS regressions produce biased and inconsistent results. However, Leszczensky and Wolbring (2019) suggest the use of fixed effect in OLS regressions to reduce

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<sup>23</sup> Coefficient of Variation (CV) means the variation among the analysts' forecasts, and we use CV as an alternate to dispersion and we find similar results under both cross-section and time series approaches of EM Calculation. Gu and Wu (2003) explain the two can be correlated but provide different measures of the uncertainty.

unobservable heterogeneity effect<sup>24</sup>. Fixed effect models also have limitations, for example returning the biased coefficients, type II errors, erroneous causal inferences error measurement among others (Hill, Davis, Roos, and French, 2020).

By using the panel dynamic GMM, we overcome these endogenous issues and it provides better and efficient results. It helps in solving the issues like heteroscedasticity, autocorrelation, fixed effects and not strictly exogenous independent variables (Roodman, 2009). Roodman (2009) gives the assumptions under which GMM is designed and works best, including the use of internal instruments based on their lagged values and does not assume the necessity to include external instruments, though the model allows the inclusion. In this study, we use the system GMM because of its acceptability of unbalanced panel dataset whereas difference GMM has some weaknesses in this regard.

For the purpose of system GMM estimations, we design two equations 8 and 9 to control for the serial correlation, which are the modified versions of equations 6 and 7 with the addition of lagged Pre\_IA, lagged EM for equation 6 and Post\_IA, and lagged EM for equation 7.

$$|Pre\_IA_{it}| = \alpha_0 + \alpha_1|Pre\_IA_{it-1}| + \alpha_2[EM_{it-1}] + \alpha_3[EM_{it}] + \alpha_4[GW I_{it}] + \alpha_5[OLC_{it}] + \alpha_6[RetOA_{it}] + \alpha_7[LOSS_{it}] + \alpha_8[PBValue_{it}] + \alpha_9[LEV_{it}] + \alpha_{10}[Log\_AF_{it}] + \alpha_{11}[AQ_{it}] + \epsilon_{it} \quad (8)$$

$$|Post\_IA_{it}| = \alpha'_0 + \alpha'_1|Post\_IA_{it-1}| + \alpha'_2[EM_{it-1}] + \alpha'_3[EM_{it}] + \alpha'_4[GW I_{it}] + \alpha'_5[OLC_{it}] + \alpha'_6[RetOA_{it}] + \alpha'_7[LOSS_{it}] + \alpha'_8[PBValue_{it}] + \alpha'_9[LEV_{it}] + \alpha'_{10}[Log\_AF_{it}] + \alpha'_{11}[AQ_{it}] + \epsilon'_{it} \quad (9)$$

*Where i represents firm and t years*

Table 1.7 shows the results from system GMM technique for Dispersion proxy of information asymmetry and the earnings management component. The inferences from the table 1.7 confer the positive relationship between EM of first lag and dispersion, while we also observe the positive relationship of lagged dispersion on the current year's dispersion. The primary

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<sup>24</sup> We run the OLS regressions with fixed effects on equation 6 and 7 with both proxies of information asymmetry and each EM component, and the results are similar. Please refer tables 1.10, 1.11 and 1.14 in appendix.

problematic of this study is to assess the informational value of the earnings announcement that should reduce the information asymmetry, which is evident from the results of table 1.7, the relationship of EM with dispersion decreases after the earnings announcement i.e. postdisclosure information asymmetry or Post\_Dispersion<sup>25</sup>. We also observe consistent negative relationship of EM of first lag with current year's information asymmetry that could explain phenomenon that analysts learn by doing and they get better in making accurate forecasts and have more information based on their experience and the availability of past firms' financial reports (Mikhail, Walther, and Willis, 1997).

Similarly as in Pooled OLS regressions, we have specified the expected signs from our control variables; overall, these results generate the desired results. Size proxies (PBValue, RetOA and Log\_AF) have negative coefficients, which is consistent with (Embong and Hosseini, 2018; Richardson, 2000; Yu, 2008). Chen et al. (2015) find the positive relationship of GWI with forecasts errors, and we expect the similar results because of the direct nature of forecast errors with information asymmetry. We expect and observe LEV to have positive sign similarly as Richardson (2000), and is inconsistent with (Abarbanell and Lehavy, 2003) who argue that high leveraged firms are less likely to engage in earnings management activities. Given existing literature, we expect AQ to have negative relationship with information asymmetry purely because of its nature. The firms, audited by big four audit firms, should present high quality financial reports and in turn, these reports should provide better informational value to the financial analysts.

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<sup>25</sup> We use Coefficient of Variation (CV) as our alternate proxy to dispersion for information asymmetry and we find consistent results with real earnings management but not with accruals earnings management.

Table 1.7: GMM Model - Dispersion

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
L.Pre_D	0.129***		0.131***		0.132***		0.133***		0.130***	
L.Post_D		0.146***		0.149***		0.110***		0.165***		0.132***
Abs_Kothari	0.053***	0.012*								
L.Abs_Kothari	-0.006**	-0.001								
Abs_Dechow			0.053***	0.013*						
L.Abs_Dechow			-0.007***	-0.0001						
Abs_CFO					0.023***	0.013***				
L.Abs_CFO					0.002	-0.002				
Abs_Prod							0.014***	0.005**		
L.Abs_Prod							-0.003**	-0.001		
Abs_Disexp									0.021***	0.008***
L.Abs_Disexp									-0.007***	-0.0004
GWI (+)	0.005	0.019***	0.006	0.019***	0.006**	0.025***	-0.001	0.018**	0.006	0.021***
OLC (+)	0.001	0.002	0.001	0.002	0.001	0.001	-0.002	-0.000	-0.003	-0.001
RetOA (-)	-0.007***	-0.005***	-0.007***	-0.005***	-0.007***	-0.003*	-0.008***	-0.004**	-0.006***	-0.002
LOSS (+)	0.000	0.001	0.000	0.000	0.001***	0.001**	0.002***	0.001**	0.002***	0.001***
PBValue (-)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000	-0.000*	-0.000***
LEV (+)	0.001	0.001*	0.001	0.001	0.000	0.001*	0.000	0.001*	0.001	0.002***
Log_AF (-)	-0.001**	-0.001**	-0.001**	-0.001**	-0.001***	-0.001***	-0.001**	-0.001**	-0.001	-0.001**
AQ (-)	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001*	-0.000	-0.001	-0.000
Constant (?)	0.001**	0.002***	0.001**	0.001***	0.003***	0.002***	0.002***	0.001**	0.002***	0.001*
Observations	5,613	5,613	5,617	5,617	5,788	5,788	5,781	5,781	5,790	5,790
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.143	0.369	0.138	0.377	0.451	0.182	0.510	0.236	0.590	0.163
Hansen test	0.196	0.320	0.218	0.223	0.153	0.465	0.181	0.158	0.0940	0.421
Difference-in-Hansen tests	0.257	0.117	0.341	0.147	0.649	0.721	0.235	0.259	0.071	0.929

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_D is the abbreviation for Pre\_Dispersion and Post\_D is for Post\_Dispersion.
3. Please refer table 1.2 for variable definitions.

Since there are few requirements to satisfy in order to use the dynamic system GMM model correctly, including no serial correlation of first order errors and higher order serial correlation and difference in Hansen tests of exogeneity (Roodman, 2009). Our results have consistently rejected the null hypothesis of no serial correlation of first order errors “AR(1)” with  $p$ -value of 0.000 across all the model specifications, which leads to AR(2) i.e. higher order serial correlation. The  $p$ -value of AR(2) is more than 5% showing no high order serial correlation issue. We also find  $p$ -values of more than 5% for Hansen and difference in Hansen’s over-identification tests, which indicate that the instruments used in the models are exogenous and generate reliable estimates.

#### **6.4 Robustness Check or Sensitivity Analyses**

Table 1.8 shows results from pooled OLS regressions on equations 6 and 7 with the second proxy of information asymmetry i.e. range as the robustness check. As results observed from the regressions on dispersion from table 1.6, we have similar evidences. The magnitude of EM has higher relationship with Pre\_Range than Post\_Range<sup>26</sup>. We observe the expected signs of all control variables except Log\_AF, which is only consistent with expected signs in the Post\_Range regressions with real earnings management.

Table 1.9 gives results from system GMM technique on equations 8 and 9 for the second proxy of information asymmetry i.e. Range. The results have again been consistent with our results in Table 1.7. Similarly, the relationship of EM is higher with Pre\_Range than with Post\_Range, showing earnings announcement reduces the information asymmetry and these results support

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<sup>26</sup> We also test the EM, calculated with the time series approach, to replicate the results and we find out the results do not differ from the results of EM in tables 1.6-1.9, calculated with cross-section approach.

our H1 and consistent with means of information asymmetries from predisclosure to postdisclosure as shown in table 1.3.

We carry out the additional tests by applying the similar technique as of Richardson (2000) to calculate EM with time series approach. For the purpose of coherency, we measure each EM component with time series regressions, and the results (appendix) correspond to our primary approach of measuring the EM with cross section industry-wise regressions.

## **7 Conclusion and Discussion**

The purpose of this study is to investigate the relationship between earnings management and the information asymmetry with US evidence. Richardson (2000) argues that the relationship exists between earnings management and information asymmetry in a way that when there is high level of information asymmetry, it reduces the access to information and consequently financial analysts are unable to monitor the firms. This leads to the firms practicing the earnings management. While Atiase and Bamber (1994) argues that information asymmetry exists due to the existence of public and private predisclosure information. The financial analysts with high degree of precision in acquiring private predisclosure information will have better insights as to firms' performances and their decision-making processes. Our study contributes to the existing literature in using the predisclosure information asymmetry along with postdisclosure information asymmetry. We observe that researchers put very little emphasis on the postdisclosure information asymmetry. Following (Atiase and Bamber, 1994), we test the effect of the magnitude of the earnings management on the information asymmetries from either side of the earnings announcement. Our extensive empirical analyses include the use of Pooled OLS and system GMM modelling to counter the reciprocity, heterogeneity and endogeneity problems.

Table 1.8: Multivariate Pooled OLS regression for Range

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
<b>Abs_Kothari</b>	<b>0.062***</b>	<b>0.043***</b>								
<b>Abs_Dechow</b>			<b>0.063***</b>	<b>0.044***</b>						
<b>Abs_CFO</b>					<b>0.057***</b>	<b>0.039***</b>				
<b>Abs_Prod</b>							<b>0.014***</b>	<b>0.008***</b>		
<b>Abs_Disexp</b>									<b>0.012***</b>	<b>0.004</b>
<b>GW</b> (+)	0.011	0.059***	0.011	0.059***	0.013	0.060***	0.008	0.057***	0.010	0.058***
<b>OLC</b> (+)	0.009**	0.004	0.009**	0.004	0.006	0.001	0.006	0.003	0.008*	0.005
<b>RetOA</b> (-)	-0.023***	-0.013**	-0.023***	-0.013**	-0.024***	-0.013**	-0.026***	-0.015***	-0.025***	-0.014**
<b>LOSS</b> (+)	0.005***	0.004***	0.005***	0.004***	0.005***	0.004***	0.006***	0.005***	0.006***	0.005***
<b>PBValue</b> (-)	-0.000***	-0.000*	-0.000***	-0.000*	-0.000**	-0.000	-0.000***	-0.000**	-0.000***	-0.000**
<b>LEV</b> (+)	0.005**	0.005**	0.005**	0.005**	0.003*	0.004**	0.006***	0.006***	0.006***	0.006***
<b>Log_AF</b> (-)	0.002**	0.000	0.002**	0.000	0.001*	-0.000	0.002*	-0.000	0.001*	-0.000
<b>AQ</b> (-)	-0.001	-0.000	-0.001	-0.000	-0.001	-0.001	-0.001	-0.000	-0.001	-0.000
<b>Constant</b> (?)	0.002*	0.003*	0.002*	0.003	0.003**	0.003*	0.004***	0.004**	0.004***	0.004***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	17.13%	10.71%	17.35%	10.85%	19.03%	11.50%	15.22%	9.63%	14.04%	9.15%
<b>Adjusted R<sup>2</sup></b>	17.02%	10.59%	17.24%	10.73%	18.92%	11.38%	15.10%	9.50%	13.93%	9.02%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_R is the abbreviation for Pre\_Range and Post\_R is for Post\_Range
3. Please refer table 1.2 for variable definitions.

Table 1.9: GMM Models – Range

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
L.Pre_R	<b>0.107***</b>		<b>0.098***</b>		<b>0.105***</b>		<b>0.111***</b>		<b>0.105***</b>	
L.Post_R		<b>0.180***</b>		<b>0.178***</b>		<b>0.161***</b>		<b>0.181***</b>		<b>0.175***</b>
Abs_Kothari	<b>0.147***</b>	<b>0.036*</b>								
L.Abs_Kothari	<b>-0.011</b>	<b>-0.001</b>								
Abs_Dechow			<b>0.172***</b>	<b>0.039**</b>						
L.Abs_Dechow			<b>-0.013</b>	<b>-0.001</b>						
Abs_CFO					<b>0.068***</b>	<b>0.044***</b>				
L.Abs_CFO					<b>0.003</b>	<b>-0.003</b>				
Abs_Prod							<b>0.026***</b>	<b>0.018***</b>		
L.Abs_Prod							<b>-0.002</b>	<b>-0.003</b>		
Abs_Disexp									<b>0.043***</b>	<b>0.025***</b>
L.Abs_Disexp									<b>-0.007</b>	<b>-0.004</b>
GWJ (+)	0.011	0.049***	0.008	0.050***	0.019*	0.054***	0.0004	0.046***	0.007	0.050***
OLC (+)	0.001	0.004	-0.002	0.003	0.0002	0.0004	-0.003	-0.003	-0.004	-0.004
RetOA (-)	-0.018***	-0.009***	-0.017***	-0.010***	-0.018***	-0.005	-0.025***	-0.008**	-0.022***	-0.005
LOSS (+)	0.001	0.002*	0.001	0.001	0.003***	0.003***	0.003***	0.003***	0.004***	0.003***
PBValue (-)	-0.000*	-0.000*	-0.000*	-0.000*	-0.000**	-0.000**	-0.0001***	-0.0001**	-0.0001***	-0.0001***
LEV (+)	-0.001	0.004**	-0.001	0.004**	-0.001	0.003**	-0.0002	0.003*	0.002	0.004**
Log_AF (-)	0.003***	0.001	0.004***	0.001	0.001*	0.0001	0.002***	0.001	0.003***	0.001
AQ (-)	-0.0002	-0.0002	-0.0002	-0.0003	-0.002	0.0000	-0.002*	-0.0004	-0.002	-0.0001
Constant (?)	-0.003	0.001	-0.004**	0.0003	0.002*	0.0004	0.002*	0.0003	0.001	-0.0004
Observations	5,613	5,613	5,617	5,617	5,788	5,788	5,781	5,781	5,790	5,790
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.418	0.391	0.480	0.394	0.781	0.216	0.722	0.221	0.715	0.208
Hansen test	0.373	0.487	0.429	0.403	0.113	0.519	0.0665	0.109	0.119	0.264
Difference-in-Hansen tests	0.107	0.234	0.079	0.229	0.226	0.679	0.234	0.120	0.533	0.966

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_R is the abbreviation for Pre\_Range and Post\_R is for Post\_Range.
3. Please refer table 1.2 for variable definitions.



We use two separate measures of information asymmetry (standard deviation of forecasts and Range of forecasts) and five different measures of earnings management (Accruals and Real Earnings Management) with two-fold empirical analyses including Pooled OLS and System GMM. The results have been very consistent and the evidences show that the earnings management induce the information asymmetry with the positive relationship. It is also evident that the predisclosure information asymmetry is higher than the postdisclosure information asymmetry, which leads to third hypothesis of our study that says, “Earnings announcement decreases the relationship between information and asymmetry and earnings management and consequently reduces information asymmetry”. Despite firms manage earnings and financial analysts being aware of the firms’ engagement in earnings management activities, the financial reports i.e. earnings announcement, provide enough informational value to the financial analysts to generate forecasts having less dispersion and variation i.e. convergent consensus.

This study contributes to the literature of postdisclosure information asymmetry, but it also has limitations. The main limitation of this study is the number of observations removed for keeping minimum three financial analysts following the firms. This does not reduce the sample size a lot but further studies on broader sample size like international firms will greatly help the inferences. This study includes mostly the firms with big four audit firms i.e. 91.56%. This is synonymous to bigger sized firms and this may limit its wider application and acceptability of generalization. Future studies may help answer these limitations and may open up more dimensions to the literature.

## Appendix 1

Table 1.10: Fixed Effect Panel Regression - Dispersion

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
Abs_Kothari	<b>0.019***</b>	<b>0.011***</b>								
Abs_Dechow			<b>0.019***</b>	<b>0.011***</b>						
Abs_CFO					<b>0.021***</b>	<b>0.014***</b>				
Abs_Prod							<b>0.013***</b>	<b>0.006***</b>		
Abs_Disexp									<b>0.014***</b>	<b>0.005*</b>
GWI (+)	0.009	0.022**	0.009	0.022**	0.009	0.022**	0.007	0.021**	0.009	0.022**
OLC (+)	0.011***	0.004	0.011***	0.004	0.010***	0.003	0.008***	0.003	0.008**	0.004
RetOA (-)	-0.009***	-0.012***	-0.009***	-0.012***	-0.009***	-0.012***	-0.010***	-0.013***	-0.009***	-0.012***
LOSS (+)	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.000
PBValue (-)	-	-	-	-	-	-	-	-	-	-
LEV (+)	0.002	-0.003	0.002	-0.003	0.002	-0.002	0.001	-0.003	0.001	-0.003
Log_AF (-)	-0.006***	-0.005***	-0.006***	-0.005***	-0.005***	-0.005***	-0.004***	-0.004***	-0.005***	-0.005***
AQ (-)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
Constant (?)	0.007***	0.008***	0.007***	0.008***	0.007***	0.007***	0.006***	0.007***	0.007***	0.008***
Observations	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
R <sup>2</sup>	10.6%	8.1%	10.5%	8.1%	11.7%	8.5%	13.0%	8.3%	11.1%	7.8%
Adjusted R <sup>2</sup>	10.4%	8.00%	10.4%	8.02%	11.6%	8.43%	12.9%	8.22%	11.0%	7.71%

## Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_D is the abbreviation for Pre\_Dispersion and Post\_D is for Post\_Dispersion.
3. Please refer table 1.2 for variable definitions.

Table 1.11: Fixed Effect Panel Regression - Range

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
<b>Abs_Kothari</b>	<b>0.047***</b>	<b>0.032***</b>								
<b>Abs_Dechow</b>			<b>0.045***</b>	<b>0.031***</b>						
<b>Abs_CFO</b>					<b>0.049***</b>	<b>0.031***</b>				
<b>Abs_Prod</b>							<b>0.028***</b>	<b>0.014***</b>		
<b>Abs_Disexp</b>									<b>0.031***</b>	<b>0.012**</b>
<b>GW</b> (+)	0.015	0.048**	0.014	0.048**	0.016	0.049**	0.011	0.046**	0.016	0.048**
<b>OLC</b> (+)	0.027***	0.011	0.027***	0.011	0.024***	0.009	0.022***	0.009	0.021***	0.010
<b>RetOA</b> (-)	-0.024***	-0.024***	-0.024***	-0.024***	-0.024***	-0.025***	-0.026***	-0.026***	-0.023***	-0.025***
<b>LOSS</b> (+)	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
<b>PBValue</b> (-)	-	-	-	-	-	-	-	-	-	-
<b>LEV</b> (+)	0.002	-0.006	0.002	-0.006	0.003	-0.006	0.002	-0.007	0.002	-0.006
<b>Log_AF</b> (-)	-0.008***	-0.009***	-0.008***	-0.009***	-0.007***	-0.009***	-0.006***	-0.008***	-0.007***	-0.009***
<b>AQ</b> (-)	-0.000	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
<b>Constant</b> (?)	0.013***	0.016***	0.013***	0.016***	0.011***	0.015***	0.009***	0.014***	0.011***	0.016***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	10.6%	7.5%	10.4%	7.5%	11.5%	7.6%	12.2%	7.4%	10.6%	6.9%
<b>Adjusted R<sup>2</sup></b>	10.5%	7.39%	10.3%	7.38%	11.3%	7.50%	12.1%	7.31%	10.5%	6.81%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Pre\_R* is the abbreviation for *Pre\_Range* and *Post\_R* is for *Post\_Range*.
3. Please refer table 1.2 for variable definitions.

Table 1.12: Multivariate Pooled OLS regression for Coefficient of Variation (CV)

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
<b>Abs_Kothari</b>	<b>0.055***</b>	<b>0.025***</b>								
<b>Abs_Dechow</b>			<b>0.056***</b>	<b>0.024***</b>						
<b>Abs_CFO</b>					<b>0.049***</b>	<b>0.016***</b>				
<b>Abs_Prod</b>							<b>0.011**</b>	<b>0.003</b>		
<b>Abs_Disexp</b>									<b>0.011*</b>	<b>0.001</b>
<b>GW (+)</b>	-0.014	0.041**	-0.015	0.041**	-0.013	0.041**	-0.017	0.040**	-0.016	0.041**
<b>OLC (+)</b>	0.019*	0.005	0.019*	0.006	0.016*	0.005	0.017*	0.006	0.018*	0.007*
<b>RetOA (-)</b>	-0.006	-0.002	-0.006	-0.002	-0.006	-0.003	-0.008	-0.003	-0.007	-0.003
<b>LOSS (+)</b>	0.017***	0.008***	0.017***	0.008***	0.017***	0.008***	0.018***	0.008***	0.018***	0.008***
<b>PBValue (-)</b>	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000
<b>LEV (+)</b>	0.006	0.003	0.006	0.002	0.005	0.002	0.007	0.003	0.007	0.003
<b>Log_AF (-)</b>	-0.010***	-0.005***	-0.010***	-0.005***	-0.010***	-0.005***	-0.010***	-0.005***	-0.010***	-0.005***
<b>AQ (-)</b>	-0.006**	-0.003**	-0.006**	-0.003**	-0.006**	-0.003**	-0.006**	-0.003**	-0.006**	-0.003**
<b>Constant (?)</b>	0.016***	0.009***	0.016***	0.009***	0.016***	0.010***	0.017***	0.010***	0.017***	0.010***
<b>Observations</b>	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666
<b>R<sup>2</sup></b>	7.6%	6.9%	7.6%	6.9%	7.8%	6.8%	7.2%	6.6%	7.1%	6.5%
<b>Adjusted R<sup>2</sup></b>	7.45%	6.82%	7.47%	6.80%	7.66%	6.69%	7.09%	6.47%	6.96%	6.41%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.

Table 1.13: GMM Model - Coefficient of Variation

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
L.EACV	<b>0.033***</b>		<b>0.035***</b>		<b>0.028***</b>		<b>0.016***</b>		<b>0.009*</b>	
L.EPCV		<b>0.144***</b>		<b>0.150***</b>		<b>0.172***</b>		<b>0.167***</b>		<b>0.173***</b>
Abs_Kothari	<b>0.014</b>	<b>0.061***</b>								
L.Abs_Kothari	<b>-0.004</b>	<b>-0.001</b>								
Abs_Dechow			<b>0.008</b>	<b>0.057***</b>						
L.Abs_Dechow			<b>-0.004</b>	<b>-0.000</b>						
Abs_CFO					<b>0.064***</b>	<b>0.024**</b>				
L.Abs_CFO					<b>-0.004</b>	<b>0.011</b>				
Abs_Prod							<b>0.029***</b>	<b>0.009*</b>		
L.Abs_Prod							<b>-0.002</b>	<b>-0.000</b>		
Abs_Disexp									<b>0.042***</b>	<b>0.014**</b>
L.Abs_Disexp									<b>-0.010**</b>	<b>-0.005</b>
GW (+)	-0.023*	0.030***	-0.029**	0.029***	-0.005	0.031***	-0.025	0.033***	-0.024*	0.032***
OLC (+)	0.004	-0.002	0.005	-0.001	0.002	-0.001	-0.004	-0.001	-0.003	-0.003
RetOA (-)	-0.008	-0.001	-0.008	-0.001	-0.009	0.001	-0.011	-0.002	-0.001	-0.000
LOSS (+)	0.014***	0.004***	0.015***	0.004***	0.011***	0.005***	0.012***	0.005***	0.014***	0.006***
PBValue (-)	-0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000*
LEV (+)	0.004	0.001	0.004	0.001	0.001	0.001	0.001	0.001	0.003	0.002
Log_AF (-)	-0.003**	-0.002***	-0.003**	-0.002***	-0.004***	-0.003***	-0.004**	-0.003***	-0.003**	-0.003***
AQ (-)	-0.003*	-0.001	-0.003*	-0.001	-0.002	-0.002	-0.003*	-0.002	-0.004**	-0.002
Constant (?)	0.008***	0.002	0.008***	0.002	0.005**	0.003**	0.007***	0.005***	0.006**	0.005***
Observations	5,610	5,610	5,614	5,614	5,785	5,785	5,778	5,778	5,787	5,787
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.559	0.165	0.556	0.133	0.310	0.0481	0.335	0.0785	0.383	0.0698
Hansen test	0.100	0.926	0.0911	0.933	0.285	0.482	0.171	0.568	0.0765	0.551

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.

Table 1.14: Fixed Effect Panel Regression - Coefficient of Variation

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
<b>Abs_Kothari</b>	<b>0.043**</b>	<b>0.029***</b>								
<b>Abs_Dechow</b>			<b>0.043**</b>	<b>0.028***</b>						
<b>Abs_CFO</b>					<b>0.042***</b>	<b>0.021***</b>				
<b>Abs_Prod</b>							<b>0.037***</b>	<b>0.011***</b>		
<b>Abs_Disexp</b>									<b>0.048***</b>	<b>0.016**</b>
<b>GWV (+)</b>	-0.039	0.031*	-0.039	0.031*	-0.038	0.032*	-0.043	0.030	-0.037	0.032*
<b>OLC (+)</b>	0.043***	0.005	0.043***	0.005	0.042***	0.005	0.034**	0.004	0.031*	0.002
<b>RetOA (-)</b>	-0.025*	-0.019**	-0.025*	-0.019**	-0.025*	-0.019**	-0.027**	-0.020***	-0.024*	-0.019**
<b>LOSS (+)</b>	0.009**	0.004**	0.009**	0.004**	0.009***	0.004**	0.009***	0.004**	0.009**	0.004**
<b>PBValue (-)</b>	-	-	-	-	-	-	-	-	-	-
<b>LEV (+)</b>	0.010	-0.008*	0.010	-0.008*	0.011	-0.007	0.009	-0.008*	0.009	-0.008*
<b>Log_AF (-)</b>	-0.016***	-0.010***	-0.016***	-0.010***	-0.016***	-0.010***	-0.012***	-0.010***	-0.014***	-0.010***
<b>AQ (-)</b>	0.008	0.001	0.008	0.001	0.007	0.001	0.008	0.001	0.007	0.001
<b>Constant (?)</b>	0.011	0.014***	0.011	0.014***	0.010	0.014***	0.005	0.013***	0.006	0.013***
<b>Observations</b>	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666
<b>R<sup>2</sup></b>	3.8%	4.6%	3.8%	4.5%	3.8%	4.4%	4.7%	4.4%	4.5%	4.4%
<b>Adjusted R<sup>2</sup></b>	3.67%	4.45%	3.66%	4.40%	3.72%	4.25%	4.58%	4.30%	4.40%	4.31%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.

Table 1.15: Multivariate Pooled OLS regression for Dispersion – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
<b>Abs_Kothari</b>	<b>0.024***</b>	<b>0.017***</b>								
<b>Abs_Dechow</b>			<b>0.024***</b>	<b>0.017***</b>						
<b>Abs_CFO</b>					<b>0.016***</b>	<b>0.010***</b>				
<b>Abs_Prod</b>							<b>0.005***</b>	<b>0.002***</b>		
<b>Abs_Disexp</b>									<b>0.007***</b>	<b>0.004***</b>
<b>GW (+)</b>	0.006	0.027***	0.006	0.027***	0.007	0.028***	0.005	0.027***	0.005	0.027***
<b>OLC (+)</b>	0.004**	0.002	0.004**	0.002	0.002	0.001	0.003	0.002	0.002	0.001
<b>RetOA (-)</b>	-0.010***	-0.007**	-0.011***	-0.007**	-0.011***	-0.007**	-0.012***	-0.008***	-0.011***	-0.007***
<b>LOSS (+)</b>	0.002***	0.001**	0.002***	0.001**	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
<b>PBValue (-)</b>	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
<b>LEV (+)</b>	0.002**	0.002*	0.002**	0.002*	0.002*	0.002*	0.002**	0.002**	0.003***	0.002**
<b>Log_AF (-)</b>	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
<b>AQ (-)</b>	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001	-0.000
<b>Constant (?)</b>	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	18.1%	11.6%	18.1%	11.6%	18.7%	11.4%	16.7%	10.5%	17.3%	10.8%
<b>Adjusted R<sup>2</sup></b>	18.0%	11.4%	18.0%	11.4%	18.6%	11.2%	16.6%	10.4%	17.2%	10.7%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Pre\_D* is the abbreviation for *Pre\_Dispersion* and *Post\_D* is for *Post\_Dispersion*.
3. Please refer table 1.2 for variable definitions.

Table 1.16: GMM Model for Dispersion - Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
L.Pre_D	0.122***		0.122***		0.129***		0.108***		0.166***	
L.Post_D		0.133***		0.132***		0.117***		0.148***		0.145***
Abs_Kothari	0.051***	0.011**								
L.Abs_Kothari	-0.003	0.002								
Abs_Dechow			0.051***	0.011**						
L.Abs_Dechow			-0.003	0.002						
Abs_CFO					0.016***	0.010***				
L.Abs_CFO					0.005*	-0.002				
Abs_Prod							0.016***	0.006***		
L.Abs_Prod							-0.003	-0.000		
Abs_Disexp									0.015***	0.006***
L.Abs_Disexp									-0.005***	-0.003***
GWJ (+)	0.010**	0.019***	0.010**	0.019***	0.010**	0.021***	0.001	0.019***	0.006*	0.018***
OLC (+)	0.001	0.002**	0.001	0.002**	-0.000	0.001	-0.004*	-0.001	0.000	0.000
RetOA (-)	-0.006***	-0.004*	-0.006***	-0.004*	-0.006***	-0.003*	-0.008***	-0.003*	-0.006***	-0.003*
LOSS (+)	0.000	0.001*	0.000	0.001*	0.001***	0.001***	0.002***	0.001**	0.001***	0.001**
PBValue (-)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000	-0.000	-0.000**
LEV (+)	0.001	0.001*	0.001	0.001*	0.000	0.002**	0.001	0.002**	0.001**	0.002***
Log_AF (-)	-0.001***	-0.001**	-0.001***	-0.001**	-0.001***	-0.001***	-0.000	-0.001*	-0.001*	-0.001**
AQ (-)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001**	-0.000	-0.001	-0.000
Constant (?)	0.001**	0.001**	0.001**	0.001**	0.002***	0.002***	0.002**	0.001	0.002**	0.001**
Observations	5,613	5,613	5,617	5,617	5,788	5,788	5,781	5,781	5,790	5,790
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.167	0.332	0.169	0.330	0.575	0.199	0.694	0.217	0.345	0.203
Hansen test	0.641	0.294	0.651	0.291	0.275	0.448	0.259	0.485	0.172	0.326

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_D is the abbreviation for Pre\_Dispersion and Post\_D is for Post\_Dispersion.
3. Please refer table 1.2 for variable definitions.



Table 1.17: Multivariate Pooled Regression for Range - Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
<b>Abs_Kothari</b>	<b>0.059***</b>	<b>0.043***</b>								
<b>Abs_Dechow</b>			<b>0.059***</b>	<b>0.044***</b>						
<b>Abs_CFO</b>					<b>0.041***</b>	<b>0.025***</b>				
<b>Abs_Prod</b>							<b>0.012***</b>	<b>0.007***</b>		
<b>Abs_Disexp</b>									<b>0.018***</b>	<b>0.011***</b>
<b>GW</b> I (+)	0.012	0.059***	0.012	0.059***	0.012	0.059***	0.009	0.058***	0.009	0.057***
<b>OLC</b> (+)	0.010**	0.004	0.010**	0.004	0.006	0.002	0.007	0.003	0.006	0.002
<b>RetOA</b> (-)	-0.023***	-0.013**	-0.023***	-0.013**	-0.023***	-0.013**	-0.026***	-0.015**	-0.025***	-0.014**
<b>LOSS</b> (+)	0.004***	0.004***	0.004***	0.004***	0.005***	0.005***	0.006***	0.005***	0.006***	0.005***
<b>PBValue</b> (-)	-0.000***	-0.000	-0.000***	-0.000	-0.000*	-0.000	-0.000***	-0.000*	-0.000***	-0.000*
<b>LEV</b> (+)	0.005**	0.005**	0.005**	0.005**	0.004**	0.005**	0.006***	0.006***	0.007***	0.007***
<b>Log_AF</b> (-)	0.002**	0.000	0.002**	0.000	0.001	-0.000	0.002*	-0.000	0.002**	0.000
<b>AQ</b> (-)	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001
<b>Constant</b> (?)	0.002*	0.002	0.002*	0.002	0.002*	0.003**	0.003**	0.004**	0.002*	0.003*
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	17.2%	11.0%	17.2%	11.0%	18.2%	10.7%	15.9%	9.8%	16.3%	10.0%
<b>Adjusted R<sup>2</sup></b>	17.1%	10.9%	17.1%	10.9%	18.1%	10.6%	15.7%	9.64%	16.2%	9.91%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_R is the abbreviation for Pre\_Range and Post\_R is for Post\_Range
3. Please refer table 1.2 for variable definitions.

Table 1.18: GMM Models for Range - Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
L.Pre_R	<b>0.093***</b>		<b>0.095***</b>		<b>0.097***</b>		<b>0.089***</b>		<b>0.109***</b>	
L.Post_R		<b>0.169***</b>		<b>0.168***</b>		<b>0.171***</b>		<b>0.175***</b>		<b>0.170***</b>
Abs_Kothari	<b>0.135***</b>	<b>0.035***</b>								
L.Abs_Kothari	<b>-0.003</b>	<b>0.006</b>								
Abs_Dechow			<b>0.137***</b>	<b>0.035***</b>						
L.Abs_Dechow			<b>-0.003</b>	<b>0.006</b>						
Abs_CFO					<b>0.060***</b>	<b>0.036***</b>				
L.Abs_CFO					<b>0.005</b>	<b>-0.005</b>				
Abs_Prod							<b>0.047***</b>	<b>0.022***</b>		
L.Abs_Prod							<b>-0.012**</b>	<b>-0.004</b>		
Abs_Disexp									<b>0.035***</b>	<b>0.019***</b>
L.Abs_Disexp									<b>-0.006*</b>	<b>-0.007***</b>
GWJ (+)	0.015	0.045***	0.015	0.045***	0.018	0.047***	0.014	0.043***	0.008	0.043***
OLC (+)	0.001	0.004*	0.001	0.004*	-0.003	-0.001	-0.009	-0.004	-0.000	-0.000
RetOA (-)	-0.014***	-0.006*	-0.014***	-0.006*	-0.018***	-0.004	-0.022***	-0.008*	-0.020***	-0.007*
LOSS (+)	0.001	0.002*	0.001	0.002*	0.003***	0.003***	0.004***	0.003***	0.003***	0.002**
PBValue (-)	-0.000**	-0.000**	-0.000*	-0.000**	-0.000	-0.000*	-0.000	-0.000*	-0.000**	-0.000***
LEV (+)	0.000	0.004**	-0.000	0.004**	-0.002	0.003**	0.001	0.004**	0.003*	0.005***
Log_AF (-)	0.003***	0.001	0.003***	0.001	0.002*	-0.000	0.004***	0.001*	0.003***	0.001
AQ (-)	-0.000	-0.000	-0.000	-0.000	-0.001	0.000	-0.002**	-0.000	-0.001	-0.000
Constant (?)	-0.003	0.000	-0.003*	0.000	0.001	0.001	-0.001	-0.001	-0.000	0.000
Observations	5,613	5,613	5,617	5,617	5,788	5,788	5,781	5,781	5,790	5,790
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.557	0.377	0.557	0.371	0.929	0.248	0.967	0.217	0.656	0.208
Hansen test	0.484	0.323	0.505	0.330	0.154	0.423	0.222	0.423	0.0247	0.217

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Pre\_R is the abbreviation for Pre\_Range and Post\_R is for Post\_Range.
3. Please refer table 1.2 for variable definitions.

Table 1.19: Fixed Effect Panel regression for Dispersion - Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D	Pre_D	Post_D
<b>Abs_Kothari</b>	<b>0.018***</b>	<b>0.012***</b>								
<b>Abs_Dechow</b>			<b>0.018***</b>	<b>0.012***</b>						
<b>Abs_CFO</b>					<b>0.022***</b>	<b>0.012***</b>				
<b>Abs_Prod</b>							<b>0.012***</b>	<b>0.005**</b>		
<b>Abs_Disexp</b>									<b>0.014***</b>	<b>0.008***</b>
<b>GWJ (+)</b>	0.009	0.022**	0.009	0.022**	0.010	0.022**	0.010	0.022**	0.009	0.022**
<b>OLC (+)</b>	0.011***	0.004	0.011***	0.004	0.009***	0.004	0.008***	0.004	0.008**	0.002
<b>RetOA (-)</b>	-0.009***	-0.012***	-0.009***	-0.012***	-0.009***	-0.012***	-0.010***	-0.012***	-0.009***	-0.012***
<b>LOSS (+)</b>	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000
<b>PBValue (-)</b>	-	-	-	-	-	-	-	-	-	-
<b>LEV (+)</b>	0.002	-0.003	0.002	-0.003	0.002	-0.003	0.001	-0.003	0.001	-0.003
<b>Log_AF (-)</b>	-0.006***	-0.005***	-0.006***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***
<b>AQ (-)</b>	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
<b>Constant (?)</b>	0.007***	0.008***	0.007***	0.008***	0.006***	0.007***	0.005***	0.007***	0.006***	0.007***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	10.6%	8.3%	10.6%	8.3%	13.1%	8.5%	13.5%	8.2%	12.4%	8.5%
<b>Adjusted R<sup>2</sup></b>	10.5%	8.19%	10.4%	8.19%	13.0%	8.40%	13.4%	8.12%	12.3%	8.40%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Pre\_D* is the abbreviation for *Pre\_Dispersion* and *Post\_D* is for *Post\_Dispersion*.
3. Please refer table 1.2 for variable definitions.

Table 1.20: Fixed Effect Panel regression for Range - Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R	Pre_R	Post_R
<b>Abs_Kothari</b>	<b>0.044***</b>	<b>0.032***</b>								
<b>Abs_Dechow</b>			<b>0.044***</b>	<b>0.032***</b>						
<b>Abs_CFO</b>					<b>0.053***</b>	<b>0.026***</b>				
<b>Abs_Prod</b>							<b>0.028***</b>	<b>0.012**</b>		
<b>Abs_Disexp</b>									<b>0.031***</b>	<b>0.018***</b>
<b>GW</b> (+)	0.015	0.048**	0.015	0.048**	0.017	0.049**	0.016	0.049**	0.015	0.048**
<b>OLC</b> (+)	0.027***	0.011	0.027***	0.011	0.023***	0.010	0.021***	0.010	0.020***	0.007
<b>RetOA</b> (-)	-0.023***	-0.024***	-0.023***	-0.024***	-0.023***	-0.024***	-0.024***	-0.025***	-0.023***	-0.024***
<b>LOSS</b> (+)	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.002
<b>PBValue</b> (-)	-	-	-	-	-	-	-	-	-	-
<b>LEV</b> (+)	0.002	-0.006	0.002	-0.006	0.003	-0.006	0.002	-0.006	0.002	-0.007
<b>Log_AF</b> (-)	-0.008***	-0.009***	-0.008***	-0.009***	-0.007***	-0.009***	-0.005***	-0.008***	-0.006***	-0.008***
<b>AQ</b> (-)	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.000	-0.001	-0.001	-0.001
<b>Constant</b> (?)	0.013***	0.016***	0.013***	0.016***	0.010***	0.015***	0.008***	0.014***	0.010***	0.014***
<b>Observations</b>	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669	6,669
<b>R<sup>2</sup></b>	10.6%	7.6%	10.6%	7.6%	13.1%	7.6%	13.3%	7.4%	12.0%	7.6%
<b>Adjusted R<sup>2</sup></b>	10.5%	7.52%	10.5%	7.51%	13.0%	7.46%	13.2%	7.27%	11.9%	7.52%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Pre\_R* is the abbreviation for *Pre\_Range* and *Post\_R* is for *Post\_Range*.
3. Please refer table 1.2 for variable definitions.

**Table 1.21: Multivariate Pooled OLS regression for Coefficient of Variation - Time Series Earnings Management**

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
<b>Abs_Kothari</b>	<b>0.057***</b>	<b>0.028***</b>								
<b>Abs_Dechow</b>			<b>0.057***</b>	<b>0.028***</b>						
<b>Abs_CFO</b>					<b>0.035***</b>	<b>0.014***</b>				
<b>Abs_Prod</b>							<b>0.011***</b>	<b>0.003*</b>		
<b>Abs_Disexp</b>									<b>0.023***</b>	<b>0.006**</b>
<b>GW</b> (+)	-0.014	0.041**	-0.014	0.041**	-0.014	0.041**	-0.016	0.040**	-0.018	0.040**
<b>OLC</b> (+)	0.019*	0.005	0.019*	0.005	0.017*	0.005	0.017*	0.005	0.012	0.004
<b>RetOA</b> (-)	-0.005	-0.002	-0.005	-0.002	-0.006	-0.002	-0.008	-0.003	-0.007	-0.003
<b>LOSS</b> (+)	0.017***	0.007***	0.017***	0.007***	0.017***	0.008***	0.018***	0.008***	0.018***	0.008***
<b>PBValue</b> (-)	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000
<b>LEV</b> (+)	0.006	0.002	0.006	0.002	0.005	0.002	0.007	0.003	0.008	0.003
<b>Log_AF</b> (-)	-0.010***	-0.005***	-0.010***	-0.005***	-0.010***	-0.005***	-0.010***	-0.005***	-0.009***	-0.005***
<b>AQ</b> (-)	-0.006*	-0.003*	-0.006*	-0.003*	-0.006**	-0.003**	-0.006**	-0.003**	-0.007**	-0.004**
<b>Constant</b> (?)	0.016***	0.009***	0.016***	0.009***	0.016***	0.009***	0.017***	0.010***	0.015***	0.009***
<b>Observations</b>	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666
<b>R<sup>2</sup></b>	7.7%	7.1%	7.7%	7.1%	7.7%	6.9%	7.3%	6.7%	8.0%	6.8%
<b>Adjusted R<sup>2</sup></b>	7.56%	6.99%	7.56%	6.99%	7.54%	6.76%	7.22%	6.54%	7.88%	6.65%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.

Table 1.22: GMM Model for Coefficient of Variation – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
L.EACV	<b>0.027***</b>		<b>0.027***</b>		<b>0.019***</b>		<b>-0.000</b>		<b>0.020***</b>	
L.EPCV		<b>0.163***</b>		<b>0.163***</b>		<b>0.166***</b>		<b>0.161***</b>		<b>0.175***</b>
Abs_Kothari	<b>0.088***</b>	<b>0.079***</b>								
L.Abs_Kothari	<b>-0.011</b>	<b>-0.002</b>								
Abs_Dechow			<b>0.086***</b>	<b>0.078***</b>						
L.Abs_Dechow			<b>-0.011</b>	<b>-0.002</b>						
Abs_CFO					<b>0.058***</b>	<b>0.017**</b>				
L.Abs_CFO					<b>-0.003</b>	<b>0.009*</b>				
Abs_Prod							<b>0.040***</b>	<b>0.012***</b>		
L.Abs_Prod							<b>-0.009**</b>	<b>-0.000</b>		
Abs_Disexp									<b>0.028***</b>	<b>0.011**</b>
L.Abs_Disexp									<b>0.004</b>	<b>-0.004</b>
GWJ (+)	-0.036***	0.039***	-0.035***	0.039***	0.009	0.035***	-0.021	0.040***	-0.033**	0.040***
OLC (+)	0.001	-0.002	0.001	-0.002	-0.001	-0.002	-0.008	-0.005*	-0.005	-0.003
RetOA (-)	-0.000	0.002	-0.000	0.002	-0.010	-0.000	-0.012*	-0.002	-0.004	-0.000
LOSS (+)	0.013***	0.005***	0.013***	0.005***	0.010***	0.005***	0.012***	0.005***	0.014***	0.005***
PBValue (-)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000
LEV (+)	0.003	-0.001	0.003	-0.001	0.002	0.002	0.004	0.002	0.002	0.003*
Log_AF (-)	-0.003*	-0.002***	-0.003*	-0.002***	-0.004***	-0.003***	-0.002	-0.002**	-0.003**	-0.003***
AQ (-)	-0.002	-0.001	-0.002	-0.001	-0.003	-0.001	-0.004**	-0.002	-0.003*	-0.002
Constant (?)	0.004	0.001	0.004	0.001	0.006**	0.003**	0.005*	0.003**	0.004*	0.004***
Observations	5,610	5,610	5,614	5,614	5,785	5,785	5,778	5,778	5,787	5,787
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.620	0.0359	0.618	0.0359	0.329	0.0472	0.407	0.129	0.380	0.0570
Hansen test	0.127	0.900	0.127	0.896	0.226	0.450	0.207	0.423	0.0804	0.552

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.

Table 1.23: Fixed Effect Panel Regression for Coefficient of Variation – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV	EACV	EPCV
<b>Abs_Kothari</b>	<b>0.040**</b>	<b>0.029***</b>								
<b>Abs_Dechow</b>			<b>0.041**</b>	<b>0.029***</b>						
<b>Abs_CFO</b>					<b>0.046***</b>	<b>0.023***</b>				
<b>Abs_Prod</b>							<b>0.034***</b>	<b>0.014***</b>		
<b>Abs_Disexp</b>									<b>0.055***</b>	<b>0.021***</b>
<b>GW</b> (+)	-0.039	0.032*	-0.039	0.031*	-0.037	0.032*	-0.037	0.032*	-0.038	0.032*
<b>OLC</b> (+)	0.044***	0.005	0.044***	0.005	0.041***	0.004	0.034**	0.002	0.025	-0.000
<b>RetOA</b> (-)	-0.024*	-0.019**	-0.024*	-0.019**	-0.024*	-0.019**	-0.025*	-0.019**	-0.023*	-0.019**
<b>LOSS</b> (+)	0.009**	0.004**	0.009**	0.004**	0.009***	0.004**	0.009***	0.004**	0.008**	0.004*
<b>PBValue</b> (-)	-	-	-	-	-	-	-	-	-	-
<b>LEV</b> (+)	0.010	-0.008*	0.010	-0.008*	0.011	-0.008*	0.009	-0.008*	0.009	-0.008*
<b>Log_AF</b> (-)	-0.016***	-0.010***	-0.016***	-0.010***	-0.015***	-0.010***	-0.013***	-0.009***	-0.012***	-0.009***
<b>AQ</b> (-)	0.007	0.001	0.007	0.001	0.007	0.001	0.008	0.001	0.008	0.001
<b>Constant</b> (?)	0.011	0.014***	0.011	0.014***	0.008	0.013***	0.004	0.012***	0.002	0.011**
<b>Observations</b>	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666	6,667	6,666
<b>R<sup>2</sup></b>	3.8%	4.6%	3.8%	4.6%	4.1%	4.6%	4.7%	4.7%	5.6%	5.0%
<b>Adjusted R<sup>2</sup></b>	3.65%	4.51%	3.65%	4.51%	3.97%	4.46%	4.59%	4.63%	5.48%	4.87%

**Note:**

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. EACV is the abbreviation for Pre Coefficient of Variation and EPCV is for Post Coefficient of Variation.
3. Please refer table 1.2 for variable definitions.





## **CHAPTER 2: DO ANALYSTS PREDICT MANAGED OR UNMANAGED EARNINGS?**

**Abstract:** Numerous studies have found that accurate forecasts reward financial analysts to maintain their reputation, while others suggest financial analysts predict unmanaged earnings. Accurate forecasts, in the literature, means analysts predict reported earnings so to reduce earnings surprises.

Firms manage earnings given their targets including, most importantly, financial analysts' predictions. Our research analyses brokers' post-disclosure actual estimates to find out their intentions to predict managed or unmanaged earnings.

Our results suggest that analysts predict the reported earnings (managed earnings) in order to be accurate and to minimize earnings surprises. Results also suggest brokers' actual estimates closely reflect managed earnings and forecast errors from managed earnings are distributed closer to zero than forecast errors from unmanaged earnings.

**Keywords:** Analysts Forecasts, Earnings Management, Unmanaged Earnings, Discretionary Accruals, Real Earnings Management

**JEL Classification:** M1; M4; M41

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## **1 Introduction**

### **1.1 Research Questions and Importance**

Since the 1990s, considered as the “Age of the Analysts” by Hong and Kubik (2003), exceeding reliance by potential investors on financial predictions has put a greater burden on financial analysts to accurately predict firms’ earnings or to reflect precisely true earnings. We investigate whether analysts are able to anticipate firms’ decisions to manage earnings. Considering firms attempt to manage earnings to meet or beat the forecasts (Abarbanell and Lehavy, 2003), before the earnings announcement (pre-disclosure), these may rarely be accurate. It becomes a challenge for them to anticipate the potential earnings manipulation by the firms’ management to reflect unmanaged earnings. These inaccurate predictions (earnings surprises) lead analysts to adjust their pre-disclosure (hereafter ex-ante) forecast and make another post-disclosure (hereafter ex-post) forecast, which is considered to be a true reflection of the unmanaged earnings or in other words “Convergent Consensus” (Aubert and Grudnitski, 2012).

The purpose of this study is to assess the intentions of analysts to predict managed or unmanaged earnings. With the widely accepted assumption of firms managing their earnings to meet or beat targets including analysts’ predictions (Abarbanell and Lehavy, 2003; Courteau et al., 2011), we believe and posit ex-post forecasts to be the true proxy for analysts’ intention of predicting earnings. The reason behind this postulate is that after the firms have reported their earnings, analysts have enough information about the firms’ performance. They are in a position to identify the true earnings, considering this situation ex-post forecast can really lead us to understand their intentions of predictions. The main purpose of this study is to analyze the two forecasts by financial analysts on either side of an earnings announcement. It is to assess whether financial analysts’ predictions reflect managed or unmanaged earnings. To answer this,

and being the major contribution of our study, we introduce the use of the ex-post forecast as the metric to determine the intentions of the financial analysts.

Abarbanell and Lehavy (2003) discuss the firms' actions of managing earnings to meet or beat the forecasts, and indicate that ex-ante forecasts can trigger managements' decisions to use discretionary powers to manage earnings and to avoid any uncertainty among the potential investors and other stakeholders about the performance of the firms. Financial analysts, while making forecasts, use the available data from the past performances and firms' current public data (including contracts, covenants, legal matters, take-overs, government regulations etc.) to reflect the actual performance of the firms (Abarbanell and Lehavy, 2003). It remains to see whether financial analysts, knowing that the firms target the forecasts to manage the earnings while taking into account past performance, still predict the unmanaged earnings. An answer to this lies in the analysts' intentions and incentives to predict the earnings but considering their reputation and job security are at stake, their best option is to predict the reported performance of the firm accurately to stay and succeed in the market (Burgstahler and Eames, 2003; Courteau et al., 2011; Schipper, 1991). Therefore, our study focuses on the possibility that the financial analysts predict the earnings "ex-ante forecasts", which should reflect actual performance of the firms. However, firms' reactions to manage earnings based on these predictions give rise to forecast errors (i.e. earnings surprises) and eventually give financial analysts a reason to make another forecast i.e. "ex-post forecasts" to either remove the forecast errors to arrive at reported earnings or remove the earnings management component for unmanaged earnings. Our study provides compelling empirical evidence to suggest that analysts intend to predict managed earnings through comparative analyses of ex-ante and ex-post forecasts (Burgstahler and Eames, 2003).

Figure 2.1 shows, graphically, the two forecasts that we use in our empirical analyses. We use 45-days ex-ante forecasts because closer windows will have more bias due to higher

information asymmetry among analysts. For ex-post forecasts, 180 days provides analysts with sufficient time to analyze and assess the information given in financial statements.

## 1.2 Background

Not all potential investors possess business acumen or financial literacy. Therefore, the investors who do not possess such skills tend to rely on the simplified information provided by financial analysts. Financial analysts in markets across the world use certain measures and tools to predict the earnings of firms, which potential investors use to make the decisions for their investment decisions or by other users. We argue whether these predictions correctly anticipate the true earnings or potentially managed earnings.

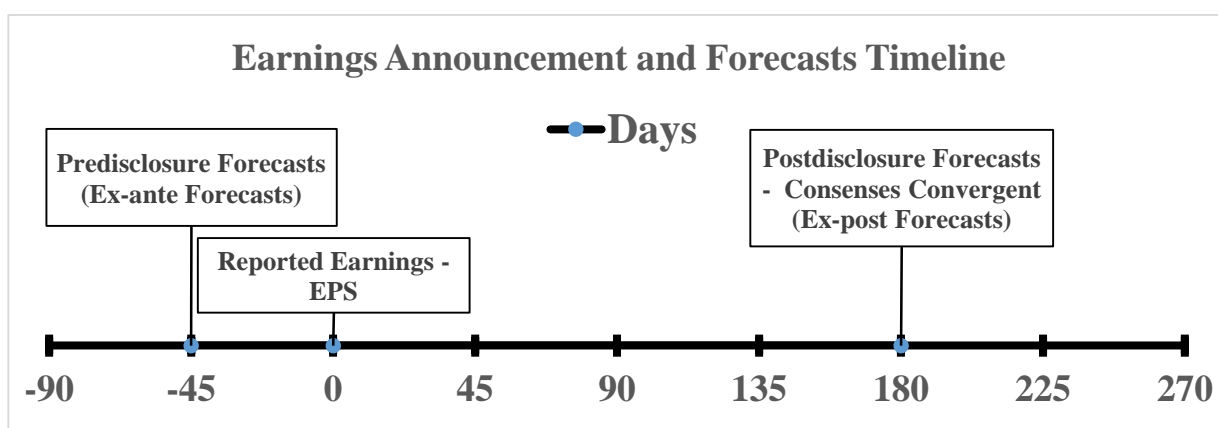


Figure 2.1: Ex-ante and Ex-post Forecasts

In this paper, the focus is on whether financial analysts anticipate earnings management in their ex-ante and ex-post forecasts. We study the significance of the difference between the two forecasts and the impact on managements' decision to manage earnings. As explained earlier, pre-disclosure forecast is described as the ex-ante forecast and, any difference thereof is ex-ante forecast errors, similarly the post-disclosure forecast is called the ex-post forecast, and the ex-post forecast errors respectively. Abarbanell and Lehavy (2003) discuss these forecast errors along with the impact of these errors on the performance and market perception on the market

value of the companies. They say in their paper that firms always try to meet the financial forecasts to attain the confidence of the potential investors. These forecasts might adversely affect the behavior of the investors particularly when reported earnings are lesser than forecasted earnings. Our study refers to these differences in the reported and forecasted earnings as forecast errors. It further discusses how firms are encouraged or driven to manage earnings by analysts' forecasts. Firms normally wish to influence and attract the market to improve the firms' goodwill and positive earnings surprises can trigger firms' market value upwards and vice-versa. Even if a firm fails to meet the forecasting targets by a single penny, it can lose six percent or more of its stock prices in a single day<sup>27</sup>. Skinner and Sloan (2002) show that stock prices have significant correlation with the earnings surprises or forecast errors i.e. even a small adverse earnings surprise may result in greater shocks to market prices. The results are also consistent with Kinney, Burgstahler, and Martin (2002). Other studies also show the positive relationship of market reactions towards positive earnings surprises i.e. when firms meet or beat earnings forecasts (Bartov, Givoly, and Hayn, 2002; Chen, DeFond, and Park, 2002; Kasznik and McNichols, 2002; Lopez and Rees, 2002).

Financial analysts, for their own interests, predict earnings as close as possible to the reported earnings to stay and prosper in the industry. When they correctly predict the earnings, they are rewarded (Hong and Kubik, 2003). Other studies argue that accurate predictions are not the basis for career development and positive or higher earnings predictions with Broker Houses' support can lead them to a well-established career (Abarbanell, 1991; Brown, Foster, and Noreen, 1985; Chopra, 1998; Dreman and Berry, 1995; Stickel, 1990). The evidence from Dechow, Hutton, and Sloan (2000), Michaely and Womack (1999), Lin and McNichols (1998) and Dugar and Nathan (1995) suggest that the analysts, who are associated with broker houses

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<sup>27</sup> Arthur Levitt, the then Chairman of Securities and Exchange Commission, gave a speech at New York University for Law and Business in September 1998 about the Earnings Management and explained the importance of Wall Street Forecasts and its impact on the market value of the firms and their decisions.

with a stock-underwriting relationship, generate more optimistic predictions and in return they receive greater commissions and incentives. This is done to attract new buyers when there is any possible announcement of IPOs in the market (Hong and Kubik, 2003).

Financial analysts have their own incentives to predict the firms' earnings with minimum difference, in other words to be more accurate, apart from staying and prospering in the industry, they are also aware of their reputation being sabotaged if these predictions turn out to be inaccurate. They are more cautious when making the predictions of future earnings. Many researchers (Jones, 1991; Lee, 2007; Stolowy and Breton, 2004) amongst others discuss that reported earnings include the managed earnings component and they highlight the potential reasons of its existence.

Considering that the reported earnings already include the managed earnings component, do financial analysts already anticipate this component when predicting earnings? Financial analysts generally predict the reported earnings, even anticipating earnings management, because they want to maintain their honor and reputation<sup>28</sup>.

The aforementioned research infer how financial analysts treat earnings management while making predictions given their own motivations. In this paper, our focus remains similar with a different technique to identify if financial analysts' intentions are to predict unmanaged or managed earnings with the help of ex-post forecasts. We statistically examine the two different forecast errors (i.e. ex-ante forecast error and ex-post forecast error) and earnings management. Our results are consistent with Burgstahler and Eames (2003) and inconsistent with Abarbanell and Lehavy (2003) and Porter and Kraut (2013). Our results suggest analysts predict the earnings that are close to reported earnings i.e. managed earnings and not the actual earnings i.e. unmanaged earnings. Furthermore, our results also provide the evidence that the ex-post

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<sup>28</sup> Stickel; 1992, Mikhail, Walther and Willis; 1999, Hong and Kubik; 2003 and Givoly, Hayn and Yoder; 2011, among others, have discussed the significance of accuracy for analysts' careers and reputation.

forecasts or convergent consensus do not reflect the unmanaged earnings and rather portray the efforts of the analysts to reduce the errors. We support these inferences by three different statistical analyses including the test of differences of forecast errors from ex-ante and ex-post, forecast errors generated from reported earnings and unmanaged earnings (proxy calculated by removing the managed earnings component from reported earnings). We use multivariate ordinary least square regression analysis and the dynamic generalized method of moments (GMM) to solve endogeneity problems (Embong and Hosseini, 2018).

The following section extends the review of relevant literature about earnings management and forecast errors. We establish the hypotheses of our research in section 3. Section 4 covers data sampling, research methodology and variable definition. Sections 5 and 6 present the empirical analyses including descriptive statistics, correlation, and univariate and multivariate results along with tests of endogeneity. The last section, section 7 concludes this empirical study with its summary and limitations.

## **2 Literature Review**

Following numerous studies including Abarbanell and Lehavy (2003), it is assumed that firms use several discretionary choices within their decision making capacity in order to manage earnings. The existing literature suggests that firms manage earnings to achieve their targets and these targets include controlling stock values and reducing stock volatility. Abarbanell and Lehavy (2003) discuss the possibilities of firms with high-low sensitivities to the earnings news; the firms with high sensitivity tend to manage earnings more than low sensitivity firms. These earnings news come from financial analysts and refer to their predictions about the firms' performance. The firms are motivated to manage earnings for varied reasons, but most importantly to meet or beat the analysts' forecasts, to reduce the effects of any shock news of

forecast errors, which affect the stock prices significantly. The pressure of achieving these targets is too considerable and failing to achieve these targets makes firms lose significant value in their market price of shares, hence providing them the reason to manage earnings to meet Wall Street estimations and earnings expectations<sup>29</sup>. While analysts' forecasts trigger firms to use discretionary choices and manage earnings, (Abarbanell and Lehavy, 2003; Levitt Jr, 1998), we assume firms are highly motivated to achieve the figures given by financial analysts in their predictions. This situation creates forecast errors and our study focuses on the financial analysts' ex-ante and ex-post forecasts and forecast errors thereof.

With varied reasons for achieving the targets, including equity market-based target, it is becoming extremely difficult for potential investors to anticipate the true earnings of the firm correctly because of their limited financial acumen. Therefore, the presence of financial analysts and their forecasts have become influential for the decision-making choices of potential investors in financial markets. The extreme dependence on financial predictions have led firms to believe that potential investors and market participants use these predictions to make decisions and it is reason enough for them to manage earnings to meet or beat expectations. Abarbanell and Lehavy (2003) suggest that firms inflate or deflate their pre-managed earnings based on their relevant targets. They explained three cases in which firms either inflate or deflate the pre-managed earnings in order to meet or beat the earnings targets. Firms inflate earnings by using available reserves when their relevant targets are higher than their pre-managed earnings. Firms deflate their earnings in two cases; either when their pre-managed earnings are higher than their relevant targets and they want to slightly beat the targets or when their pre-managed earnings are well below the targets and their reserves are not enough to beat the targets, this case is referred to as "Earnings Bath" (Levitt Jr, 1998).

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<sup>29</sup> Levitt Jr (1998) says that, "even if a firm fails to meet the forecasting targets by a single penny, it can lose six percent or more of its stock prices in a single day" during his speech at New York University for Law and Business in September 1998.



The fundamental purpose of preparing financial statements is to provide information to intended users including shareholders and stakeholders. Earnings management is a tool to manufacture the information that management intends the users of financial statements to receive. Earnings management involves the practice of manipulating financial statements but these practices are within the limits of Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) rules and standards (Haniffa, Abdul Rahman, and Haneem Mohamed Ali, 2006). Healy and Wahlen (1999) define earnings management as the use of managers' discretionary choices to restructure the transactions to alter the financial reports with the purpose of either misleading stakeholders about the underlying economic performance or influencing any outcomes that are dependent on accounting numbers. Jiraporn, Miller, Yoon, and Kim (2008) suggest that earnings management is opportunistic or beneficial depending on the circumstances and eventual benefits that managers are looking for. There is a line distinguishing earnings management from fraud that is evident in the cases of Enron and WorldCom. The executives tried intentionally to mislead the users of its financial statements by hiding the debts and inflating the revenues to meet Wall Street expectations. Perols and Lougee (2011) define the fraud as accounting practices beyond the conformance to GAAP or IFRS. Another definition of financial reporting fraud is the intentional or reckless conduct resulting in materially misstated financial statements by act or omission<sup>30</sup>. Earnings management is the intentional and deliberate act of altering earnings thus differentiating it from unintentional errors (Fields, Lys, and Vincent, 2001; Healy and Wahlen, 1999; Marai and Pavlović, 2013; Schipper, 1989), but Dechow and Skinner (2000) differentiate between accounting practices falling under fraud and earnings management. They say, fraudulent accounting practices – in violation of GAAP or IFRS – need to have preconceived intentions of materially altering financial statements to deceive or mislead its users while activities to

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<sup>30</sup> US National Commission on Fraudulent Financial Reporting (1987).

constitute earnings management conform to GAAP or IFRS. Levitt Jr (1998) suggests that earnings management is used as a means to achieve the managers' goals and there may be various modalities including achieving earnings targets or benchmarks, restricting higher volatility by smoothing income or to use big bath and cookie jar reserves to reflect results that are suitable. He discusses how managers use their discretionary powers to achieve earnings management through two methods: accrual management i.e. based on accounting system and real earnings management i.e. transaction based. Marai and Pavlović (2013) explain the two methods; the accrual management uses accounting policies to alter values, e.g. changing the accounting estimates, provisions for bad debts, accounting and valuation methods, asset pricing and its impairment. Real earnings management uses business transactions to inflate or deflate revenues and expenses, e.g. product pricing, production costs, research and developments and other discretionary expenditures. Leuz, Nanda, and Wysocki (2003) find high investor protection policies could greatly reduce these practices, produce high quality financial reports, and alleviate earnings management and similarly fraudulent activities in a country.

Investors rarely calculate the fundamental price of shares and in fact, they rather focus on the demand and supply factors of the market and heavily rely on analysts' predictions. Financial analysts easily influence potential investors with their behavior. Managers consider analysts a major factor affecting the market of shares (Graham et al., 2005). Healy and Palepu (2001) and Jensen and Meckling (1976) named analysts as the external monitors of the managers, because they have a close eye on the performance of the firms and they analyze every transaction of the firm.

Bushman, Piotroski, and Smith (2004) and Schipper (1991) consider analysts to be the information intermediaries to supply investors with the information they require to make decisions. The information and predictions supplied by financial analysts are of great importance and consequential in the financial markets especially in these times when earnings

management has become the norm of the economy. Now, whether this activity is beneficial or adverse is dependent on the managers' intentions and discretions over the choices they make to communicate any information to stakeholders including stockholders and the public. Numerous studies have, however, already discussed the purpose of earnings management and whether it is beneficial or opportunistic. It is beneficial if managers exercise their discretionary powers to enhance information and communicate it to the stakeholders (Arya, Glover, and Sunder, 2003; Demski, 1998; Guay, Kothari, and Watts, 1996; Healy and Palepu, 1993; Holthausen, 1990; Jiraporn et al., 2008; Subramanyam, 1996; Watts and Zimmerman, 1986) . This is empirically consistent with Subramanyam (1996) that these activities help in improving the earnings to reflect the fundamental value of the firm. Some researchers also consider this activity as opportunistic when there is conflict in managers' and shareholders' interests which induces managers to take advantage of the flexibility available in the GAAP or IFRS, thereby giving rise to distortions or misrepresentation in the reported earnings in financial statements (Healy and Palepu, 1993).

### **3 Hypothesis Development**

As discussed above, financial analysts have reasons and incentives to predict either managed or unmanaged earnings (Abarbanell and Lehavy, 2003; Fama, 1980; Francis, Philbrick, and Schipper, 1998; Kasznik, 1999; Skinner, 1994; Trueman, 1986). Our study's primary focus is to analyze whether financial analysts actually predict managed or unmanaged earnings by empirically testing the predictions; ex-ante and ex-post forecasts.

Healy and Wahlen (1999) say that researchers have been unable to, convincingly, provide enough evidence to support that earnings management exists. Ever since, this research question

has widely been part of many researchers' work (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2003; Courteau et al., 2011; Porter and Kraut, 2013) including many others.

We design our study to answer two questions. The first question is to identify empirically if analysts predict actual or unmanaged earnings while making their forecasts. Abarbanell and Lehavy (2003) find that analysts are unmotivated or cannot anticipate earnings management and predict actual earnings. This first question is tested against the alternate question if analysts predict reported or managed earnings which is answered by Burgstahler and Eames (2003), in which they argue that the similarity between the distributions of analysts' forecasts and reported earnings exists because analysts predict reported earnings.

We base our second question on Aubert and Grudnitski (2012)'s work, who consider ex-post forecasts "convergent consensus" as unmanaged earnings. This implies that financial analysts realize the effect of earnings management on their ex-ante forecasts through forecast errors and predict again after the annual reporting date (i.e. ex-post forecast) that closely resembles unmanaged earnings.

**H1: Financial analysts predict unmanaged earnings.**

We test our study's main hypothesis against the alternate hypothesis which states that financial analysts predict managed earnings rather than unmanaged (Burgstahler and Eames, 2003;

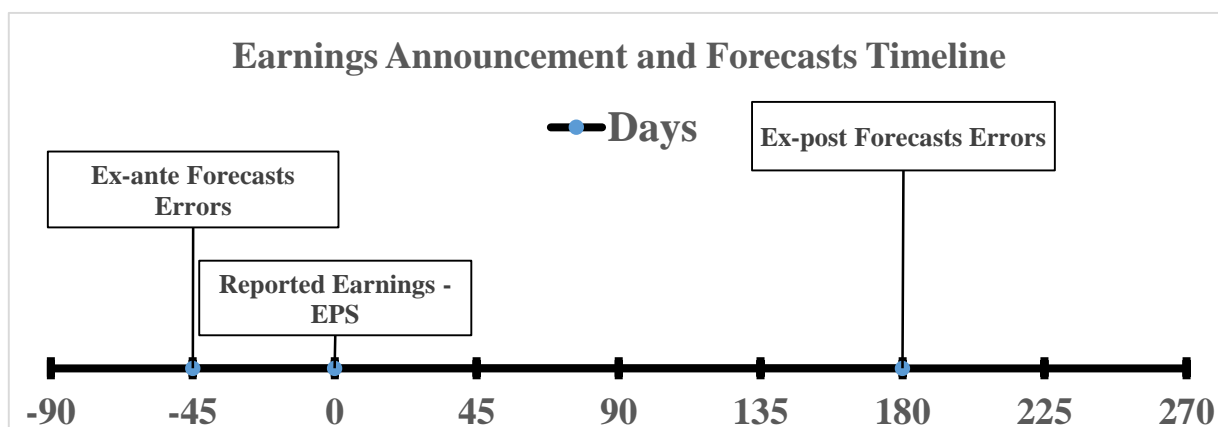


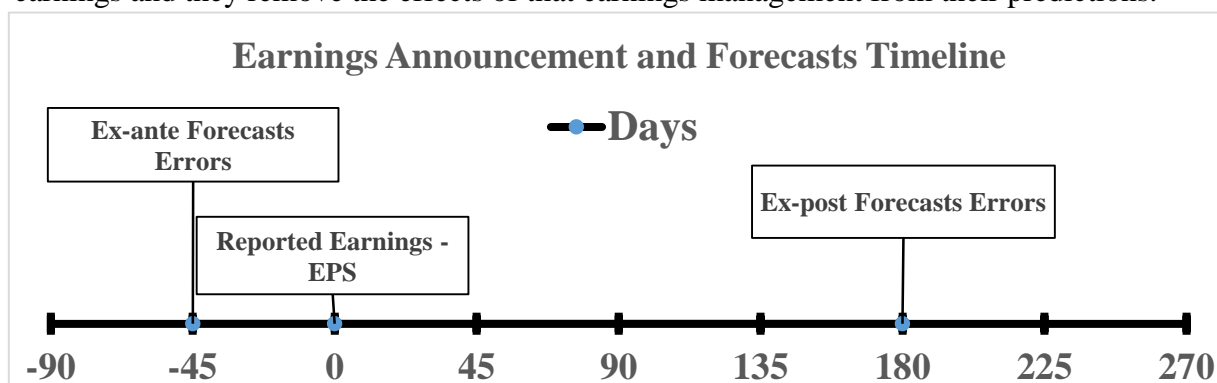
Figure 2.2: Ex-post forecast error is higher than Ex-ante forecast error

Courteau et al., 2011; Givoly, Hayn, and Yoder, 2011) in order to be rewarded (Barth, Kasznik, and McNichols, 2001; Huang, Willis, and Zang, 2005; Irvine, 2004; Lang, Lins, and Miller, 2004).

Figure 2.2 explains our hypothesis H1 graphically. It shows that if ex-post forecasts errors are higher than ex-ante forecast errors then our hypothesis H1 will hold which means financial analysts predict unmanaged earnings. Figure 2.3 shows the higher ex-ante forecast errors, meaning ex-post forecasts are closer to the managed earnings, which is consistent with our hypothesis H1a.

**H1a: Financial analysts predict managed earnings.**

Financial analysts predict managed earnings; this means they anticipate that firms manage earnings and they remove the effects of that earnings management from their predictions.



*Figure 2.3: Ex-ante forecast error is higher than Ex-post forecast error*

**H2: Financial analysts remove the earnings management component from reported earnings while revising forecasts i.e. ex-post Forecasts.**

We test this hypothesis against the alternate hypothesis H2a that financial analysts try to reach the number that is closer to reported earnings. Aubert and Grudnitski (2012) consider the ex-post forecasts or convergent consensus as the forecasts that closely reflect unmanaged earnings.

**H2<sub>a</sub>: Financial analysts do not remove the earnings management component from reported earnings while revising forecasts i.e. ex-post forecasts.**

We use the forecast errors from managed and unmanaged earnings (calculated by removing the earnings managed component from reported earnings) and apply the tests of equality to analyze which forecast error is closer to zero.

Embong and Hosseini (2018) discuss the endogenous relationship of earnings management and ex-ante forecast errors in some capacity, but literature does not provide any evidence for the relationship between earnings management and ex-post forecast errors. Hence, our empirical analysis includes the test for endogeneity in order to provide reliable results. The following section offers further explanation of the endogeneity issue.

## **4 Data Sampling and Methodology**

### **4.1 Data Sampling**

Our initial sample, comprising non-AAER (Accounting and Auditing Enforcement Release) firms from the US market, consists of 83,798 firm-years observations spread over 13 years (6,446 firms/year) from 2006 to 2018. We collect the data from the Factset Database based on Excel Connect including Factset Fundamentals, Factset Actuals, Factset Estimates and Reuters Global Fundamentals. Following the wisdom of prior literature including (Fama and French, 1992; Payne and Robb, 2000), we remove the firms in the Finance industry because of their use of special accounting techniques and rules and also because of the difficulty in estimation of discretionary accruals, which make them incomparable to firms in other industries. We also remove unidentified and miscellaneous firms, not only because it makes it difficult to compare with firms in other industries but the available data is insufficient to make the analysis.

We further apply trimming to the remaining data based on the following two criteria:

- We remove the firms followed by less than three financial analysts.
- We winsorize all variables at the 1<sup>st</sup> and 99<sup>th</sup> percentile.

Finally, table 2.1 shows the final sample (unbalanced Panel Data) after the application of trimming criterion and the common sample generated after applying the above trimming criteria and common sample data.

*Table 2.1: Data Sampling*

<b>Industry-wise Sample Distribution</b>						
<b>Industry</b>		<b>Final Sample</b>		<b>Common Sample</b>		
<b>Name</b>	<b>Code</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Commercial Services</b>	3200	902	4.65	180	5.47	
<b>Communications</b>	4900	365	1.88	49	1.49	
<b>Consumer Durables</b>	1400	590	3.04	147	4.47	
<b>Consumer Non-Durables</b>	2400	849	4.38	229	6.96	
<b>Consumer Services</b>	3400	1,335	6.88	156	4.74	
<b>Distribution Services</b>	3250	370	1.91	83	2.52	
<b>Electronic Technology</b>	1300	2,124	10.95	564	17.15	
<b>Energy Minerals</b>	2100	1,102	5.68	41	1.25	
<b>Health Services</b>	3350	684	3.53	67	2.04	
<b>Health Technology</b>	2300	2,595	13.38	425	12.93	
<b>Industrial Services</b>	3100	1,187	6.12	77	2.34	
<b>Non-Energy Minerals</b>	1100	410	2.11	69	2.1	
<b>Process Industries</b>	2200	876	4.52	328	9.98	
<b>Producer Manufacturing</b>	1200	1,602	8.26	444	13.5	
<b>Retail Trade</b>	3500	1,271	6.55	120	3.65	
<b>Technology Services</b>	3300	1,636	8.44	271	8.24	
<b>Transportation</b>	4600	614	3.17	38	1.16	
<b>Utilities</b>	4700	881	4.54			
<b>Total</b>		<b>19,393</b>	<b>100</b>	<b>3,288</b>	<b>100</b>	

## 4.2 Methodology

### 4.2.1 Model Specification

We are using, unlike other extant studies where only one approach has been used, both Real Earnings Management (Roychowdhury, 2006) and Accruals Management (Dechow et al., 1995;

Kothari et al., 2005) approaches to estimate the Managed Earnings Component and then regress them with the dependent variables of ex-ante and ex-post forecast errors.

We have extracted the following models:

- Equation 1 from Modified Jones Model (Kothari et al., 2005)
- Equation 2 from Modified Jones Model (Dechow et al., 1995)
- Equations 3 to 5 from (Roychowdhury, 2006)

$$TA_{it} = \alpha_0 + \alpha_1(1/A_{it-1}) + \alpha_2 (\Delta S_{it} - \Delta REC_{it}) + \alpha_3(PPE_{it}) + \alpha_4(ROA_{it}) + \epsilon_{it} \quad (1)$$

$$TA_{it} = \beta_0 + \beta_1(1/A_{it-1}) + \beta_2 (\Delta REV_{it} - \Delta REC_{it}) + \beta_3(PPE_{it}) + \epsilon_{it} \quad (2)$$

$$CFO_{it} = \gamma_0 + \gamma_1(1/A_{it-1}) + \gamma_1(S_{it}) + \gamma_2 (\Delta S_{it}) + \epsilon_{it} \quad (3)$$

$$Prod\_Cost_{it} = \mu_0 + \mu_1(1/A_{it-1}) + \mu_1(S_{it}) + \mu_2 (\Delta S_{it}) + \mu_3 (\Delta S_{it-1}) + \epsilon_{it} \quad (4)$$

$$DisExp_{it} = \varphi_0 + \varphi_1(1/A_{it-1}) + \varphi_2(S_{it-1}) + \epsilon_{it} \quad (5)$$

*Where i represents firm and t years*

The first two models calculate the discretionary accruals, i.e. residuals denoted by  $\epsilon_{it}$ , estimated by year for each industry code. We are also applying the Real Earnings Management technique from Roychowdhury (2006) to estimate the abnormalities in the Cash Flow from Operations, Production Cost and Discretionary Expenses by year for each SIC industry code. These discretionary accruals and abnormalities suggest the earnings management component (EM) and are primary variables to analyze the behavior of the financial analysts towards forecasting the earnings. After we have calculated the Earnings Management Component (EM) from the above five models, we use the following two models to answer our primary question. We use these models with absolute values of mean and median series for each of our study's dependent variables FEP (ex-post forecast error) and FEA (ex-ante forecast error) separately to achieve robust results.



$$|Abs\_FEPMean_{it}| = \alpha_0 + \alpha_1|Abs\_EM_{it}| + \alpha_2GW_{it} + \alpha_3OLC_{it} + \alpha_4RC_{it} + \alpha_5LEV_{it} + \alpha_6Log\_AF_{it} + \alpha_7AQ_{it} + \epsilon_{it} \quad (6)$$

$$|Abs\_FEAMean_{it}| = \alpha'_0 + \alpha'_1|Abs\_EM_{it}| + \alpha'_2GW_{it} + \alpha'_3OLC_{it} + \alpha'_4RC_{it} + \alpha'_5LEV_{it} + \alpha'_6Log\_AF_{it} + \alpha'_7AQ_{it} + \epsilon_{it} \quad (7)$$

Where  $i$  represents firm and  $t$  years

The above models explain the multivariate regression analysis of our study to define the relationship between the financial analysts' attitude towards the managed or unmanaged earnings. We are using the discretionary choices managers use, possibly in part, in an attempt to manage the earnings for example for Goodwill Impairment, Restructuring Charges and Operating Lease Commitments. Kothari et al. (2005) explain how loss recognition under accounting conservatism affects reported earnings and it includes goodwill impairment and restructuring charges, among others. While Ge (2006) talks about how operating lease commitments lower earnings in future periods, the example of off balance sheet activities in his study. We use these items to control the effect of earnings management on the financial analysts' ability to forecast earnings correctly, because it is possible that our models, without these discretionary choices, reflect a higher magnitude of relationship between the earnings management and forecast errors than there actually is. We use the absolute values of our variables of interest, forecast errors and the earnings management component, in order to check the magnitude of the relationship between them.

#### 4.2.2 Variable Definition

Table 2.2 defines and explains all the variables involved in the data analysis of this study.

**Table 2.2: Variable Definition**

Variable Code	Definition	Data Source	Extraction
<b>Panel A: Accruals Models</b>			

Variable Code	Definition	Data Source	Extraction
TA	Total Accruals calculated by the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization	Derived	$TA = (\Delta CA - \Delta CL - \Delta Cash + \Delta STD - D\&A)$
A	Total Assets	Factset Database	
$\Delta S - \Delta REC$	Change in Sales minus change in Receivables at year T	Derived	$\Delta S - \Delta REC = (Sales(t) - Sales(t-1)) - (Rec(t) - Rec(t-1))$
PPE	Gross value of Property Plant and Equipment	Factset Database	
IBE	Income before Extra Items	Factset Database	
$\Delta REV - \Delta REC$	Change in Revenue minus change in Receivables at year T	Derived	$\Delta REV - \Delta REC = (Rev(t) - Rev(t-1)) - (Rec(t) - Rec(t-1))$

*Note: All variables are scaled by lagged total assets except Total Assets "A"*

#### Panel B: Real Earnings Management Models

CFO	Cash flow from Operations	Factset Database	
S	Total Sales	Factset Database	
$\Delta S(t)$	Change in Sales at year T	Derived	$\Delta S = Sales(t) - Sales(t-1)$
Prod_Cost	Production Cost calculated by adding change in Inventory to the Cost of Goods Sold	Derived	$Prod\_Cost = COGS + \Delta INV$
$\Delta S(t-1)$	Change in Sales at year T-1	Derived	$\Delta S = Sales(t-1) - Sales(t-2)$
DisExp	Discretionary Expenses calculated by adding three expenses: Research and Development, Advertising and Selling, General and Administrative Expenses	Derived	$DisExp = R\&D + SG\&A + ADV$

*Note: All variables are scaled by lagged total assets*

#### Panel C: Forecast Errors Models

Abs_FEAMean	Absolute values of the Forecast Errors calculated by the difference between Reported EPS and Ex-Ante Forecast Mean Values (Before Reported Earnings)	Derived	$Abs\_FEAMean =  EPS - EAMean $
Abs_FEAMedian	Absolute values of the Forecast Errors calculated by the difference between Reported EPS and Ex-Ante Forecast Median Values (Before Reported Earnings)	Derived	$Abs\_FEAMedian =  EPS - EAMedian $
Abs_FEPMean	Absolute values of the Forecast Errors calculated by the difference between Reported EPS and Ex-Post Forecast Mean Values (After Reported Earnings)	Derived	$Abs\_FEPMean =  EPS - EPMean $
Abs_FEPMedian	Absolute values of the Forecast Errors calculated by the difference between Reported EPS and Ex-Post Forecast Median Values (After Reported Earnings)	Derived	$Abs\_FEPMedian =  EPS - EPMedian $
Abs_Kothari	Absolute values of the discretionary accruals from Kothari Model	Derived	$Abs\_Kothari =  Residuals $

Variable Code	Definition	Data Source	Extraction
Abs_Dechow	Absolute values of the discretionary accruals from Dechow Model	Derived	Abs_Dechow =  Residuals
Abs_CFO	Absolute values of the abnormalities from CFO Model of Roychowdhury	Derived	Abs_CFO =  Residuals
Abs_Prod	Absolute values of the abnormalities from Production Cost Model of Roychowdhury	Derived	Abs_Prod =  Residuals
Abs_Disexp	Absolute values of the abnormalities from Discretionary Expense Model of Roychowdhury	Derived	Abs_Disexp =  Residuals
EM	Earnings Management Component = Discretionary Accruals calculated by Residual Values in Kothari and Dechow Models and Abnormalities in Roychowdhury Models of Cash Flow from Operations, Production Costs and Discretionary Expenses	Derived	EM = Abs_Kothari, Abs_Dechow, Abs_CFO, Abs_Prod and Abs_Disexp
GW	Goodwill Impairment	Factset Database	
OLC	Operating Lease Commitments	Factset Database	
RC	Restructuring Charges is the dummy variable	Derived	RC = 1 if non-zero value, RC = 0 otherwise
LEV	Leverage is ratio of Long Term Debt to Total Assets	Derived	LEV = LTD/Total Assets
Log_AF	Log of Number of Analysts Following the firms	Factset Database	Log_AF = log(AF)
AQ	Audit Quality is the dummy variable based on the Big Four Audit Firms	Derived	AQ = 1 for Big Four Firms, AQ = 0 otherwise

**Note:**

3. Annual Estimates before reported earnings (referred as ex-ante Forecasts in our study) have been collected at 45 days prior to; while Annual Estimates after reported earnings (referred as ex-post Forecasts in our study) have been collected at 180 days after the reported earnings.
4. All variables except Restructuring Charges, Analyst Following, Leverage and Audit Quality; are scaled by the Number of Shares and Share Price at the start of the year.

### 4.2.3 Endogeneity Bias

Endogeneity bias occurs when there is a reciprocity or simultaneity between the explanatory variable and dependent variable. Ordinary least square (OLS) regressions produce biased or contradictory results in these situations. Although, extant literature provides empirical evidence for endogeneity bias between earnings management and ex-ante forecast errors, our study mainly focuses on the ex-post forecasts errors and literature provides insufficient evidence for

endogeneity bias with earnings management. Embong and Hosseini (2018) use the GMM procedure to counter the reciprocity effect between earnings management and ex-ante forecasts errors. Hence, following this study, we use a similar approach to eliminate the effects of endogeneity induced by bi-direction or reciprocity between earnings management and forecast errors. Our primary multivariate analysis comprises OLS regressions and secondary multivariate analysis includes the GMM procedure.

## **5 Descriptive Statistics and Correlation**

### **5.1 Descriptive Statistics**

As explained previously, we reduce the initial firm-year observations, taken from US markets from year 2006 to 2018, to 3,288 observations after applying trimming to the data to mitigate the adverse effects of outliers.

Table 2.3 presents the summary of statistics for the variables used in our models 6 and 7. Panel A of table 2.3 shows the results of four different series used for forecast errors, two each for ex-ante and ex-post with mean and median. Mean (Median) values of Abs\_FEAMean and Abs\_FEPMean stand at 0.0467 (0.0154) and 0.0432 (0.0142), we also observe that the mean (median) values are almost identical with the values of Abs\_FEAMedian at 0.0466 (.0155) and Abs\_FEPMedian at 0.0433 (0.0141). The purpose of using mean and median series of the forecast errors is to confirm the robustness of our results, which show that the errors from ex-ante forecasts are higher than the errors from ex-post forecasts.

Panel B of table 2.3 reports the statistics for five separate Managed Earnings components (scaled by number of shares and share price) where the mean and median values in Discretionary Accrual Models are lower than in Real Earnings Models. Since these are absolute

values and show the magnitude of earnings management, these non-zero values suggest that managers use real earnings techniques more than accrual techniques in order to manage earnings.

*Table 2.3: Descriptive Statistics*

<b>n = 3,288</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Quartile 1</b>	<b>Quartile 3</b>
<b>Panel A: Forecast Errors</b>							
<b>Abs_FEAMean</b>	0.0467	0.0911	0.0154	0.0000	0.5601	0.0050	0.0427
<b>Abs_FEPMean</b>	0.0432	0.0824	0.0142	0.0000	0.4972	0.0041	0.0413
<b>Abs_FEAMedian</b>	0.0466	0.0906	0.0155	0.0000	0.5509	0.0051	0.0431
<b>Abs_FEPMedian</b>	0.0433	0.0836	0.0141	0.0000	0.5005	0.0039	0.0414
<b>Panel B: Earnings Management Component (EM)</b>							
<b>Abs_Kothari</b>	0.0512	0.0616	0.0298	0.0000	0.3354	0.0130	0.0630
<b>Abs_Dechow</b>	0.0512	0.0618	0.0296	0.0000	0.3402	0.0130	0.0630
<b>Abs_CFO</b>	0.0624	0.0728	0.0410	0.0000	0.4626	0.0193	0.0745
<b>Abs_Prod</b>	0.1322	0.1694	0.0779	0.0000	1.0415	0.0349	0.1507
<b>Abs_Disexp</b>	0.1108	0.1414	0.0631	0.0001	0.7866	0.0273	0.1309
<b>Panel C: Control Variables</b>							
<b>GW</b>	0.0123	0.0511	0.0000	0.0000	0.3413	0.0000	0.0000
<b>OLC</b>	0.0307	0.0770	0.0077	0.0000	1.1471	0.0027	0.0228
<b>RC</b>	0.8400	0.3666	1.0000	0.0000	1.0000	1.0000	1.0000
<b>LEV</b>	0.2477	0.1861	0.2325	0.0000	0.9421	0.1153	0.3481
<b>Log_AF</b>	1.0090	0.2907	1.0414	0.4771	1.5185	0.7782	1.2304
<b>AQ</b>	0.9425	0.2328	1.0000	0.0000	1.0000	1.0000	1.0000

*Please refer table 2.2 for variable definitions.*

Panel C of table 2.3 represents the list of control variables, which have been commonly been used in the relevant literature. These include Goodwill Impairment (GW) and Restructuring Charges (RC) which affect reported incomes with capitalized amounts (Kothari et al., 2005). The interesting point to notice here is that all the control variables are positive and right skewed. Most values of GW, OLC and LEV lie within fourth quartile. AQ reflects 94.25% of the sample firms in our study with big four audit firms.

## 5.2 Correlation Matrix

Table 2.4 shows the correlation among the various variables used in our models. The purpose of this is to identify the correlation of the explanatory variables; we expect moderate correlation as high correlation may suggest unrealistic results. Since we do not use Earnings Management Components [Discretionary Accruals (Dechow and Kothari) and Roychowdhury's Abnormalities (CFO, Production Cost and Expenses) simultaneously, their inter-correlation is not taken into consideration (i.e. Discretionary Accruals from Dechow and Kothari are highly and significantly correlated). We observe, as expected, that GW and OLC are positively correlated with Discretionary Accruals of Kothari (0.140\*\*\* and 0.200\*\*\* respectively) and with Discretionary Accruals of Dechow (0.138\*\*\* and 0.201\*\*\* respectively). RC has a positive correlation but with a very low significance level at more than 10%.

All the other variables, except RC and AQ, show significant levels and they are not highly correlated with each other. This leads us to believe that our regression shows robust results. AQ shows weak significance but shows a negative sign as expected with EM proxies along with Log\_AF. For a further robustness check of the inter-correlation we used the Variable Inflation Factor (VIF) technique<sup>31</sup> for each of our models and the results are similar and a significant correlation among the explanatory variables to question the reliability of the results.

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<sup>31</sup> Results from Variation Inflation Factor show maximum value of 1.20.

**Table 2.4: Correlation Matrix**

n = 3,288	Pairwise Pearson Correlation											
	Abs_Kothari	Abs_Dechow	Abs_CFO	Abs_Prod	Abs_Disexp	GW	OLC	RC	LEV	Log_AF	AQ	
<b>Abs_Kothari</b>	1											
<b>Abs_Dechow</b>	0.998***	1										
<b>Abs_CFO</b>	0.391***	0.392***	1									
<b>Abs_Prod</b>	0.314***	0.315***	0.502***	1								
<b>Abs_Disexp</b>	0.336***	0.336***	0.415***	0.762***	1							
<b>GW</b>	0.140***	0.138***	0.116***	0.129***	0.130***	1						
<b>OLC</b>	0.200***	0.201***	0.239***	0.323***	0.355***	0.0367**	1					
<b>RC</b>	0.00407	0.00404	0.00182	0.00308	0.00544	0.0137	-0.0440**	1				
<b>LEV</b>	0.161***	0.161***	0.156***	0.0623***	0.0493***	0.0672***	0.0635***	0.122***	1			
<b>Log_AF</b>	-0.198***	-0.198***	-0.146***	-0.173***	-0.178***	-0.0965***	-0.0355**	0.0169	-0.0134	1		
<b>AQ</b>	-0.00482	-0.00453	-0.00271	-0.0073	0.00939	-0.0216	0.0433**	0.0740***	0.101***	0.196***	1	

1.  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

2. This correlation matrix gives the information about the correlation among the independent variables.

3. Please refer table 2.2 for variable definitions.

## 6 Results and Discussions

Our main hypothesis H1 is based on the study of Abarbanell and Lehavy (2003) where they empirically test the sensitivity of the stock price to earnings news (earnings predictions) and provide empirical evidence that analysts are rather unmotivated or unable to predict earnings management. We focus on analysts' predictions (ex-ante and ex-post forecasts) and find whether financial analysts predict managed or unmanaged earnings. Alternate hypothesis H1a of our study is motivated by Burgstahler and Eames (2003) and Courteau et al. (2011), who claim that analysts predict managed earnings. This study assumes ex-post forecasts as the true measure of analysts' intentions of predictions and we use multiple empirical analyses to achieve robust results including univariate and multivariate (OLS and GMM procedures) methods.

### 6.1 Univariate Results

We compare the Mean (Median) series of ex-ante forecast errors with the Mean (Median) series of ex-post forecast errors. Panel A of table 2.5 shows the t-test results of the two comparisons and Panel B of table 2.5 shows the Wilcoxon test results. t-value (z-value) of the first comparison under Panel A and B are significant values 6.7753\*\*\* (1.6779\*) showing that there is significant difference between the mean series. Positive differences of 0.0035 (0.0012) signify forecast errors from ex-ante are higher than forecast errors from ex-post. We also find similar results of positive differences under Panel A and B between median series comparisons 0.0033 (0.0014) with t and z-values of 6.1742\*\*\* (0.3828). Only the t-test shows results at the 1% significance level. The reason behind the weaker significance from the Wilcoxon test possibly stems from the tied and zero-valued differences between the observations that reduce statistical power. Regardless, our initial univariate results suggest that analysts use the published information, after the earnings announcement, and predict the figure that is closer to



the reported earnings rather than removing the earnings management component from the reported earnings. These results also help in answering our H2, which states that analysts remove the earnings management component from the ex-post forecasts. Our statistical results from initial univariate tests support the alternative hypothesis. Financial analysts are not motivated to remove the earnings management component from reported earnings and predict the number that is closer to reported earnings in order to reduce the forecast errors.

**Table 2.5: Tests for Equality of Ex-Ante and Ex-Post Forecasts Errors**

<b>Panel A: T Tests</b>		
<b>n = 3,288</b>	<b>Difference</b>	<b>t-value</b>
FEAMean – FEPMean	0.0035	6.7753***
FEAMedian – FEPMedian	0.0033	6.1742***
<b>Panel B: Wilcoxon Tests</b>		
<b>n = 3,288</b>	<b>Difference</b>	<b>z-value</b>
FEAMean – FEPMean	0.0012	1.6779*
FEAMedian – FEPMedian	0.0014	0.3828
1. We use the absolute values for the variables.		
2. Please refer table 2.2 for variable definitions.		

We further apply the same approach to see the difference between forecast errors from managed and unmanaged earnings and which one is closer to zero. We calculate unmanaged earnings as reported earnings minus earnings management component (EM). For H1 to hold true, we expect forecast errors from unmanaged earnings to be closer to zero. It means distribution of analysts' forecasts is similar to the distribution of unmanaged earnings. The opposite will be true for alternate hypothesis H1a. The results from these tests will also help us to answer our hypothesis H2.

### 6.1.1 Forecast Errors from Unmanaged Earnings

Following the extant literature that assumes that discretionary accruals and abnormalities in the Cash Flow from Operations, Production Cost and Discretionary Expenses closely measure the

proxies of earnings management (Dechow et al., 1995; Kothari et al., 2005; Roychowdhury, 2006), which we refer to as the Managed Earnings Component (EM) in our study. By deducting this EM from the reported earnings, we arrive at the value which is the true proxy of the unmanaged earnings (Porter and Kraut, 2013).

Table 2.6 presents results from the t-tests and Wilcoxon tests. Panel A shows t-test results of the comparison between absolute means forecast errors from managed earnings and absolute means forecast errors from unmanaged earnings. The results suggest that absolute means of forecast errors from unmanaged earnings are higher in magnitude than the absolute means of forecast errors from managed earnings in all cases. The negative difference values are significant with p-values at less than 1%. We observe that the analysts' predictions are closer to the managed earnings than to unmanaged earnings.

Panel B of table 2.6 returns the Wilcoxon test results from the comparisons of the absolute mean forecast errors from managed earnings with the absolute mean forecast errors from unmanaged earnings. We get similar results (as Panel A) from these comparisons evidenced by the negative differences with significance level of less than 1%.

**Table 2.6: T - Tests for Forecast Errors from Managed and Unmanaged Earnings**

Forecast Errors from Managed Earnings	Forecast Errors from Unmanaged Earnings				
	Kothari	Dechow	CFO	Prod	Disexp
<b>Panel A: T – Test</b>					
<b>FEAMean</b>	(0,0235)***	(0,0233)***	(0,0358)***	(0,106)***	(0,0895)***
<b>FEPMean</b>	(0,0252)***	(0,0249)***	(0,0385)***	(0,1069)***	(0,0909)***
<b>Panel B: Wilcoxon Test</b>					
<b>FEAMean</b>	(0,0165)***	(0,0163)***	(0,0358)***	(0,0665)***	(0,0607)***
<b>FEPMean</b>	(0,0178)***	(0,0178)***	(0,0371)***	(0,067)***	(0,0619)***
<i>Notes:</i>	*** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.10$				
1.	We use the absolute values of all the variables involved in these tests.				
2.	Values in the brackets show the differences between the means of the variables.				
3.	We calculate the difference as Forecast errors from managed earnings – forecast errors from unmanaged earnings.				
4.	Please refer table 2.2 for variable definitions.				

Since in our study we also use median series of forecast errors, it helps to check the robustness of our results. Panels A and B (t-test and Wilcoxon test respectively) of the table 2.7 show the results from absolute median of forecast errors from managed earnings with the absolute median forecast errors from unmanaged earnings. The results have not been any different from the mean series comparisons with negative differences and significance level of less than 1% to reject the null hypothesis of symmetric distribution of the difference of the two series around zero. This brings us to confirm our results from Table 2.6 with the results from table 2.7 with median series. The Wilcoxon Test is an alternative to the t-test, to determine if the two series are similarly distributed. Unsurprisingly, our results from both tests complement each other.

We assume that the ex-post forecast shows financial analysts' true intentions of predicting earnings. Abarbanell and Lehavy (2003) and Porter and Kraut (2013) assume that firms manipulate earnings and report managed earnings and they use analysts' ex-ante forecasts as their targets to achieve their goals. Considering analysts' intentions are to predict unmanaged earnings while predicting ex-ante forecasts, it means that they process the available (past) information and potential earnings management to reach the number that is closer to unmanaged earnings. At the same time, firms are planning to manipulate their pre-managed earnings by meeting or beating these forecasts. Therefore, we assume that ex-ante forecasts, alone, do not provide enough informational value for firms' earnings quality. However, Aubert and Grudnitski (2012) believe financial analysts' intentions are to predict unmanaged earnings and the difference between reported earnings and ex-post forecasts show the earnings management component. Hence, for the purpose of our study, we posit financial analysts' true intentions of predicting earnings rest with the ex-post forecast.

**Table 2.7: T-Test and Wilcoxon Test for Forecast Errors from Managed and Unmanaged Earnings**  
n = 3,288

Forecast Errors from Managed Earnings	Forecast Errors from Unmanaged Earnings				
	Kothari	Dechow	CFO	Prod	Disexp
<b>Panel A: T – Test</b>					
<b>FEAMedian</b>	(0,0237)***	(0,0236)***	(0,0357)***	(0,1062)***	(0,0896)***
<b>FEPMedian</b>	(0,0254)***	(0,0252)***	(0,0384)***	(0,1071)***	(0,091)***
<b>Panel B: Wilcoxon Test</b>					
<b>FEAMedian</b>	(0,0163)***	(0,0606)***	(0,0357)***	(0,0667)***	(0,0607)***
<b>FEPMedian</b>	(0,0179)***	(0,0178)***	(0,0375)***	(0,0672)***	(0,062)***
<i>Notes:</i>	*** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.10$				
	1. We use the absolute values of all the variables involved in these tests.				
	2. Values in the brackets show the differences between the means of the variables.				
	3. We calculate the difference as Forecast errors from managed earnings – forecast errors from unmanaged earnings.				
	4. Please refer table 2.2 for variable definitions.				

Our results from univariate tests suggest the financial analysts predict managed earnings because the ex-ante forecast errors are higher in magnitude than ex-post forecast errors (Table 2.5), which signifies that the analysts use the published information and produce an ex-post forecast which is closer to reported (i.e. managed) earnings. This result supports our alternate hypothesis H1a which is consistent with Burgstahler and Eames (2003). Tables 2.6 and 2.7, indicate the forecast errors from unmanaged earnings are higher than the forecast errors from managed earnings, which imply that financial analysts' forecasts are closer to reported (i.e. managed) earnings than unmanaged earnings. These results reject the H2 and accept our alternate hypothesis that says the analysts, while making ex-post forecasts, produce the number that is close to managed earnings.

## 6.2 Multivariate Regression Results

In this part of our primary multivariate data analysis, we apply the pooled ordinary least square (OLS) regressions on forecast errors from reported (managed) earnings as our dependent variables. We use earnings management components (EMs), as our predictors along with discretionary choices (GW, RC and OLC) with control variables of Leverage (LEV), Analysts

Following (Log\_AF) and Audit Quality (AQ). We expect negative signs with two variables these are Log\_AF and AQ. We argue that the higher the number of analysts, firms will be less likely to engage in earnings management practices, thence lower forecast errors and negative signs on regressions. Similarly, Audit Quality can also potentially restrict firms to practice earnings management and hence we expect a negative relation to forecast errors. For example, if any of the big four auditing firms audit a firm, there is a chance that the firm will not engage itself in earnings management activities.

The initial problem is determining the earnings management (EM) component using two separate earnings management techniques: accruals and real earnings management. This study is not a comparison of two earnings management techniques, but it does include them in data analysis. We use the cross-sectional method to estimate EM for the firms within the same 2-digit SIC code each year<sup>32</sup>. We measure the five separate EM proxies and use them as our predictors in equations 6 and 7 by using the equations 1 through 5 as described in section 4.2.1 under Model Specification.

We base our study on Abarbanell and Lehavy (2003), who consider that firms manage earnings to meet or beat targets and those targets include the analyst forecasts. They say financial analysts predict unmanaged earnings but firms manage earnings by beating this target. We answer this question of whether analysts predict managed or unmanaged earnings using ex-post forecasts. We test the hypothesis H1 “Analysts predict unmanaged earnings” against the hypothesis H1a “Analysts predict managed earnings”.

In our study, we assume that the ex-post forecasts are a better proxy of analysts’ intentions of predicting behavior. If EM has a high positive relationship with the ex-post forecast errors

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<sup>32</sup> Dechow et al. (1995) use the time series approach to measure the accruals but we apply the cross-sectional approach as done by (Kothari et al., 2005) to all our EM calculations including real earnings management (Roychowdhury, 2006) for coherency.

(higher coefficients in equation 6) than with ex-ante forecast errors (lower coefficients in equation 7), then it means that financial analysts use the earnings announcement to predict unmanaged earnings. Similarly, if coefficients of equation 7 are higher than coefficients of equation 6, then ex-post forecasts reflect reported earnings.

We use absolute values of our variables of interest because we wish to check the magnitude of forecast errors from either side of reported earnings. While we believe ex-post forecast can potentially relate to the true intentions of the financial analyst, we apply the pooled OLS regressions on equations 6 and 7. For hypothesis H1, we expect the coefficients of EMs in equation 6 to be higher than the coefficients in equation 7. In case of the incidence of higher coefficients in equation 7 than in equation 6, our results will be consistent with Burgstahler and Eames (2003) i.e. hypothesis H1a. The reason for these expectations is that if analysts' intentions are to predict unmanaged earnings they will remove earnings management from reported earnings based on the published information while predicting the ex-post forecast, therefore ex-post forecast errors will reflect the earnings management component<sup>33</sup>.

Table 2.8 shows the regression results from equations 6 and 7. We ran these equations with each of our EM proxies, two from discretionary accruals and three from real earnings management<sup>34</sup>. From all regressions, we observe the similar pattern of a significant positive relationship between forecast errors and EM. As suggested by Abarbanell and Lehavy (2003) that firms try to meet or beat financial targets, these results support this claim with the positive relationship between earnings management and forecast errors. In table 2.8, across all EMs, we have higher coefficients in ex-ante forecast errors (Abs\_FEAMean) than ex-post forecast errors (Abs\_FEPMean) with significance at less than 1%. This means earnings management has a

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<sup>33</sup> Aubert and Grudnitski (2012) use Manipulated Earnings Component as:

$ME_{it} = | \text{Reported } EPS_{it} - \text{ex-post convergent consensus } EPS_{it} |$

<sup>34</sup> The results were not any different with use of EM calculated as time series. Richardson (2000) also uses the similar analysis of using EM with both approaches. Please see tables 2.14-2.19 in appendix.

higher relationship in magnitude with ex-ante forecast errors than ex-post forecast errors. Financial analysts, after the earnings announcement, take into account all public information and private information to reduce the forecast errors from reported earnings. These results suggest that the ex-post forecasts closely reflect reported earnings. Considering these results, it seems that analysts use published information to re-estimate their forecasts to be closer to reported earnings i.e. managed earnings rather than unmanaged earnings. Hence, we conclude that the forecast errors from post announcement forecasts i.e. ex-post forecast errors do not reflect earnings management and that is why the coefficient of EM proxies is lower in the case of equation 6 than in equation 7. This is consistent with hypothesis H1a.

Accounting conservatism directs us to record losses immediately and not to recognize gains until realized, while there is also uncertainty about the measurement of goodwill impairment. Accounting standards allow for annual tests for goodwill impairments. In our study, Goodwill Impairment (GW) shows higher coefficients meaning a higher and significant positive relationship with the forecast errors which is consistent with Chen et al. (2015). It might mean that firms use Goodwill Impairment as one of their discretionary choices to manipulate earnings. Operating Lease Commitments (OLC) and Restructuring Charges (RC) also show a positive relationship, significant at less than 1%, with forecast errors, that means firms use off- balance sheet items like operating leases to manage earnings that lead to forecast errors and also to understate or overstate restructuring charges. Probably contractual covenants lead high leveraged firms to engage in earnings management activities, which explains this positive sign for leverage (LEV) in our results. Analysts following (Log\_AF) has a negative sign in our regression analysis which is consistent with (Yu, 2008). Audit Quality (AQ) has a negative relationship with forecast errors. This implies that firms are less likely to engage in earnings management resulting in a lower magnitude of forecast errors. All our regressions show good adjusted r-squared percentages from 45.57% to 52.42%, which makes our models are reliable.

Our univariate results (tables 2.5 – 2.7) also reject our Hypothesis H1, which states that analysts predict unmanaged earnings. H1a states that financial analysts are not motivated to remove the earnings management component from their predictions. Rather, they reduce the forecast errors from their ex-ante forecasts and predict a number, which is closer to reported (managed) earnings than actual (unmanaged) earnings while making the ex-post forecast or Convergent Consensus as suggested by Aubert and Grudnitski (2012). Our results present that the forecast errors from managed earnings are closer to zero and are smaller in magnitude than forecast errors from unmanaged earnings. This gives the impression that financial analysts are unable to anticipate earnings management or even if they do, they ignore the earnings management component and predict managed earnings to reduce the forecast errors from their first predictions. This explains the reason why we reject our hypothesis H2 that states that ex-post forecast or convergent consensus is a true proxy of unmanaged earnings. Our results suggest ex-post forecasts are closer to reported earnings i.e. managed earnings.

### **6.3 Tests of Endogeneity**

As previously mentioned, we use the GMM technique in our secondary multivariate tests to eliminate endogenous effects, which are any bi-directional causality or reciprocity effects between dependent and independent variables. Extant literature provides several procedures including Froot (1989)'s procedure or simultaneous equations i.e. two-stage least square (2SLS) as additional tests to analyze cross sectional or serial dependence or correlation. Fixed effect panel models also helps to reduce the heterogeneity effect to some extent (Leszczensky and Wolbring, 2019)<sup>35</sup>. However, panel dynamic GMM eliminates many limitations posed by fixed

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<sup>35</sup> We apply panel regressions with fixed effects in both cases of cross-section and time-series earnings management components and the results appear to be unchanged. Please see tables 2.12-2.13 and 2.16-2.17 in appendix.



effect and OLS models for example; biased coefficients, heteroscedasticity, causal inferences error measurement, type II errors, autocorrelation and not strictly exogenous independent variables (Roodman, 2009)<sup>36</sup>. Roodman (2009) describes the assumptions under which GMM is built and functions best, including the use of internal instruments based on lagged values, and does not presume the necessity of including external instruments, though the model allows for their inclusion. We use system GMM in this study due to its acceptability of unbalanced panel datasets, while difference GMM has some limitations in this regard.

For system GMM estimations, we modify our equations 6 and 7 to control for serial correlation.

$$|Abs\_FEPMean_{it}| = \alpha_0 + \alpha_1|Abs\_FEPMean_{it-1}| + \alpha_2|Abs\_EM_{it-1}| + \alpha_3|Abs\_EM_{it}| + \alpha_4GW_{it} + \alpha_5OLC_{it} + \alpha_6RC_{it} + \alpha_7LEV_{it} + \alpha_8Log\_AF_{it} + \alpha_9AQ_{it} + \epsilon_{it} \quad (8)$$

$$|Abs\_FEAMean_{it}| = \alpha'_0 + \alpha'_1|Abs\_FEAMean_{it-1}| + \alpha'_2|Abs\_EM_{it-1}| + \alpha'_3|Abs\_EM_{it}| + \alpha'_4GW_{it} + \alpha'_5OLC_{it} + \alpha'_6RC_{it} + \alpha'_7LEV_{it} + \alpha'_8Log\_AF_{it} + \alpha'_9AQ_{it} + \epsilon_{it} \quad (9)$$

*Where i represents firm and t years*

Table 2.9 shows the results from system GMM. We infer from these results that earnings management has a positive relationship with forecast errors as suggested by the pooled OLS. We observe similar results as the primary multivariate empirical analysis shown in table 2.8. Earnings management has a higher positive relationship with ex-ante forecast errors than with ex-post forecast errors, which is consistent with our hypothesis H1a. While we don't see a significant relationship of one-year lagged earnings management with forecast errors at the 10% level, except in the discretionary expenses model, it shows a negative sign consistently, which means that if there is earnings management in a previous period, financial analysts will generate less forecast errors and their predictions will closely reflect reported (managed) earnings.

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<sup>36</sup> Our primary analysis includes the OLS that is heteroscedasticity-consistent standard errors procedure, which eliminates the heteroscedasticity issues.

Roodman (2009) lays out system GMM model parameters to produce reliable results. For system GMM to produce reliable results, the model parameters include rejecting the null hypothesis of no serial correlation of first order errors “AR(1)”, not rejecting the null hypothesis of no higher-order serial correlations in first difference “AR(2)” and not rejecting the Hansen’s over-identification null hypothesis if all instruments are exogenous.

Our results consistently fulfil these model parameters across all regression results. We observe AR(1) at significance level of less than 1%, which means we reject the null hypothesis of no serial correlation of first order errors, while we do not reject the null hypotheses of AR(2) and Hansen’s over-identification at the significance level of more than 5%.

#### **6.4 Sensitivity Analysis or Robustness Test**

For sensitivity analysis or robustness checks, we applied the same regressions on median series of absolute ex-ante and ex-post forecast errors. Similarly, table 2.10 and table 2.11 show a significant positive relationship of earnings management with forecast errors. We also note that coefficients of earnings management with ex-ante forecast errors are higher in magnitude than the coefficients of earnings management with ex-post forecast errors.

Our extensive empirical analyses consistently provide robust results which are in line with Burgstahler and Eames (2003). Aubert and Grudnitski (2012) suggest that the post announcement predictions, i.e. convergent consensus, represent managed earnings and financial analysts do not remove the earnings management component from the reported earnings to predict unmanaged earnings. Our results suggest that financial analysts minimize the forecast errors and while making ex-post forecasts, i.e. convergent consensus, predict reported (managed) earnings which is inconsistent with Aubert and Grudnitski (2012).

**Table 2.8: Multivariate Pooled OLS Regression results for Mean Series**

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
<b>Abs_Kothari</b>	<b>0.306***</b>	<b>0.246***</b>								
<b>Abs_Dechow</b>			<b>0.305***</b>	<b>0.243***</b>						
<b>Abs_CFO</b>					<b>0.277***</b>	<b>0.223***</b>				
<b>Abs_Prod</b>							<b>0.071***</b>	<b>0.058***</b>		
<b>Abs_Disexp</b>									<b>0.071***</b>	<b>0.064***</b>
<b>GW</b>	1.129***	0.986***	1.129***	0.987***	1.134***	0.991***	1.145***	0.998***	1.148***	1.000***
<b>OLC</b>	0.072*	0.063*	0.072*	0.063*	0.058	0.051	0.068*	0.058*	0.072*	0.058
<b>RC</b>	0.012***	0.016***	0.012***	0.016***	0.012***	0.016***	0.012***	0.015***	0.011***	0.015***
<b>LEV</b>	0.036***	0.031***	0.036***	0.031***	0.035***	0.031***	0.048***	0.041***	0.049***	0.042***
<b>Log_AF</b>	-0.007	-0.004	-0.007	-0.004	-0.010*	-0.006	-0.012**	-0.008	-0.013**	-0.008
<b>AQ</b>	-0.014**	-0.014**	-0.014**	-0.014**	-0.013**	-0.014**	-0.013**	-0.014**	-0.014**	-0.015**
<b>Constant</b>	0.016*	0.013	0.016*	0.013	0.017*	0.014	0.025***	0.020**	0.028***	0.021***
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	51.94%	47.69%	51.94%	47.63%	52.52%	48.14%	49.63%	45.90%	49.15%	45.69%
<b>Adj. R<sup>2</sup></b>	51.84%	47.58%	51.84%	47.52%	52.42%	48.03%	49.52%	45.79%	49.04%	45.57%

Note:

4. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

5. *Abs\_FEAM* is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and *Abs\_FEPM* is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.

6. Please refer table 2.2 for variable definitions.

Table 2.9: GMM on Mean Series

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
L.Abs_FEAM	<b>0.0946***</b>		<b>0.0937***</b>		<b>0.0833***</b>		<b>0.1105***</b>		<b>0.1209***</b>	
L.Abs_FEPM		<b>0.1649***</b>		<b>0.1645***</b>		<b>0.1708***</b>		<b>0.1368***</b>		<b>0.1511***</b>
Abs_Kothari	<b>0.4920***</b>	<b>0.2630***</b>								
L.Abs_Kothari	<b>-0.0226</b>	<b>-0.0313</b>								
Abs_Dechow			<b>0.4807***</b>	<b>0.2553***</b>						
L.Abs_Dechow			<b>-0.0237</b>	<b>-0.0319</b>						
Abs_CFO					<b>0.3902***</b>	<b>0.2034***</b>				
L.Abs_CFO					<b>-0.0422</b>	<b>0.0041</b>				
Abs_Prod							<b>0.1762***</b>	<b>0.1364***</b>		
L.Abs_Prod							<b>-0.0117</b>	<b>-0.0112</b>		
Abs_Disexp									<b>0.1842***</b>	<b>0.1351***</b>
L.Abs_Disexp									<b>-0.1094***</b>	<b>-0.0813***</b>
GWJ	1.0609***	0.9347***	1.0620***	0.9369***	1.1179***	0.9654***	1.0646***	0.9047***	1.0508***	0.9229***
OLC	0.0408	0.0302	0.0384	0.0286	-0.0100	0.0145	-0.0197	-0.0155	0.0359	0.0327
RC	0.0118***	0.0144***	0.0117***	0.0143***	0.0104***	0.0122***	0.0095***	0.0133***	0.0095***	0.0130***
LEV	0.0189*	0.0151*	0.0192**	0.0154*	0.0114	0.0106	0.0279***	0.0215***	0.0289***	0.0252***
Log_AF	0.0014	-0.0015	0.0011	-0.0018	-0.0078*	-0.0048	-0.0030	-0.0007	-0.0120**	-0.0095**
AQ	-0.0120**	-0.0098*	-0.0121**	-0.0100**	-0.0090	-0.0098*	-0.0059	-0.0111**	-0.0091	-0.0082
Constant	-0.0015	0.0063	-0.0004	0.0071	0.0101	0.0108	-0.0004	0.0036	0.0224***	0.0172**
Observations	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.352	0.220	0.388	0.235	0.803	0.382	0.390	0.321	0.190	0.151
Hansen test	0.928	0.889	0.927	0.885	0.886	0.927	0.599	0.759	0.757	0.599

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAM is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and Abs\_FEPM is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.
3. Please refer table 2.2 for variable definitions.

Table 2.10: Multivariate Pooled OLS Regression results for Median Series

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
Abs_Kothari	<b>0.297***</b>	<b>0.244***</b>								
Abs_Dechow			<b>0.296***</b>	<b>0.240***</b>						
Abs_CFO					<b>0.275***</b>	<b>0.232***</b>				
Abs_Prod							<b>0.068***</b>	<b>0.059***</b>		
Abs_Disexp									<b>0.069***</b>	<b>0.065***</b>
GW	1.124***	0.980***	1.124***	0.981***	1.128***	0.983***	1.139***	0.992***	1.143***	0.994***
OLC	0.072*	0.069*	0.072*	0.070*	0.057	0.056	0.068*	0.064*	0.071*	0.064*
RC	0.012***	0.015***	0.012***	0.015***	0.012***	0.015***	0.011***	0.015***	0.011***	0.014***
LEV	0.034***	0.031***	0.034***	0.031***	0.033***	0.030***	0.046***	0.041***	0.047***	0.042***
Log_AF	-0.008	-0.004	-0.008	-0.004	-0.010**	-0.006	-0.013**	-0.008	-0.014***	-0.009*
AQ	-0.014**	-0.014**	-0.014**	-0.014**	-0.013**	-0.014**	-0.013**	-0.014**	-0.014**	-0.015**
Constant	0.018**	0.014*	0.018**	0.015*	0.018**	0.014*	0.026***	0.021***	0.029***	0.022***
Observations	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
R <sup>2</sup>	51.72%	45.93%	51.73%	45.85%	52.47%	46.72%	49.48%	44.27%	49.04%	44.06%
Adj. R <sup>2</sup>	51.62%	45.82%	51.62%	45.74%	52.37%	46.61%	49.38%	44.15%	48.93%	43.94%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAMd is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and Abs\_FEPMd is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.

Table 2.11: GMM on Median Series

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
L.Abs_FEAMd	<b>0.1020***</b>		<b>0.1013***</b>		<b>0.0883***</b>		<b>0.1150***</b>		<b>0.1318***</b>	
L.Abs_FEPMd		<b>0.1542***</b>		<b>0.1541***</b>		<b>0.1619***</b>		<b>0.1276***</b>		<b>0.1425***</b>
Abs_Kothari	<b>0.4707***</b>	<b>0.3384***</b>								
L.Abs_Kothari	<b>-0.0185</b>	<b>-0.0443</b>								
Abs_Dechow			<b>0.4600***</b>	<b>0.3306***</b>						
L.Abs_Dechow			<b>-0.0188</b>	<b>-0.0438</b>						
Abs_CFO					<b>0.3848***</b>	<b>0.2561***</b>				
L.Abs_CFO					<b>-0.0329</b>	<b>0.0033</b>				
Abs_Prod							<b>0.1816***</b>	<b>0.1626***</b>		
L.Abs_Prod							<b>-0.0173</b>	<b>-0.0221</b>		
Abs_Disexp									<b>0.1862***</b>	<b>0.1840***</b>
L.Abs_Disexp									<b>-0.1101***</b>	<b>-0.1058***</b>
<b>GW</b>	1.0565***	0.9288***	1.0575***	0.9304***	1.1156***	0.9638***	1.0484***	0.8897***	1.0419***	0.9104***
<b>OLC</b>	0.0398	0.0265	0.0369	0.0244	-0.0133	0.0046	-0.0211	-0.0218	0.0334	0.0237
<b>RC</b>	0.0117***	0.0135***	0.0117***	0.0134***	0.0103***	0.0114***	0.0092***	0.0118***	0.0094***	0.0115***
<b>LEV</b>	0.0161	0.0098	0.0163	0.0098	0.0098	0.0063	0.0261***	0.0208***	0.0284***	0.0232***
<b>Log_AF</b>	0.0006	-0.0013	0.0003	-0.0014	-0.0079*	-0.0046	-0.0032	0.0001	-0.0118**	-0.0096**
<b>AQ</b>	-0.0117**	-0.0102**	-0.0119**	-0.0104**	-0.0084	-0.0095*	-0.0060	-0.0098*	-0.0089	-0.0080
<b>Constant</b>	0.0004	0.0060	0.0014	0.0067	0.0100	0.0095	0.0005	0.0014	0.0219**	0.0167**
<b>Observations</b>	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864
<b>AR(1)</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>AR(2)</b>	0.351	0.209	0.388	0.226	0.820	0.399	0.398	0.307	0.175	0.118
<b>Hansen test</b>	0.930	0.797	0.929	0.798	0.877	0.898	0.630	0.749	0.727	0.362

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAMd is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and Abs\_FEPMd is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.

## 7 Conclusion

Our major contribution, to the wide and extant literature of earnings management and financial analysts' forecasts, is the use of financial analysts' ex-post forecasts along with ex-ante forecasts to answer the question of if analysts' forecasts are symmetrically distributed with managed or unmanaged earnings. We use multiple techniques of measuring proxies of earnings management (i.e. Discretionary Accruals and Real Earnings Management) simultaneously to provide robust results. Our extensive empirical analyses include the use of pooled OLS and system GMM procedures to counter reciprocity, heterogeneity and endogeneity problems.

We provide evidence to support the claim that analysts predict managed earnings. They reduce earnings surprises and readjust their ex-ante forecasts to make accurate predictions in order to reduce the risk of job insecurity and loss of reputation in the market. One of the major reasons that firms manage their earnings and keep their earnings closer to market expectations is because of serious market reactions to earning shocks or negative earnings surprises. In other words, firms manage earnings to reduce surprises and volatility in their stock prices.

It is widely accepted that firms' targets include analysts' predictions and firms manage earnings to meet or beat these targets to reduce earnings surprises volatility<sup>37</sup>. We consider that after firms have reported their earnings, financial analysts are in a better position to analyze arrangements and can arrive at the actual (unmanaged) earnings of the firms. That is when financial analysts decide to make another prediction (i.e. ex-post forecasts) or readjust their ex-ante forecasts after earnings announcements to predict firms' actual performance. Our results provide empirical evidence that financial analysts predict reported (managed) earnings and reduce the forecast errors from ex-ante forecasts rather than predict firms' actual performance.

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<sup>37</sup> Abarbanell and Lehavy (2003) talk about the intentions of firms and they discuss the effects of forecast errors or earnings surprises on stock valuation.

While this study provides a significant contribution to the literature, it also has limitations. The data sample mostly comprises the firms who use the big four audit firms i.e. 94.25%. This then reflects the bigger sized firms, which may limit the wider application of this study. Further studies on broader sample sizes like international firms will greatly contribute to the literature and may present a multitude of dimensions for more research.



## Appendix 2

Table 2.12: Fixed Effect Panel regression on Mean Series

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
<b>Abs_Kothari</b>	0.209***	0.160***								
<b>Abs_Dechow</b>			0.208***	0.157***						
<b>Abs_CFO</b>					0.246***	0.220***				
<b>Abs_Prod</b>							0.108***	0.082***		
<b>Abs_Disexp</b>									0.113***	0.111***
<b>GW</b>	1.136***	0.986***	1.136***	0.986***	1.145***	0.993***	1.136***	0.986***	1.143***	0.991***
<b>OLC</b>	0.131**	0.109***	0.131**	0.110***	0.112	0.086**	0.110**	0.094***	0.112*	0.080**
<b>RC</b>	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.008**	0.009***
<b>LEV</b>	0.060***	0.062***	0.060***	0.062***	0.055***	0.057***	0.058***	0.061***	0.059***	0.060***
<b>Log_AF</b>	-0.037***	-0.033***	-0.038***	-0.033***	-0.035***	-0.030***	-0.034**	-0.030**	-0.036***	-0.030**
<b>AQ</b>	-0.021	-0.007	-0.021	-0.008	-0.022*	-0.008	-0.023*	-0.009	-0.020*	-0.006
<b>Constant</b>	0.054***	0.036**	0.055***	0.037**	0.049**	0.029**	0.049**	0.032**	0.051***	0.029**
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	0.522	0.492	0.522	0.492	0.532	0.508	0.521	0.492	0.515	0.493
<b>Adj. R<sup>2</sup></b>	0.521	0.491	0.521	0.491	0.531	0.507	0.520	0.491	0.514	0.492

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAM is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and Abs\_FEPM is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.
3. Please refer table 2.2 for variable definitions.

Table 2.13: Fixed Effect Panel regression on Median Series

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
Abs_Kothari	<b>0.206***</b>	<b>0.163***</b>								
Abs_Dechow			<b>0.204***</b>	<b>0.160***</b>						
Abs_CFO					<b>0.245***</b>	<b>0.225***</b>				
Abs_Prod							<b>0.107***</b>	<b>0.085***</b>		
Abs_Disexp									<b>0.113***</b>	<b>0.118***</b>
GW	1.140***	0.995***	1.139***	0.994***	1.149***	1.002***	1.140***	0.995***	1.147***	0.999***
OLC	0.128**	0.107***	0.129**	0.108***	0.109	0.083**	0.108**	0.090***	0.108*	0.074**
RC	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.007**	0.009***
LEV	0.058***	0.060***	0.058***	0.060***	0.053***	0.055***	0.057***	0.059***	0.058***	0.058***
Log_AF	-0.037***	-0.034***	-0.037***	-0.035***	-0.034***	-0.031***	-0.033**	-0.031**	-0.035***	-0.031**
AQ	-0.021	-0.008	-0.021	-0.008	-0.021*	-0.008	-0.022*	-0.009	-0.019*	-0.006
Constant	0.054***	0.038**	0.054***	0.039**	0.048**	0.031**	0.048***	0.034**	0.050***	0.030**
Observations	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
R <sup>2</sup>	0.527	0.481	0.527	0.481	0.538	0.497	0.527	0.481	0.521	0.483
Adj. R <sup>2</sup>	0.526	0.480	0.526	0.480	0.537	0.496	0.526	0.480	0.519	0.482

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAMd is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and Abs\_FEPMd is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.

Table 2.14: Pooled OLS on Mean Series – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
<b>Abs_Kothari</b>	<b>0.341***</b>	<b>0.264***</b>								
<b>Abs_Dechow</b>			<b>0.344***</b>	<b>0.266***</b>						
<b>Abs_CFO</b>					<b>0.199***</b>	<b>0.158***</b>				
<b>Abs_Prod</b>							<b>0.045***</b>	<b>0.037***</b>		
<b>Abs_Disexp</b>									<b>0.071***</b>	<b>0.059***</b>
<b>GW</b>	1.132***	0.990***	1.131***	0.989***	1.146***	1.000***	1.152***	1.005***	1.149***	1.002***
<b>OLC</b>	0.072*	0.064*	0.072*	0.064*	0.070*	0.061*	0.084**	0.071**	0.060	0.052
<b>RC</b>	0.012***	0.016***	0.012***	0.016***	0.012***	0.016***	0.012***	0.015***	0.012***	0.015***
<b>LEV</b>	0.036***	0.032***	0.036***	0.032***	0.039***	0.034***	0.050***	0.042***	0.051***	0.044***
<b>Log_AF</b>	-0.005	-0.002	-0.005	-0.002	-0.012**	-0.008	-0.015***	-0.010*	-0.013**	-0.008
<b>AQ</b>	-0.013**	-0.014**	-0.013**	-0.014**	-0.014**	-0.014**	-0.014**	-0.015**	-0.015**	-0.015***
<b>Constant</b>	0.011	0.009	0.010	0.009	0.022**	0.017**	0.029***	0.023***	0.026***	0.020***
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	0.537	0.488	0.537	0.488	0.517	0.474	0.491	0.454	0.496	0.459
<b>Adj. R<sup>2</sup></b>	0.536	0.487	0.536	0.487	0.516	0.473	0.490	0.453	0.495	0.458

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Abs\_FEAM* is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and *Abs\_FEPM* is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.
3. Please refer table 2.2 for variable definitions.

Table 2.15: Pooled OLS on Median Series – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
<b>Abs_Kothari</b>	<b>0.335***</b>	<b>0.266***</b>								
<b>Abs_Dechow</b>			<b>0.338***</b>	<b>0.268***</b>						
<b>Abs_CFO</b>					<b>0.197***</b>	<b>0.164***</b>				
<b>Abs_Prod</b>							<b>0.045***</b>	<b>0.038***</b>		
<b>Abs_Disexp</b>									<b>0.070***</b>	<b>0.060***</b>
<b>GW</b>	1.126***	0.983***	1.126***	0.983***	1.140***	0.993***	1.146***	0.999***	1.143***	0.996***
<b>OLC</b>	0.071*	0.070**	0.071*	0.070**	0.068*	0.066*	0.082**	0.077**	0.059	0.057
<b>RC</b>	0.012***	0.015***	0.012***	0.015***	0.012***	0.015***	0.012***	0.015***	0.012***	0.015***
<b>LEV</b>	0.034***	0.032***	0.034***	0.032***	0.037***	0.033***	0.048***	0.042***	0.049***	0.043***
<b>Log_AF</b>	-0.005	-0.003	-0.005	-0.003	-0.013**	-0.008	-0.015***	-0.010*	-0.013**	-0.009*
<b>AQ</b>	-0.013**	-0.014**	-0.013**	-0.014**	-0.014**	-0.015**	-0.014**	-0.015**	-0.015**	-0.015***
<b>Constant</b>	0.012	0.010	0.012	0.010	0.023**	0.018**	0.030***	0.024***	0.027***	0.021***
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	0.536	0.471	0.536	0.471	0.516	0.459	0.490	0.439	0.495	0.443
<b>Adj. R<sup>2</sup></b>	0.535	0.470	0.535	0.470	0.515	0.458	0.489	0.437	0.494	0.441

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Abs\_FEAMd* is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and *Abs\_FEPMd* is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.

**Table 2.16: Fixed Effect Panel regression on Mean Series – Time Series Earnings Management**

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
<b>Abs_Kothari</b>	<b>0.248***</b>	<b>0.188***</b>								
<b>Abs_Dechow</b>			<b>0.250***</b>	<b>0.190***</b>						
<b>Abs_CFO</b>					<b>0.207***</b>	<b>0.185***</b>				
<b>Abs_Prod</b>							<b>0.095***</b>	<b>0.077***</b>		
<b>Abs_Disexp</b>									<b>0.138***</b>	<b>0.125***</b>
<b>GW</b>	1.140***	0.989***	1.140***	0.989***	1.150***	0.997***	1.140***	0.988***	1.143***	0.991***
<b>OLC</b>	0.133***	0.111***	0.133**	0.111***	0.117*	0.090**	0.115**	0.095***	0.082	0.059*
<b>RC</b>	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.007**	0.009***
<b>LEV</b>	0.061***	0.063***	0.061***	0.063***	0.061***	0.063***	0.063***	0.065***	0.058***	0.059***
<b>Log_AF</b>	-0.035**	-0.031***	-0.035**	-0.031**	-0.035***	-0.030**	-0.036***	-0.032***	-0.033**	-0.028**
<b>AQ</b>	-0.021	-0.007	-0.021	-0.007	-0.021*	-0.007	-0.023**	-0.009	-0.021*	-0.007
<b>Constant</b>	0.050**	0.033**	0.049**	0.033**	0.047**	0.028*	0.050***	0.032**	0.044**	0.025*
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	0.534	0.501	0.534	0.501	0.527	0.503	0.519	0.492	0.526	0.502
<b>Adj. R<sup>2</sup></b>	0.533	0.500	0.533	0.500	0.526	0.502	0.518	0.491	0.525	0.501

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. *Abs\_FEAM* is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and *Abs\_FEPM* is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.
3. Please refer table 2.2 for variable definitions.

**Table 2.17: Fixed Effect Panel regression on Median Series – Time Series Earnings Management**

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
<b>Abs_Kothari</b>	<b>0.245***</b>	<b>0.192***</b>								
<b>Abs_Dechow</b>			<b>0.247***</b>	<b>0.194***</b>						
<b>Abs_CFO</b>					<b>0.206***</b>	<b>0.189***</b>				
<b>Abs_Prod</b>							<b>0.097***</b>	<b>0.081***</b>		
<b>Abs_Disexp</b>									<b>0.139***</b>	<b>0.131***</b>
<b>GW</b>	1.144***	0.998***	1.144***	0.998***	1.153***	1.006***	1.143***	0.997***	1.146***	0.999***
<b>OLC</b>	0.130***	0.109***	0.130***	0.108***	0.113*	0.087**	0.111**	0.090***	0.078	0.052
<b>RC</b>	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.008**	0.010***	0.007**	0.009***
<b>LEV</b>	0.059***	0.061***	0.059***	0.061***	0.060***	0.061***	0.061***	0.063***	0.056***	0.057***
<b>Log_AF</b>	-0.034**	-0.033***	-0.034**	-0.033***	-0.034***	-0.032***	-0.035***	-0.033***	-0.032**	-0.029**
<b>AQ</b>	-0.020	-0.007	-0.020	-0.007	-0.020*	-0.007	-0.023**	-0.009	-0.020*	-0.007
<b>Constant</b>	0.049**	0.035**	0.049**	0.034**	0.046**	0.029*	0.048***	0.033**	0.043**	0.026*
<b>Observations</b>	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
<b>R<sup>2</sup></b>	0.539	0.490	0.539	0.490	0.533	0.492	0.525	0.482	0.532	0.493
<b>Adj. R<sup>2</sup></b>	0.538	0.489	0.538	0.489	0.532	0.491	0.524	0.481	0.531	0.491

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAMd is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and Abs\_FEPMd is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.

Table 2.18: GMM on Mean Series – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM	Abs_FEAM	Abs_FEPM
L.Abs_FEAM	<b>0.0971***</b>		<b>0.0965***</b>		<b>0.1275***</b>		<b>0.1100***</b>		<b>0.1048***</b>	
L.Abs_FEPM		<b>0.1791***</b>		<b>0.1790***</b>		<b>0.1673***</b>		<b>0.1429***</b>		<b>0.1467***</b>
Abs_Kothari	<b>0.3638***</b>	<b>0.1867***</b>								
L.Abs_Kothari	<b>-0.0142</b>	<b>-0.0414</b>								
Abs_Dechow			<b>0.3670***</b>	<b>0.1894***</b>						
L.Abs_Dechow			<b>-0.0136</b>	<b>-0.0416</b>						
Abs_CFO					<b>0.2800***</b>	<b>0.2569***</b>				
L.Abs_CFO					<b>-0.0593</b>	<b>-0.0574*</b>				
Abs_Prod							<b>0.1711***</b>	<b>0.1484***</b>		
L.Abs_Prod							<b>-0.0248</b>	<b>-0.0314*</b>		
Abs_Disexp									<b>0.1696***</b>	<b>0.1541***</b>
L.Abs_Disexp									<b>-0.0746***</b>	<b>-0.0811***</b>
GW	1.0697***	0.9409***	1.0699***	0.9399***	1.1172***	0.9899***	1.1170***	0.9343***	1.0793***	0.9102***
OLC	0.0650**	0.0585**	0.0646**	0.0580**	0.0621**	0.0494**	-0.0242	-0.0247	0.0092	0.0032
RC	0.0122***	0.0152***	0.0121***	0.0152***	0.0098***	0.0122***	0.0095***	0.0136***	0.0103***	0.0137***
LEV	0.0232***	0.0213**	0.0230**	0.0211**	0.0189*	0.0141	0.0312***	0.0237***	0.0343***	0.0239***
Log_AF	-0.0021	-0.0054	-0.0020	-0.0053	-0.0081*	-0.0052	-0.0011	0.0001	-0.0075*	-0.0065*
AQ	-0.0107**	-0.0086*	-0.0107**	-0.0086*	-0.0100*	-0.0102*	-0.0142**	-0.0127**	-0.0118**	-0.0114**
Constant	0.0040	0.0098	0.0038	0.0096	0.0122	0.0083	0.0036	0.0019	0.0150*	0.0138**
Observations	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.487	0.243	0.486	0.241	0.646	0.527	0.373	0.249	0.179	0.0928
Hansen test	0.887	0.776	0.888	0.775	0.763	0.728	0.681	0.698	0.872	0.794

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAM is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Mean series and Abs\_FEPM is the abbreviation for Absolute value of Ex-Post Forecast Errors for Mean series.
3. Please refer table 2.2 for variable definitions.

Table 2.19: GMM on Median Series – Time Series Earnings Management

Variables	Accrual Models				Real Earnings Models					
	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd	Abs_FEAMd	Abs_FEPMd
L.Abs_FEAMd	<b>0.1029***</b>		<b>0.1022***</b>		<b>0.1347***</b>		<b>0.1160***</b>		<b>0.1112***</b>	
L.Abs_FEPMd		<b>0.1725***</b>		<b>0.1724***</b>		<b>0.1483***</b>		<b>0.1335***</b>		<b>0.1437***</b>
Abs_Kothari	<b>0.3588***</b>	<b>0.2323***</b>								
L.Abs_Kothari	<b>-0.0050</b>	<b>-0.0477</b>								
Abs_Dechow			<b>0.3619***</b>	<b>0.2360***</b>						
L.Abs_Dechow			<b>-0.0044</b>	<b>-0.0479</b>						
Abs_CFO					<b>0.2754***</b>	<b>0.3335***</b>				
L.Abs_CFO					<b>-0.0592*</b>	<b>-0.0792***</b>				
Abs_Prod							<b>0.1640***</b>	<b>0.2006***</b>		
L.Abs_Prod							<b>-0.0219</b>	<b>-0.0660***</b>		
Abs_Disexp									<b>0.1679***</b>	<b>0.1795***</b>
L.Abs_Disexp									<b>-0.0706***</b>	<b>-0.0910***</b>
GW	1.0661***	0.9454***	1.0664***	0.9446***	1.1057***	0.9897***	1.1084***	0.9214***	1.0694***	0.9027***
OLC	0.0605*	0.0530*	0.0603*	0.0524*	0.0605**	0.0517*	-0.0198	-0.0310	0.0040	-0.0001
RC	0.0122***	0.0141***	0.0121***	0.0142***	0.0097***	0.0114***	0.0095***	0.0126***	0.0104***	0.0127***
LEV	0.0207**	0.0171**	0.0206**	0.0170**	0.0182*	0.0120	0.0300***	0.0236***	0.0330***	0.0213**
Log_AF	-0.0022	-0.0061	-0.0020	-0.0060	-0.0089*	-0.0038	-0.0019	0.0006	-0.0077*	-0.0069*
AQ	-0.0106**	-0.0087*	-0.0106**	-0.0087*	-0.0099*	-0.0106**	-0.0140**	-0.0118**	-0.0118**	-0.0115**
Constant	0.0044	0.0110	0.0041	0.0107	0.0134	0.0053	0.0049	-0.0004	0.0152*	0.0140**
Observations	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.505	0.240	0.504	0.239	0.661	0.648	0.405	0.194	0.185	0.0764
Hansen test	0.891	0.664	0.891	0.664	0.713	0.692	0.600	0.664	0.800	0.570

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Abs\_FEAMd is the abbreviation for Absolute value of Ex-Ante Forecast Errors for Median series and Abs\_FEPMd is the abbreviation for Absolute value of Ex-Post Forecast Errors for Median series.
3. Please refer table 2.2 for variable definitions.





## **CHAPTER 3: EFFECTS OF EARNINGS MANAGEMENT ON INDIVIDUAL FIRMS' MARKET ADJUSTED RETURN**

**Abstract:** This study investigates the effect of earnings management and the earnings surprises on the firms' stock returns adjusted with market returns. We use the discretionary accrual modified model and real earnings management to proxy for the earnings management. Earnings management is the discretionary choice of the management to manipulate earnings to achieve the financial targets. Earnings surprise is the difference of firms' reported earnings and the Wall Street estimates, which affects the individual firms' stock prices around the earnings announcement and on the long run.

We argue in this study that earnings' announcement affects the respective firms' share prices depending on their performances. Financial markets react to the bottom figure of the financial statements and to achieve the positive and favorable reaction, firms manage their earnings. We believe that bottom figures in the earnings announcement include the earnings management, which helps firms to improve their market return. Similarly, earnings surprise also affects the market share. Positive earnings surprise, good news, leads to higher market returns and vice-versa for negative earnings surprise, bad news.

Our results suggest that the magnitude of earnings management has positive and significant relationship with firms' market-adjusted return. Similarly, good news also shows the positive relationship and significant negative relationship exists with bad news. This concludes that the earnings announcement does indeed have significant effects on firms' market-adjusted returns.

**Keywords:** Market Adjusted Returns, Earnings Management, Analysts Forecasts, Earnings Surprise, Earnings Announcement, Accruals Earnings Management, Real Earnings Management

**JEL Classification:** M41

## 1 Introduction

### 1.1 Research Question and Importance

There is an extant literature which deals with the earnings surprises and abnormal share returns (Keung et al., 2010), sales surprises and abnormal share returns (Shih, 2019) and meeting or beating earnings expectations (Abarbanell and Lehavy, 2003; Oler, Pitre, and Song, 2018). There is a large literature, which also deals with the market reaction towards the earnings announcement (Lyle et al., 2019) and achieving the financial thresholds with earnings management (Ebaid, 2012; Mindak et al., 2016). Levitt Jr (1998) says that the firms manage their earnings to beat the market expectations in order to avoid any significant negative effects on their market share. This research focuses on the study of firm' attitude towards their earnings management techniques and its effects on the market-adjusted returns (hereafter MAR) of individual firms. Similar to Fuller, Netter, and Stegemoller (2002), we measure MAR, using market adjusted return model, as the difference between returns of individual firm and market index return over shorter 2-days and 3-days rolling windows instead of 5-days period<sup>38</sup>. This study also emphasizes on the two techniques firms use to manage their earnings to reach financial targets<sup>39</sup>. These techniques include the accruals earnings management and real earnings management (hereafter AEM and REM respectively).

This study investigates the effects of such earnings management techniques on the firm's MAR. The reason to select shorter windows is to assess the market reaction towards the earnings announcement and the earnings surprises thereof. We assume the markets are efficient and they will be able to mitigate the shocks in the longer run. Existing literature has put a little emphasis

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<sup>38</sup> Fuller et al. (2002) follow Brown and Warner's (1985) model to measure the cumulative abnormal return (CAR). While we use the same market adjust return model but with smaller 3-days windows, similar to Keung et al. (2010).

<sup>39</sup> Levitt Jr (1998) says that, "even if a firm fails to meet the forecasting targets by a single penny, it can lose six percent or more of its stock prices in a single day" during his speech at New York University for Law and Business in September 1998.

on the shorter rolling window returns instead focusing more on firms achieving the earnings targets or benchmarks (Barua, Legoria, and Moffitt, 2006; Mindak et al., 2016). Other studies investigate the economic effects of small negative earnings surprises (Graham et al., 2005)<sup>40</sup> and investors' skepticism towards the small positive earnings surprises (Keung et al., 2010).

There are few major contributions of this study. Our study uses MAR with multiple rolling windows in days ( $[-1 +1]$ ,  $[0 +1]$  and  $[-1 0]$ ) around the earnings announcement, to be discussed later in more detail. Our study is the extension of the work by Keung et al. (2010) by incorporating the period beyond 2006. Introducing AEM and REM techniques, which firms use to manage their earnings unlike Burgstahler and Eames (2006) who only use discretionary accruals and operating cash flow components<sup>41</sup>. We also create subsamples from each earnings management technique to see what challenges firms, with income-increasing (hereafter PEM) and income-decreasing (hereafter NEM) attitude, face<sup>42</sup>. Incorporating earnings surprise (good and bad news) to check the sensitivity analysis and to compare our results with the work of Keung et al. (2010), Burgstahler and Eames (2006) and Graham et al. (2005). Another contribution to the literature is the use of individual firms' beta returns (i.e. systematic risk) against the market as a whole. We use beta as an alternative specification to the rolling window MAR, which explains the firms' risk sensitivity to the market index return. Our results suggest that firms' earnings management choices consistently affect their returns after adjusting with market. PEM positively affects the MAR and vice-versa in case of NEM.

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<sup>40</sup> Frankel et al. (2010) find no materially statistical evidence to support the results of Graham et al. (2005).

<sup>41</sup> Burgstahler and Eames (2006) use the Jones (1991) model to estimate discretionary accruals while our study focuses on modified Jones model by Kothari et al. (2005).

<sup>42</sup> Keung et al. (2010) only deal with positive earnings management and assume the firms with positive discretionary accruals more often end up with positive earnings surprise with  $[0, 1c]$ .

## 1.2 Background

Existing literature widely speaks about the earnings management i.e. accruals earnings management (Kothari et al., 2005) and real earnings management (Roychowdhury, 2006). Since Beaver (1968) hints that there exists the relationship between earnings announcement and the investor reactions, researchers have focused their attention on the study of market reactions towards the earnings announcement and its informational value (Atiase and Bamber, 1994; Frankel et al., 2010; Keung et al., 2010; Shih, 2019). Levitt Jr (1998) explains the attitude of the firms, that the firms manage their earnings in order to achieve their financial targets. While one of the most important financial targets is the Wall Street Journal forecasts. Not all potential investors have financial and business acumen, for investing decisions, they rely heavily on their own financial knowledge or financial analysts' forecasts i.e. Wall Street Journal forecasts. Investors with the financial knowledge are capable of analyzing the financial news and performance of the firms. In other words, they understand the techniques undertaken by the firms to manage their earnings in order to deliver the good news to public. While other investors without this knowledge tend to rely on financial analysts and their investment consultancy services. As Hong and Kubik (2003) classify this as the "Age of the analysts", there is exceeding reliance on the financial analysts which warrants ever so more studies on their forecasting capabilities (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2006).

This study investigates the effects of firms' decisions to manage earnings upward (PEM) or downward (NEM) on the firms' MAR. Our study gets the motivation from recent literature that talks about the firms' choices to meet or beat the thresholds (Abarbanell and Lehavy, 2003; Levitt Jr, 1998) and whether stock market or investors are skeptical about the small positive surprises and perceive them as the signal of earnings manipulation (Keung et al., 2010; Shih, 2019). While Frankel et al. (2010) also discuss about the reactions of the capital markets on the

small negative earnings surprises. These studies discuss the firms' decisions to manage the earnings in order to achieve the targets and these targets include the financial analysts' forecasts.

For the purpose of our research and following the existing literature, we study the market reactions towards the firms' earnings management decision-making. While it is assumed that, the firms manage their earnings in order to achieve the financial targets including analysts' forecasts to avoid any significant detrimental reactions from the capital market players. Having said that we also understand that not all firms play this number's game, but we do not differentiate between the confirmed manipulators and mere suspects<sup>43</sup>. We confine our study to analyze the effect of these decisions on their market share, in terms of the share price return adjusted with the market return (MAR). Healy and Wahlen (1999) describe the earnings management by firms' discretionary powers to change financial reports to mislead some users of financial statements about the firm's performance. Marai and Pavlović (2013) explain AEM as the use of accounting policies to alter values, such as adjusting accounting estimates, provisions for bad debts, accounting and valuation methods, asset pricing, and impairment. While they say, REM inflates or deflates revenues and expenses by using business transactions, such as product pricing, production costs, research and development, and other discretionary expenditures. There is a growing literature, which separately deals with these two earnings management techniques. This study does not compare AEM and REM but we employ both to analyze the firms' attitude and its effects on market reactions<sup>44</sup>. Furthermore, we also divide our sample into income increasing and income decreasing firms for earnings manipulation under each technique to analyze if the firms that overstate and understate their earnings actually have positive or negative return.

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<sup>43</sup> Keung et al. (2010) use these terms to explain the numbers game. They explain that the cost of lower valuations in the capital markets is borne mutually by all the firms.

<sup>44</sup> Shi et al. (2015) have done a comparative study of these two techniques within geographic dispersion of the firms. Another such comparative study is done by Ferentinou and Anagnostopoulou (2016).

Prior literature discusses the similar question and finds that the firms apply earnings management technique to meet or beat the target and its relationship with abnormal returns (Keung et al., 2010; Shih, 2019). Burgstahler and Eames (2006) also discuss the use of earnings management to achieve zero or small positive earnings shocks or surprises<sup>45</sup>. While these studies focus more on the abnormal returns and zero or small positive (negative) earnings surprises; our study emphasizes on the overall firms' behavior or attitude towards their earnings management decision-making and its effect on the market reaction and firms' MAR.

Our results suggest that the magnitude of the earning management positively affects the MAR i.e. firms return adjusted against the market return. However, our results are still consistent when we split our sample in the two categories: firms with PEM and NEM attitude. The firms with PEM attitude are those, which overstate their earnings in order to achieve the forecasting targets<sup>46</sup>. While other category belongs to those firms, which understate their earnings. Our results show the evidence that when firms apply the PEM approach towards their earnings, their MAR actually increases while the firms with NEM approach find their MAR decreasing. Our results are robust with the inclusion of earnings surprise in our statistical analysis and provides the similar evidence that the good (bad) news in terms of earnings surprises actually positively (negatively) affects the firms' returns or growth. Our statistical analyses also include the use of beta i.e. systematic risk, or also known as volatility, of the firm against the market and our results consistently support our primary analysis.

The following section extends the review of relevant literature about the reactions from capital markets or potential investors to the firms' decision-making choices to the financial targets including analysts' forecasts. Section 3 develops the hypotheses of our research study. The data sampling, research methodology and variable definition are part of section 4. Sections 5 and 6

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<sup>45</sup> Frankel et al. (2010) discuss the consequences of small negative earnings surprises on investor relations.

<sup>46</sup> Levitt Jr (1998) says that these firms overstate their earnings because even underachieving the forecasting targets by 1-cent costs more than 6% decrease in their market share.

present the empirical data analyses including descriptive statistics, correlation, and multivariate regression results. The section 7 concludes this empirical study with summary and limitations.

## **2 Literature Review**

Firms prepare the financial statements to provide the information to its end users including potential investors along with other capital market players. The incentive for the firms to produce useful information is to protect those potential investors, who become one of their fund generating sources. They are also part of the capital market who influence the total market value of the individual firms. For that purpose, Othman and Zeghal (2006) discuss about the country policies on the investor protection to establish an economy that is sustainable and stable for the overall growth of the economy. Knowing these users influence the market value, firms have that added pressure of making up the numbers to present better view of their performance (Levitt Jr, 1998). Schipper (1989) defines earnings management as the use of discretionary powers by the firms to manage the earnings and dress up the numbers to show good performance. Furthermore, Healy and Wahlen (1999) also define it as the use of discretionary choices to hide the actual financial performance and alter the financial reports to achieve the targets. Prior literature has provided the two techniques to measure the earnings management. Jones (1991) introduces the Accruals Earnings Management (AEM) technique, which Kothari et al. (2005) modifies. Roychowdhury (2006) gives another technique i.e. Real Earnings Management (REM). We use both techniques in our statistical analyses of this study.

Firms' earnings announcements affect their share price returns. Potential investors require financial information to make any informed investing decision. First source of such information is the financial statements that firms prepare and issue i.e. earnings announcement. Lyle et al. (2019) discuss the difference in the market reaction in relation to the timing of the earnings



announcement. They believe that the firms, which announce the earnings outside of regular trading hours, give investors enough time to process the financial information before the trading begins again. Therefore, the announcements during the pre-open period have slower market reactions. Beaver, McNichols, and Wang (2020) deal with the change in the market response towards the earnings announcement during difference periods. They document increased response during 2001-2011 and over time. We analyze the effects of earnings quality on the market returns and differentiate the users of financial statement into potential investors and financial analysts<sup>47</sup>. Literature defines earnings quality on the multitude of angles<sup>48</sup>.

This study focuses on the study of earnings quality and its effects on the investors' decision-making, which further explains the behavior of the firms' returns adjusted against the market. Prior literature mostly deals with the earnings surprises. While Frankel et al. (2010) investigate the effects of missing forecasting targets on the investor relations. They use analysts' conference calls with managers as the proxy of investor relations and analyze the effects of small negative earnings surprises. They conduct a survey study to analyze the effects of missing market expectations on the investor relationship and they find that the firms that miss expectations generally have longer lengths than meeting expectations. They explain this relationship as the negative effect of missing market expectation on the investor relationship. They do not find significant evidence to support Graham et al. (2005) that missing earnings benchmark results in severe economic implications. While Keung et al. (2010) talks about the market reaction to the positive earnings surprises and they find that the investors are skeptical when firms just meet or beat the earnings expectations and consider the existence of earnings management. Other studies discuss the use of earnings management to meet or beat analysts' forecasts in case

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<sup>47</sup> We argue that there are financial analysts, who provide the investment consultancy services to the potential investors who do not possess the financial knowledge. While the studies Beaver et al. (2020) and Lyle et al. (2019) only use the term investors.

<sup>48</sup> Lo (2008) defines earnings quality on the degree of earnings management. Higher earnings management means low quality of earnings while Dehaan et al. (2013) discuss application of standards, investor protection, audit quality, reporting incentives and earnings management as the possible explanatory variables.

of Buy (Sell) rated firms (Abarbanell and Lehavy, 2003), use of earnings management to achieve financial targets (Burgstahler and Eames, 2006). Abarbanell and Lehavy (2003) explain how firms are motivated to meet or beat the targets when the firm is rated a Buy and vice-versa in case of Sell. Burgstahler and Eames (2006) find that the firms manage their earnings to meet or beat the earnings expectation in order to have zero or small positive earnings surprises to avoid consequences of earnings shocks.

Our study is motivated by the prior literature and talks about the effects of earnings management on the firms' returns on the stock market adjusted by the capital market returns. We explain this phenomenon in two stages: first stage explains how firms' are motivated to manage their earnings to meet or beat earnings targets (Abarbanell and Lehavy, 2003)<sup>49</sup> and second stage talks about the reactions of the market on the quality of the earnings reports and earnings surprises thereof on the firms' stock returns adjusted against the market's return. Existing literature mostly focus on the relationship between small positive (negative) earnings surprises and the share price returns. Therefore, there is a need of an extension to the existing literature and our study contributes to the literature by including the share price returns of the firms adjusted against the markets, which minimizes the unwanted effects of extremely positive (negative) returns. We also include the short windows for measuring the market-adjusted returns. We use 3-days window (Keung et al., 2010) and two 2-days windows to measure market-adjusted return of the firms. We also use the systematic risk "beta" as the proxy for adjusted returns in place of MAR to check for the robustness.

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<sup>49</sup> Levitt Jr (1998) explains this strategy by the firms as The Numbers Game.

### 3 Hypotheses Development

Keung et al. (2010) and Shih (2019) use earnings surprises and sales surprises respectively, to analyze the effects on the firms' abnormal returns. They suggest the investors are skeptical when there are zero or small positive surprises. Abarbanell and Lehavy (2003) suggest the firms manage earnings upwards when they are rated Buy and downwards when they are rated Sell. Similarly, Burgstahler and Eames (2006) suggest that the firms manage earnings to avoid negative consequences and when firms manage earnings there is higher frequency of zero and small positive surprises.

This study gets the motivations from existing literature and its primary focus is to analyze empirically the relationship between earnings management and the firms' market adjusted return (MAR). Following Abarbanell and Lehavy (2003) and Burgstahler and Eames (2006), who discuss the use of earnings management to meet (zero earnings surprise) or beat (positive earnings surprise) the targets, we assume that the earnings surprise is the function of earnings management. Hence, we use these two proxies separately to analyze the effects on firms' MAR. We posit that the market reaction is the function of firms' discretionary choices to manage earnings and the earnings surprises. We hypothesize that the firms' MAR increases when they amplify the earnings managements or when there is positive earnings surprise (good news). We also analyze the effect of firms' attitude i.e. PEM and NEM, towards the earnings management on the MAR. Finally, this study replicates the literature and uses earnings surprises to analyze the market reaction and its impact on the firms' MAR (Frankel et al., 2010; Keung et al., 2010)<sup>50</sup>.

Literature largely focuses on the alpha returns of the firms, which measure the growth rate of the firms' market share-price returns and we use similar measure of the returns and adjust these

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<sup>50</sup> We assume that the market-adjusted return is the function of market reaction. Market reactions include the behavior of the investors and their investing decisions, which ascertain the market reaction.

returns against the market index. These market-adjusted returns explain the actual performance of the firm relative to the market. Our study also contributes to the literature in the use of beta returns, i.e. the systematic risk or volatility. Beta is the indication that how much a firm's share or stock is volatile against the market. Betas higher than 1 suggest that the firms have higher risk but can also produce higher returns.

**H1: Magnitude of earnings management is positively associated with the firms' MAR.**

**H1a: PEM affects the firms' MAR positively.**

**H1b: NEM affects the firms' MAR negatively.**

**H2: Magnitude of earnings surprises is positively associated with firms' MAR.**

**H2a: Positive earnings surprise (i.e. good news) has positive effect on firms' MAR.**

**H2b: Negative earnings surprise (i.e. bad news) has negative effect on firms' MAR.**

## **4 Data Sampling and Methodology**

### **4.1 Data Sample Selection**

Our data includes non-AAER (Accounting and Auditing Enforcement Release) US market firms and has 83,785 firm-year observations spread over 13 years (6,445 firms each year) from 2006 to 2018. We obtain the data from the Factset Database based on Excel Connect including Factset Fundamentals, Factset Actuals, Factset Estimates, Reuters Global Fundamentals, Thomson Reuters DataStream, I/B/E/S and Center for Research in Security Prices (CRSP). We extract data related to earnings and earnings forecasts from I/B/E/S/ and market return data from CRSP. We obtain betas of the firms from Thomson Reuters DataStream's finance data.

Following (Fama and French, 1992; Payne and Robb, 2000), We exclude observations from financial firms because they use unique accounting procedures and principles, as well as the difficulty in estimating discretionary accruals. Since there is insufficient data under unspecified and miscellaneous firms, we also exclude these observations from our analysis.

The table 3.1 shows the final sample (unbalanced panel data) of firm-year observations under three different rolling windows after removing the firms and the application of trimming criteria. We have one 3-days and two 2-days rolling windows.

**Table 3.1: Sample Selection**

<b>Panel A: Firm-Year Observations</b>									
<b>Firms</b>		<b>Firm-Year Observations</b>							
Total number of firms		(6445 * 13)						83,785	
Less: Firms from financial industry		(1219 * 13)						(15,847)	
Less: Firms from Miscellaneous industries		(774 * 13)						(10,062)	
Less: Unidentified Firms		(70 * 13)						(910)	
<b>Remaining Firms</b>		<b>(4383 * 13)</b>						<b>56,966</b>	
<b>Panel B: Industry-wise Sample Distribution – Final Sample</b>									
<b>Industry</b>		<b>Market Adjusted Return (MAR)</b>						<b>Beta</b>	
		<b>window -1 +1</b>		<b>window 0 +1</b>		<b>window -1 0</b>		<b>n</b>	<b>%</b>
<b>Name</b>	<b>Code</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
<b>Commercial Services</b>	3200	309	4.88	296	4.91	127	5.04	187	4.75
<b>Communications</b>	4900	82	1.29	87	1.44	22	0.87	36	0.91
<b>Consumer Durables</b>	1400	210	3.31	216	3.58	52	2.06	147	3.73
<b>Consumer Non-Durables</b>	2400	330	5.21	313	5.19	113	4.49	219	5.56
<b>Consumer Services</b>	3400	400	6.31	361	5.99	150	5.95	219	5.56
<b>Distribution Services</b>	3250	163	2.57	173	2.87	65	2.58	114	2.9
<b>Electronic Technology</b>	1300	932	14.71	896	14.87	355	14.09	547	13.89
<b>Energy Minerals</b>	2100	272	4.29	260	4.31	137	5.44	121	3.07
<b>Health Services</b>	3350	161	2.54	150	2.49	74	2.94	92	2.34
<b>Health Technology</b>	2300	776	12.25	764	12.68	373	14.81	444	11.28
<b>Industrial Services</b>	3100	398	6.28	355	5.89	134	5.32	245	6.22
<b>Non-Energy Minerals</b>	1100	138	2.18	120	1.99	39	1.55	96	2.44
<b>Process Industries</b>	2200	380	6	360	5.97	157	6.23	258	6.55
<b>Producer Manufacturing</b>	1200	703	11.1	625	10.37	252	10	476	12.09
<b>Retail Trade</b>	3500	340	5.37	350	5.81	135	5.36	255	6.48
<b>Technology Services</b>	3300	514	8.11	495	8.21	247	9.81	305	7.75
<b>Transportation</b>	4600	188	2.97	173	2.87	74	2.94	149	3.78
<b>Utilities</b>	4700	40	0.63	32	0.53	13	0.52	27	0.69
<b>Total</b>	<b>18</b>	<b>6336</b>	<b>100%</b>	<b>6026</b>	<b>100%</b>	<b>2519</b>	<b>100%</b>	<b>3937</b>	<b>100%</b>

## 4.2 Methodology

Our methodology for the empirical analysis is two-fold; first, we measure the earnings management at the first stage. In second stage, we apply these earnings management proxies to empirical test our hypotheses. Prior studies often only use one measure of earnings management in their analysis. Shi et al. (2015) make the comparative study on two different measures or techniques (AEM and REM) for the geographically dispersed firms. Our study does not provide the comparison between these two measures, but to provide robust results we use both measures of the earnings management, i.e. AEM (Kothari et al., 2005) and REM (Roychowdhury, 2006). Kothari et al. (2005) use the performance-matching approach to estimate the earnings management i.e. equation (1). We estimate discretionary accruals (i.e. residuals  $\epsilon_{it}$ ) by regressing equation 1, cross-sectionally for the firms within the same 2-digit SIC code each year.

$$TA_{it} = \alpha_0 + \alpha_1(1/A_{it-1}) + \alpha_2 (\Delta S_{it} - \Delta REC_{it}) + \alpha_3(PPE_{it}) + \alpha_4(ROA_{it}) + \epsilon_{it} \quad (1)$$

*Where i represents firm and t years*

Likewise, here are the three equations from (Roychowdhury, 2006). He believes that the firms manipulate actual profits in order to meet benchmarks and prevent disclosing any annual losses. We measure the abnormalities (i.e. residuals  $\epsilon_{it}$ ) in cash flow from operations (CFO), production costs (Prod\_Cost) and discretionary expenses (DisExp) using the following equations respectively, cross-sectionally for the firms within the same 2-digit SIC code each year. Subsequently, we multiply the residuals from equation 4 with  $-1$  and calculate REM by adding the residuals generated from these equations<sup>51</sup>.

$$CFO_{it} = \gamma_0 + \gamma_1(1/A_{it-1}) + \gamma_1(S_{it}) + \gamma_2 (\Delta S_{it}) + \epsilon_{it} \quad (2)$$

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<sup>51</sup> Zang (2012) multiplies the residual from discretionary expense model by  $-1$ , to inverse the nature to discretionary expense cuts. Greater amounts of discretionary expense cuts reflect income-increasing management.

$$\mathbf{Prod\_Cost}_{it} = \mu_0 + \mu_1(1/A_{it-1}) + \mu_1(S_{it}) + \mu_2(\Delta S_{it}) + \mu_3(\Delta S_{it-1}) + \epsilon_{it} \quad (3)$$

$$\mathbf{DisExp}_{it} = \varphi_0 + \varphi_1(1/A_{it-1}) + \varphi_2(S_{it-1}) + \epsilon_{it} \quad (4)$$

*Where i represents firm and t years*

Our hypotheses not only focus on the magnitude of earnings management but also on the firms' attitude towards earnings management (PEM and NEM). We calculate the absolute values of AEM & REM and use sign values to separate the two attitudes. We define PEM as, when firms use the accounting practices to overstate earnings and when firms use accounting practices to understate earnings is known as NEM. Therefore, we divide our each sample into two subsamples to analyze the effects of PEM and NEM approaches of the firms on our interested variable MAR. Similar approach is followed for the earnings surprise. We use the following two equations (5 and 6) to test our hypotheses empirically. We use two different measures for firms' share price returns (1) market-adjusted returns i.e. MAR and (2) Beta i.e. the systematic risk or volatility of the stock against the market index.

$$|MAR_{it}| = \alpha_0 + \alpha_1[EM_{it}] + \alpha_2[PBValue_{it}] + \alpha_3[LEV_{it}] + \alpha_4[Log\_Assets_{it}] + \alpha_8[Log\_AF_{it}] + \alpha_9[AQ_{it}] + \epsilon_{it} \quad (5)$$

$$|MAR_{it}| = \alpha_0 + \alpha_1[ES_{it}] + \alpha_2[PBValue_{it}] + \alpha_3[LEV_{it}] + \alpha_4[Log\_Assets_{it}] + \alpha_8[Log\_AF_{it}] + \alpha_9[AQ_{it}] + \epsilon_{it} \quad (6)$$

*Where i represents firm and t years*

We measure the earnings surprise as the difference between the reported earnings and I/B/E/S mean earnings forecast – 45-days before the firms announce their earnings. In contrast to prior literature, which uses the latest I/B/E/S mean earnings forecasts. We argue that latest earnings forecasts do not provide firms sufficient time to manage earnings to meet or beat their targets. These forecasts might also generate the number closer to reported earnings anyway after incorporating all the recent and relevant information. Therefore, we assume that 45-days

window provides firms with reasonable incentive and motivations to manage their earnings to meet or beat the targets to avoid earnings shocks (or bad news) and untoward market reactions.

Our multivariate models explain how firms manage earnings (PEM or NEM) to achieve their financial targets. The financial targets of the firms can include meeting or beating forecasts, in order to issue good news to market players to receive positive market reaction and consequently to achieve positive market-adjusted return. Our market-adjusted returns have three rolling windows. Similar to Keung et al. (2010), our initial primary MAR period consists of 3-days window from one day before to one day after the earnings announcement but they use market model to measure cumulative abnormal return while we follow Fuller et al. (2002) and Rosen (2006) who use Brown and Warner's (1985) market adjusted return model. We also use two more 2-days windows to check for the robustness. One of these two windows consists of the day of earnings announcement and a day after, and the second window consists of the day before the earnings announcement and the day of earnings announcement. Given past studies in earnings management and earnings surprises, our models include several control variables. The variables Price-to-Book value, Total Assets and Analysts Following (PBValue, Log\_Assets and Log\_AF respectively) explain varying degrees of the size of the firm. Literature does not explicitly employ these variables on share price returns but we find these variables on earnings management and forecast accuracy (Embong and Hosseini, 2018; Richardson, 2000). We expect PBValue to have positive sign with returns because it shows the good news to the market players if it is higher. The reason behind Log\_AF's positive relationship is that the bigger sized firms attract more followers (including all stakeholders), which generates public information for all analysts to produce consensus forecast with low dispersion. One of the two incentives to manage earnings is to avoid debt covenant violation (Richardson, 2000). Therefore, we include the Leverage (LEV) to control for the firms' leverage risk. Firms engage less with earnings management when they are audited by big four auditing firms, and it plays a role in the earnings



quality (Clinch et al., 2012). Assuming market players react better when they have confidence on the quality of earnings report and its informational value, thus we expect Audit Quality (AQ) to have positive sign with MAR.

The table 3.2 describes the variables included in our empirical analyses.

**Table 3.2: Variable Definition**

Variable Code	Definition	Data Source	Extraction
<b>Panel A: Accruals Models</b>			
TA	Total Accruals calculated by the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization	Derived	$TA = (\Delta CA - \Delta CL - \Delta Cash + \Delta STD - D\&A)$
A	Total Assets	Factset Database	
$\Delta S - \Delta REC$	Change in Sales minus change in Receivables at year T	Derived	$\Delta S - \Delta REC = (Sales(t) - Sales(t-1)) - (Rec(t) - Rec(t-1))$
PPE	Gross value of Property Plant and Equipment	Factset Database	
IBE	Income before Extra Items	Factset Database	
$\Delta REV - \Delta REC$	Change in Revenue minus change in Receivables at year T	Derived	$\Delta REV - \Delta REC = (Rev(t) - Rev(t-1)) - (Rec(t) - Rec(t-1))$
<i>Note: All variables are scaled by lagged total assets except Total Assets "A"</i>			
<b>Panel B: Real Earnings Management Models</b>			
CFO	Cash flow from Operations	Factset Database	
S	Total Sales	Factset Database	
$\Delta S(t)$	Change in Sales at year T	Derived	$\Delta S = Sales(t) - Sales(t-1)$
Prod_Cost	Production Cost calculated by adding change in Inventory to the Cost of Goods Sold	Derived	$Prod\_Cost = COGS + \Delta INV$
$\Delta S(t-1)$	Change in Sales at year T-1	Derived	$\Delta S = Sales(t-1) - Sales(t-2)$
DisExp	Discretionary Expenses calculated by adding three expenses: Research and Development, Advertising and Selling, General and Administrative Expenses.	Derived	$DisExp = R\&D + SG\&A + ADV$
<i>Note: All variables are scaled by lagged total assets</i>			
<b>Panel C: Adjusted Return Models</b>			
MAR	Market Adjusted Return (MAR) is the difference of Market return and individual firms' return within 2 days windows. Window [-1, +1] means the return calculated with one day before and after the earnings announcement. Similarly with other windows [0, +1] and [-1, 0].	Factset Database	$MAR = \log(\text{Market return } R_{m,t} - \text{Firms' return } R_{i,t} / 100)$ Where: Return is calculated as: $\frac{R_{m,t} - R_{m,t-1}}{R_{m,t-1}}$ $\frac{R_{i,t} - R_{i,t-1}}{R_{i,t-1}}$

Variable Code	Definition	Data Source	Extraction
Beta	Beta is the systematic risk, which measures the volatility of the security/share or portfolio in comparison to the market.	DataStream Database	
Abs_AEM	Absolute values of the discretionary accruals from Kothari Model.	Derived	Abs_Kothari =  Residuals
Abs_REM	Absolute values of the summation of abnormalities from three Roychowdhury models i.e. Cash Flow from Operations, Production Costs and Discretionary Expenses.	Derived	Abs_REM =   $\sum$ Residuals
PP_AEM	Positive accruals earning management by the management to elevate the earnings.	Derived	Aggr_AEM = Positive Accruals earnings management
NN_AEM	Negative accruals earning management by the management to alleviate the earnings.	Derived	Cons_AEM = Negative Accruals earnings management
P_REM	Positive real earning management by the management to elevate the earnings.	Derived	Aggr_REM = Positive Real earnings management
N_REM	Negative real earning management by the management to alleviate the earnings.	Derived	Cons_REM = Negative Real earnings management
ES	Earnings Surprise calculated by the difference between Reported EPS and Ex-Ante Forecast Mean Values (45 days before Reported Earnings).	Derived	ES =  EPS - EAMean  EAMean = Pre-announcement mean earnings forecast
Abs_ES	Absolute values of the Earnings Surprise	Derived	Abs_ES =  ES
ESpve	Positive earnings surprise or good news. When firms beat the earnings forecasts.	Derived	ESpve = ES where ES > 0
ESnve	Negative earnings surprise or bad news or earnings shock. When firms fail to beat the earnings forecasts.	Derived	ESnve = ES where ES < 0
EM	Earnings Management Component = Discretionary Accruals calculated by Residual Values in Kothari Model and Abnormalities in Rowchowdhury Models of Cash Flow from Operations, Production Costs and Discretionary Expenses.	Derived	EM = Abs_AEM, Abs_REM, Aggr_AEM, Cons_AEM, Aggr_REM, Cons_REM Where: REM is the summation of abnormalities calculated with three Roychowdhury models.
PBVALUE	Price to Book Value	Factset Database	
LEV	Leverage is ratio of Long Term Debt to Total Assets	Derived	LEV = LTD/Total Assets
Log_Assets	Log of Total Assets	Derived	Log_Assets = log <sub>10</sub> (Total Assets)
Log_AF	Log of Number of Analysts Following the firms	Factset Database	Log_AF = log <sub>10</sub> (AF)

Variable Code	Definition	Data Source	Extraction
AQ	Audit Quality is the dummy variable based on the Big Four Audit Firms	Derived	AQ = 1 for Big Four Firms, AQ = 0 otherwise

*Note:*

5. Only Earnings Management and Earnings Surprise are scaled with Share Price at the start of the year. All other variables either are ratios or already scaled.
6. All variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile except dummy variable i.e. AQ.

## 5 Descriptive Statistics and Correlation

### 5.1 Descriptive Statistics

The table 3.3 shows the statistical summary of the variables employed in our empirical study. Panel A of the table 3.3 presents the descriptive statistics of our dependent variables. We have three separate windows for MAR and we use Beta to check for the robustness. We employ 3-days window as our primary variable for our data analysis and the remaining two windows along with Beta to support our primary results. We observe consistently that the means of market-adjusted returns are lower than their median across three windows, which shows the negatively skewed distribution. Except Beta which is positive skewed distribution. Sample of beta only includes the data from year 2015 to 2018.

Panel B of the table 3.3 reports the statistics for AEM and REM, where the mean and median values in AEM are lower than in REM. Since, our analyses include the study of magnitude of the earnings management and firms' attitude on these discretionary choices; we show absolute, PEM and NEM. With these values, suggest that managers use REM more than AEM in order to manage earnings. We also observe unequal observations in our subsamples for PEM, NEM and in earnings shocks. While this should not reduce the statistical power of these extensive empirical analyses.

Panel C of table 3.3 shows the list of control variables. The majority of PBValue and LEV values are in the fourth quartile and lean to the positive skewness. With the big four audit firms

as their external auditors, AQ represents 80.70 percent of the sample firms in our report. Log\_AF shows the number of analysts following a firm, which is a proxy for firm size. The larger companies would draw a larger number of followers.

**Table 3.3: Descriptive Statistics**

	<b>n</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Quartile 1</b>	<b>Quartile 3</b>
<b>Panel A: Market Adjusted Returns (MAR) and Systematic risk against Market (Beta)</b>								
<b>MAR_11</b>	6336	-1.177	0.678	-1.185	-2.932	0.778	-1.603	-0.765
<b>MAR_01</b>	6026	-1.202	0.732	-1.243	-2.994	0.816	-1.697	-0.716
<b>MAR_10</b>	2519	-1.304	0.712	-1.352	-3.045	0.772	-1.785	-0.864
<b>Beta</b>	3937	1.190	0.546	1.139	0.010	3.477	0.829	1.481
<b>Panel B: Earnings Management (EM) and Earnings Surprise</b>								
<b>Abs_AEM</b>	6336	0.053	0.076	0.028	0.000	0.838	0.012	0.063
<b>P_AEM</b>	2633	0.053	0.078	0.026	0.000	0.568	0.010	0.061
<b>N_AEM</b>	3703	-0.054	0.075	-0.029	-0.838	-0.00	-0.064	-0.013
<b>Abs_REM</b>	6336	0.290	0.404	0.149	0.000	2.636	0.063	0.337
<b>P_REM</b>	3496	0.326	0.441	0.170	0.000	2.636	0.072	0.390
<b>N_REM</b>	2840	-0.246	0.348	-0.126	-2.115	-0.000	-0.282	-0.053
<b>Abs_ES</b>	6336	0.032	0.072	0.010	0.000	0.655	0.003	0.029
<b>ESpve</b>	2341	0.0163	0.035	0.004	0.000	0.199	0.001	0.012
<b>ESnve</b>	3995	-0.042	0.086	-0.015	-0.655	-0.00	-0.037	-0.005
<b>Panel C: Control Variables</b>								
<b>PBValue</b>	6336	4.090	6.148	2.506	0.235	52.41	1.569	4.157
<b>LEV</b>	6336	0.198	0.177	0.179	0.000	0.849	0.013	0.316
<b>Log_Assets</b>	6336	3.137	0.816	3.142	0.140	5.606	2.577	3.664
<b>Log_AF</b>	6336	0.711	0.488	0.778	0.000	1.491	0.301	1.114
<b>AQ</b>	6336	0.807	0.395	1.000	0.000	1.000	1.000	1.000

*Note: Please refer table 3.2 for variable definitions.*

## 5.2 Correlation Matrix

Table 3.4 presents the correlation among different variables used in our studies. The aim is to assess the correlation between the explanatory variables; we anticipate a low to moderate correlation because a strong correlation may imply unreliable and biased results. Since our analyses do not employ AEM and REM simultaneously, we overlook their inter-correlation.

**Table 3.4: Correlation Matrix**

<i>Pairwise Pearson and Spearman Correlation</i>								
<i>n = 6,336</i>	<b>Abs_AEM</b>	<b>Abs_REM</b>	<b>Abs_ES</b>	<b>PBValue</b>	<b>LEV</b>	<b>Log_Assets</b>	<b>Log_AF</b>	<b>AQ</b>
<b>Abs_AEM</b>		0.2647***	0.2834***	-0.3020***	0.0334***	-0.1005***	-0.0905***	-0.0562***
<b>Abs_REM</b>	0.2819***		0.1632***	-0.2618***	0.0420***	-0.0960***	-0.1386***	-0.0521***
<b>Abs_ES</b>	0.3074***	0.1643***		-0.2239***	0.1270***	-0.0315**	0.0032	-0.0344***
<b>PBValue</b>	-0.0858***	-0.1045***	-0.0706***		0.0905***	0.0961***	0.1962***	0.0845***
<b>LEV</b>	0.0562***	0.0625***	0.1131***	0.1856***		0.4822***	0.2361***	0.2043***
<b>Log_Assets</b>	-0.1027***	-0.0494***	-0.0682***	0.0032	0.3986***		0.5417***	0.4393***
<b>Log_AF</b>	-0.0969***	-0.1085***	-0.0226*	0.0941***	0.2154***	0.5046***		0.2771***
<b>AQ</b>	-0.0633***	-0.0233*	-0.0562***	0.0361***	0.1866***	0.4476***	0.2709***	

Note:

1. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$
2. This correlation matrix gives the information about the correlation among the independent variables.
3. The correlation below the diagonal line is Pearson; above the diagonal line is Spearman correlation.
4. Please refer table 3.2 for variable definitions.

Statistically, we observe no significant correlation among the explanatory variables, suggesting that the predictors in our models do not have a multicollinearity problem, leading us to assume that our regressions can generate reliable results. We use the variable inflation factor (VIF) technique<sup>52</sup> for each of our regressions to assess the robustness of the bivariate inter-correlation or multicollinearity. The findings are identical and display no evidence of substantial multicollinearity among the explanatory variables, creating questions about model's reliability.

## 6 Results and Discussion

Keung et al. (2010) use different ranges of earnings surprises to analyze the effect on the market reactions. They find that the investors are more skeptical when they observe zero or small positive earnings surprises than large earnings surprises<sup>53</sup>. While this study focuses on the relationship between the earnings management i.e. quality of earnings announcement and the market reaction, which leads to change in firms' stock price returns, market-adjusted returns in our case study. This study uses the stock returns adjusted against the market instead of abnormal stock returns. We measure MAR as the difference between the individual firms' stock returns and the market returns (CRSP). We use MAR with three different windows of short intervals i.e. 3-days and 2-days. The reason behind choosing the short intervals is to capture investors' immediate reaction to the earnings announcement. Moreover, we assume the market is perfectly competitive and it neutralizes the impact of earnings shock (good or bad news) in the future. Our study uses both earnings management techniques (AEM and REM), the firms' attitude on earnings management (PEM or NEM) to replicate Burgstahler and Eames (2006), and further

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<sup>52</sup> Results from Variation Inflation Factor show maximum value of 1.95.

<sup>53</sup> Shih (2019) furthers the study and finds that the investors are also skeptical about the firms' with small positive sales surprises. They find lower relationship of abnormal share returns with small positive sales surprises than with other ranges of sales surprises.

analysis includes the earnings surprises (good news or earnings shocks) to reproduce studies from (Graham et al., 2005; Keung et al., 2010).

Our empirical analysis is two-fold; in the first stage, we measure the earnings management by using equations 1 through 4 [see section 4.2]. In the second stage, we run the regressions on equations 5 and 6 to test our hypotheses [see section 4.2]. The second stage of our empirical analysis is further three-fold, which includes the primary analysis with earnings management, alternative specification with earnings surprises and robustness check by using beta instead of MAR to proxy for capital market reaction to stock returns.

### **6.1 Primary Analysis**

Our primary analysis includes the multivariate-pooled OLS heteroscedasticity-consistent standard errors regression on equation 5 for the earnings management as the explanatory variable on the firms' MAR with 3-days window starting from one day before the earnings announcement to one day after  $[-1, +1]$ <sup>54</sup>.

Table 3.5 includes the results for our primary analysis. Our results are consistent with Burgstahler and Eames (2006), who believe that the firms manage their earnings in order to avoid the severe economic consequences. The magnitude of earnings management (AEM and REM) has significant positive relationship with the MAR. This means that the firms, which involve themselves into these discretionary activities, benefit from the positive market reaction with better stock returns. Our results are in line with hypothesis H1 of this study, which states that, the magnitude of the earnings management is positively associated with MAR.

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<sup>54</sup> The results are consistent from remaining two 2-days windows i.e. Table 3.8 and 3.9 in the appendix.

Moreover, as described earlier, our study furthers the literature and divides the firms based on their attitude towards the earnings management. H1<sub>a</sub> of our study says that the firms with PEM attitude should realize better stock returns and vice versa in case of H1<sub>b</sub> for the NEM firms<sup>55</sup>. Our results consistently show that the firms with PEM (P\_AEM or P\_REM) have positive relationship with the firms' MAR. While the firms with NEM (N\_AEM or N\_REM) show negative relationship. In cases of N\_AEM and N\_REM, we do not find significant coefficients but they show negative signs, as we expect and are in line with our hypothesis H1<sub>b</sub>. Our control variables, except PBValue, show accurate signs in consistence with the prior literature and significant coefficients except AQ and LEV.

**Table 3.5: Multivariate Pooled OLS regression for Earnings Management**

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window -1 +1 days around Earnings Announcement)					
Abs_AEM	<b>0.250**</b>					
P_AEM	<b>0.380*</b>					
N_AEM	<b>-0.167</b>					
Abs_REM				<b>0.061***</b>		
P_REM				<b>0.058**</b>		
N_REM				<b>-0.051</b>		
PBValue (+)	-0.004***	-0.003	-0.005***	-0.004***	-0.003	-0.004***
LEV (+)	0.118**	0.092	0.126	0.115**	0.110	0.151*
Log_Assets (?)	-0.143***	-0.143***	-0.141***	-0.144***	-0.145***	-0.143***
Log_AF (+)	0.096***	0.068**	0.114***	0.100***	0.064**	0.144***
AQ (+)	0.019	0.040	0.011	0.018	0.016	0.006
Constant (?)	-0.576***	-0.552***	-1.158***	-0.564***	-0.482***	-1.134***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,336	2,633	3,703	6,336	3,496	2,840
R <sup>2</sup>	5.6%	6.2%	5.8%	5.6%	6.7%	5.7%
Adjusted R <sup>2</sup>	5.07%	5.00%	4.98%	5.11%	5.79%	4.64%

Note:

4. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

5. Please refer table 3.2 for variable definitions.

<sup>55</sup> Whether the firms, which understate the earnings, still meet or beat the earnings targets and have positive earnings surprises (good news), is not part of this study. We assume that the firms understating their earnings will have done it to create reserves or overstating their earnings will not have generated desired results or achieve targets.



## 6.2 Alternative Specification

Similarly, we now run multivariate-pooled OLS heteroscedasticity-consistent standard errors regression on equation 6 for earnings surprises as the explanatory variable on the firms' MAR with all three short interval 3-days and 2-days windows [-1, +1], [0, +1] and [-1, 0] respectively.

Table 3.6 presents the results for the hypotheses H2, H2<sub>a</sub> and H2<sub>b</sub> of this study. Hypothesis H2 states that the magnitude of the earnings surprises has positive relationship with the firms' MAR. Since magnitude uses the absolute values, that means the non-negative values, we expect positive linear relationship. The results in table 3.6 support our hypothesis H2, which show the significant positive coefficients of absolute values of earnings surprises (Abs\_ES) with MAR across all three windows.

Our results are consistent with the literature and our hypothesis H2<sub>a</sub>, MAR increases when we use the positive earnings surprises i.e. ESpve (Abarbanell and Lehavy, 2003; Burgstahler and Eames, 2006). We also observe the symmetric negative relationship of negative earnings surprises i.e. ESnve on MAR across all windows which is in line with our hypothesis H2<sub>b</sub> and is consistent with Graham et al. (2005). We see positive relationship of ESpve with MAR, except in 2-days window [-1, 0], only that coefficients are insignificant<sup>56</sup>. These results are partially consistent with the Keung et al. (2010). Keung et al. suggest that the investors have gotten skeptical about the zero or small positive earnings surprises over time. Their study is divided into 3 periods and only in the last period i.e. 2002-06, investors show skepticism. While we observe negative association of bad news earnings surprises (earnings shock) with firms' MAR, which is consistent with Graham et al. (2005). The results are significant except the 2-days window [-1, 0]. One of the possible reasons might be very low number of observations,

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<sup>56</sup> The 2-days window [-1, 0] has very small number of observations, which might have played the role in contrasting sign. Because most of the results do not have significant coefficients, we believe that further extensive study is required to provide robust statistical evidence.

which diminishes the statistical power of the regression analysis. Control variables, except PBValue, consistently show accurate signs in accordance with the prior literature and significant coefficients except AQ.

### 6.3 Robustness Check

We use the alternate proxy of the stock returns i.e. beta. Beta is the systematic risk or volatility of a stock against the market index. The beta describes the movement of the stock relative to the market. If the beta is higher, the stock can generate higher returns but it also poses higher risk. Table 3.7 presents the results from multivariate-pooled OLS heteroscedasticity-consistent standard errors regression. Magnitude of earnings management (Abs\_AEM and Abs\_REM) and magnitude of earnings surprise (Abs\_ES) have significant positive relationship with firms' beta returns, which is consistent with hypotheses H1 and H2. Similarly as our primary results, P\_AEM and P\_REM (N\_AEM and N\_REM) have positive (negative) relationship with beta returns, this provides statistical evidence to support hypotheses H1<sub>a</sub> and H1<sub>b</sub>. While earnings surprises i.e. good news (bad news) also similarly affect the beta returns positively (negatively). These results are in line with the hypotheses H2<sub>a</sub> and H2<sub>b</sub> of this study.

We conduct additional tests using a technique used by Richardson (2000) to measure earnings management (AEM and REM) using a time series methodology<sup>57</sup>. The findings (shown in appendix) are consistent with our primary approach of measuring the AEM and REM using cross-section industry-wise regressions.

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<sup>57</sup> The results from time-series earnings management are presented in tables 3.10-3.13 in appendix.

## 7 Conclusion and Limitations

This study investigates the link between firms' intentions to achieve the financial targets and its stock returns. Achieving financial targets drives firms to manage their earnings, which in turn affects the stock market performance. Levitt Jr (1998) says that achieving Wall Street Journal forecasts is one of the most important financial targets for the firms. Abarbanell and Lehavy (2003) discuss how firms are motivated to meet or beat the earnings expectations. Extant literature deals with the effects of small negative earnings surprises on economic implications (Graham et al., 2005), investor relations (Frankel et al., 2010) and effects of small positive earnings surprises on abnormal stock returns (Keung et al., 2010), earnings management (Burgstahler and Eames, 2006). Our study contributes to the extensive literature in using the stock returns adjusted against the market and beta returns instead of using individual firms' stock returns or abnormal stock returns i.e. in other words alpha returns. We add to the literature by using the 3 different short interval-rolling windows of the market-adjusted return. We note that researchers place little importance on the use of firms' attitude (PEM and NEM) to analyze the effects on stock market performance. We observe researchers investigate earnings surprises (good news or bad news) separately. This study covers all these aspects of the literature and provide the robust results. Our results consistently support our hypotheses and the existing literature from different empirical tests. We provide statistical evidence that the firms use discretionary powers to manage their earnings to meet or beat the Wall Street Journal earnings expectations or forecasts<sup>58</sup>. They do so to improve the stock market performance i.e. stock returns and avoid any severe consequences in the capital markets. The results are consistent with the earnings surprises, with good news or positive earnings surprises to improve the stock returns and vice versa in case of bad news or negative earnings surprises.

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<sup>58</sup> Although our regressions do not show significant explanatory power (adjusted  $R^2$ ), but their F-statistics (not shown) is positive and significant across our empirical analyses.

Where this study contributes to the literature on few fronts, there are limitations also. There is more work required on the use of PEM and NEM and earnings surprises. NEM attitude is not synonymous to bad news and this study does not differentiate between the NEM firms with goods news and bad news. The other limitation of this study is the use of US market only, which limits the sample size. This study includes 80.7% firms audited by big four firms, this represents the number of big sized firms, limiting the wider application. Future research can help to overcome these limitations and expand the reach of the literature.

**Table 3.6: Multivariate Pooled OLS regression for Earnings Surprise**

Variables	Market Adjusted Returns (Window in days around Earnings Announcement)								
	Window [-1 +1]			Window [0 +1]			Window [-1 0]		
<b>Abs_ES</b>	<b>0.314**</b>			<b>0.496***</b>			<b>0.366**</b>		
<b>ESpve</b>		<b>0.574</b>			<b>0.300</b>			<b>-0.086</b>	
<b>ESnve</b>			<b>-0.226*</b>			<b>-0.503***</b>			<b>-0.268</b>
<b>PBValue (+)</b>	-0.004***	-0.001	-0.005***	-0.003*	-0.000	-0.004**	-0.004	0.001	-0.008**
<b>LEV (+)</b>	0.109**	0.011	0.150**	0.196***	0.299***	0.151**	0.208**	0.165	0.183
<b>Log_Assets (?)</b>	-0.141***	-0.167***	-0.126***	-0.192***	-0.219***	-0.178***	-0.106***	-0.090**	-0.122***
<b>Log_AF (+)</b>	0.094***	0.147***	0.063**	0.052**	0.146***	-0.004	0.048	0.100	0.032
<b>AQ (+)</b>	0.019	0.024	0.014	0.011	-0.030	0.033	-0.008	-0.109	0.034
<b>Constant (?)</b>	-0.557***	-0.524***	-1.167***	-0.578***	-0.434***	-1.015***	-1.403***	-1.592***	-1.306***
<b>Industry Control</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Year Control</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Observations</b>	6,336	2,341	3,995	6,026	2,186	3,840	2,519	894	1,625
<b>R<sup>2</sup></b>	5.6%	8.3%	5.0%	5.9%	7.6%	6.0%	6.4%	6.9%	7.6%
<b>Adjusted R<sup>2</sup></b>	5.10%	7.06%	4.27%	5.39%	6.20%	5.20%	5.18%	3.52%	5.76%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.

Table 3.7: Multivariate Pooled OLS regressions – Robustness Check

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)			Earnings Surprise (ES)		
	Beta (Individual stock's systematic risk against the market)								
Abs_AEM	<b>0.963***</b>								
P_AEM		<b>1.159***</b>							
N_AEM			<b>-0.797***</b>						
Abs_REM				<b>0.151***</b>					
P_REM					<b>0.106**</b>				
N_REM						<b>-0.282***</b>			
Abs_ES							<b>0.785***</b>		
ESpve								<b>1.136</b>	
ESnve									<b>-0.704***</b>
PBValue (+)	-0.005***	-0.005*	-0.005***	-0.005***	-0.007***	-0.006**	-0.005***	-0.006**	-0.006***
LEV (+)	0.314***	0.213*	0.408***	0.343***	0.441***	0.203	0.309***	0.316**	0.315***
Log_Assets (?)	-0.043*	-0.030	-0.052**	-0.047**	-0.002	-0.009	-0.043*	-0.014	-0.044*
Log_AF (+)	0.042	0.072*	0.025	0.050*	0.009	0.043	0.033	0.036	0.027
AQ (+)	0.064	0.087	0.050	0.059	-0.023	0.121*	0.066	0.059	0.069
Constant (?)	1.158***	1.110***	1.198***	1.159***	1.097***	1.009***	1.184***	1.120***	1.186***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,937	1,601	2,336	3,937	2,285	1,652	3,937	1,264	2,673
R <sup>2</sup>	14.6%	14.9%	15.4%	14.3%	19.0%	16.2%	14.3%	11.9%	17.7%
Adjusted R <sup>2</sup>	14.0%	13.5%	14.5%	13.8%	18.1%	14.8%	13.7%	10.1%	16.9%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.

## Appendix 3

Table 3.8: Multivariate Pooled OLS regression for Earnings Management

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window 0 +1 days around Earnings Announcement)					
Abs_AEM	<b>0.348***</b>					
P_AEM		<b>0.344*</b>				
N_AEM			<b>-0.376**</b>			
Abs_REM				<b>0.063**</b>		
P_REM					<b>0.057**</b>	
N_REM						<b>-0.077</b>
PBValue (+)	-0.003*	-0.002	-0.003	-0.003**	0.001	-0.006***
LEV (+)	0.212***	0.206**	0.206**	0.218***	0.233**	0.232**
Log_Assets (?)	-0.194***	-0.154***	-0.223***	-0.197***	-0.172***	-0.203***
Log_AF (+)	0.056**	0.009	0.081**	0.060**	0.024	0.099**
AQ (+)	0.011	0.007	0.019	0.009	0.006	-0.004
Constant (?)	-0.605***	-0.717***	-1.086***	-0.583***	-0.617***	-0.850***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,026	2,531	3,495	6,026	3,274	2,752
R <sup>2</sup>	5.8%	5.2%	7.4%	5.8%	5.7%	7.1%
Adjusted R <sup>2</sup>	5.28%	4.01%	6.54%	5.27%	4.75%	6.07%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.

Table 3.9: Multivariate Pooled OLS regression for Earnings Management

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window -1 0 days around Earnings Announcement)					
Abs_AEM	<b>0.397**</b>					
P_AEM		<b>0.133</b>				
N_AEM			<b>-0.621***</b>			
Abs_REM				<b>0.077*</b>		
P_REM					<b>0.052</b>	
N_REM						<b>-0.095</b>
PBValue (+)	-0.004	-0.009***	0.001	-0.004	-0.004	-0.006*
LEV (+)	0.217**	0.075	0.442***	0.216**	0.211*	0.292*
Log_Assets (?)	-0.108***	-0.068*	-0.143***	-0.109***	-0.095***	-0.128***
Log_AF (+)	0.055	0.030	0.064	0.056	0.075	0.059
AQ (+)	-0.008	-0.048	0.030	-0.011	-0.029	0.000
Constant (?)	-1.409***	-1.433***	-1.368***	-1.408***	-1.601***	-1.227***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,519	1,052	1,467	2,519	1,327	1,192
R <sup>2</sup>	6.4%	7.2%	8.5%	6.3%	8.8%	7.0%
Adjusted R <sup>2</sup>	5.20%	4.34%	6.49%	5.18%	6.60%	4.48%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.



Table 3.10: Multivariate Pooled OLS regression for Time Series Earnings Management

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window -1 +1 days around Earnings Announcement)					
Abs_AEM	<b>0.286**</b>					
P_AEM		<b>0.364*</b>				
N_AEM			<b>-0.278*</b>			
Abs_REM				<b>0.041**</b>		
P_REM					<b>0.030</b>	
N_REM						<b>-0.047</b>
PBValue (+)	-0.004***	-0.001	-0.005***	-0.004***	-0.004*	-0.004**
LEV (+)	0.116**	0.108	0.122*	0.122**	0.142**	0.122
Log_Assets (?)	-0.141***	-0.176***	-0.121***	-0.144***	-0.140***	-0.157***
Log_AF (+)	0.097***	0.096***	0.095***	0.098***	0.067**	0.131***
AQ (+)	0.019	0.070*	-0.012	0.017	0.004	0.024
Constant (?)	-0.576***	-0.485***	-1.228***	-0.549***	-1.124***	-0.589***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,336	2,579	3,757	6,336	3,448	2,888
R <sup>2</sup>	5.6%	6.8%	5.6%	5.5%	5.7%	6.5%
Adjusted R <sup>2</sup>	5.09%	5.59%	4.82%	5.07%	4.82%	5.47%

Note:

3. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

4. Please refer table 3.2 for variable definitions.

Table 3.11: Multivariate Pooled OLS regression for Time Series Earnings Management

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window 0 +1 days around Earnings Announcement)					
Abs_AEM	<b>0.331***</b>					
P_AEM	<b>0.237</b>					
N_AEM	<b>-0.428***</b>					
Abs_REM				<b>0.075***</b>		
P_REM				<b>0.069***</b>		
N_REM				<b>-0.068</b>		
PBValue (+)	-0.003*	-0.004**	-0.002	-0.003*	-0.000	-0.005**
LEV (+)	0.213***	0.250***	0.179**	0.219***	0.222**	0.266***
Log_Assets (?)	-0.194***	-0.184***	-0.201***	-0.196***	-0.168***	-0.217***
Log_AF (+)	0.056**	0.062*	0.050	0.061**	0.030	0.094**
AQ (+)	0.011	0.020	0.007	0.006	-0.006	0.015
Constant (?)	-0.597***	-0.631***	-1.200***	-0.570***	-1.181***	-0.494***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,026	2,519	3,507	6,026	3,215	2,811
R <sup>2</sup>	5.8%	6.1%	7.1%	5.9%	5.0%	7.9%
Adjusted R <sup>2</sup>	5.27%	4.90%	6.25%	5.36%	4.04%	6.88%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.

Table 3.12: Multivariate Pooled OLS regression for Time Series Earnings Management

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Market Adjusted Returns (Window -1 0 days around Earnings Announcement)					
Abs_AEM	<b>0.422**</b>					
P_AEM		<b>0.216</b>				
N_AEM			<b>-0.569***</b>			
Abs_REM				<b>0.096***</b>		
P_REM					<b>0.054</b>	
N_REM						<b>-0.158**</b>
PBValue (+)	-0.004	-0.010***	0.002	-0.004	-0.005	-0.004
LEV (+)	0.217**	0.096	0.390***	0.216**	0.051	0.424***
Log_Assets (?)	-0.106***	-0.113***	-0.119***	-0.109***	-0.109***	-0.129***
Log_AF (+)	0.055	0.075	0.038	0.059*	0.101**	0.049
AQ (+)	-0.009	-0.063	0.051	-0.013	-0.012	-0.009
Constant (?)	-1.413***	-1.409***	-1.425***	-1.418***	-1.563***	-1.295***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,519	1,029	1,490	2,519	1,271	1,248
R <sup>2</sup>	6.4%	8.0%	8.1%	6.5%	7.4%	9.5%
Adjusted R <sup>2</sup>	5.23%	5.18%	6.12%	5.35%	5.10%	7.32%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.

Table 3.13: Multivariate Pooled OLS regressions for Time Series Earnings Management – Robustness Check

Variables	Accrual Earnings Management (AEM)			Real Earnings Management (REM)		
	Beta (Individual stock's systematic risk against the market)					
Abs_AEM	<b>1.030***</b>					
P_AEM		<b>1.328***</b>				
N_AEM			<b>-0.876***</b>			
Abs_REM				<b>0.163***</b>		
P_REM					<b>0.127***</b>	
N_REM						<b>-0.263***</b>
PBValue (+)	-0.005***	-0.005*	-0.004**	-0.005***	-0.008***	-0.002
LEV (+)	0.311***	0.133	0.433***	0.346***	0.461***	0.159
Log_Assets (?)	-0.040*	-0.001	-0.055**	-0.047**	-0.015	-0.051
Log_AF (+)	0.044	0.073*	0.027	0.052*	0.028	0.059
AQ (+)	0.064	0.068	0.063	0.055	-0.025	0.141**
Constant (?)	1.144***	1.070***	1.169***	1.148***	1.107***	1.117***
Industry Control	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,937	1,525	2,412	3,937	2,221	1,716
R <sup>2</sup>	14.8%	14.5%	16.1%	14.8%	19.3%	10.2%
Adjusted R <sup>2</sup>	14.3%	13.0%	15.2%	14.3%	18.3%	8.86%

Note:

1. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$
2. Please refer table 3.2 for variable definitions.



## GENERAL CONCLUSION

There is always mounting pressure on firms to achieve their targets. These targets can be financial or non-financial depending on the interests and intentions of the firms. While financial targets are often the ones, which are discussed and analyzed in the literature. Abarbanell and Lehavy (2003) discuss that the financial analysts' forecasts are often firms' primary financial targets. They further discuss that firms often temper with their financial reporting to adjust their earnings to achieve these targets. Graham et al. (2005) also find that firms often face significant economic consequences if they do not achieve these financial targets. Burgstahler and Eames (2006) also support the similar notion and suggest that the firms try to avoid reporting earnings below the financial analysts' forecasts i.e. negative earnings surprises. Levitt Jr (1998) points out the importance of achieving these financial targets and talks about the ways firms temper or manipulate their earnings to report good news or positive earnings surprises.

While it is also important to note here financial analysts are often aware of the firms' intentions to manage earnings. This situation coupled with information asymmetry, Atiase and Bamber (1994) explain this as the financial analysts having private information with differential precision, make it difficult to predict firms' financial performance accurately. While, there are contrasting studies on this notion, where Abarbanell and Lehavy (2003) believe that financial analysts anticipate earnings management and they try to predict the unmanaged earnings, whereas Burgstahler and Eames (2003) suggest otherwise. Despite extensive literature on the earnings management and financial analysts' predictions, an important factor is, surprisingly, unattended and that is financial analysts' actual intentions or behavior that can be measured by their willingness to restate or revise their initial forecasts (i.e. ex-post forecasts for the purpose of this thesis). We assume that financial analysts' restatements or revisions of forecasts will

provide better insights into their intentions to predict managed or unmanaged earnings. Thus, our research provides the essential and significant contribution and fills the gaps in the literature.

This dissertation investigates the effects of quality of financial reporting, measured by earnings management, on the various events around the earnings announcement. First, we analyze the effects of earnings management on the information asymmetry, before and after the earnings announcement. We also investigate whether or not earnings announcement helps in reducing the postdisclosure information asymmetry. Secondly, we observe the financial analysts' behavior or intentions of predicting earnings management. We investigate their behavior by empirically comparing relationships of earnings management with ex-ante and ex-post forecast errors. In our third essay, we examine the effects of quality of financial reporting on the market returns. We empirically test the relationship of earnings management and the share returns along with the effects of earnings surprises due to earnings announcement on the firms' share returns.

## **1 Research Findings**

Our first empirical study posits that earnings' announcement reduces postdisclosure information asymmetry, despite firms' decisions to use discretionary choices to manage earnings. The firms use discretionary powers to manage the earnings, which increases the information asymmetry among the financial analysts. The financial analysts acquire private predisclosure information with differential precision to make forecasts. We believe that earnings announcement provides enough informational value to the market participants to restate their forecasts to achieve consensus. Using the extensive sample with period of 2006-18 from US market Non-Accounting and Auditing Enforcement Releases (Non-AAER) firms, our

results suggest that the magnitude of earnings management has higher positive and significant relationship with predisclosure forecasts' dispersion than with the postdisclosure forecasts' dispersion. This means that the earnings announcement reduces the information asymmetry.

In the second empirical research analysis, we examine the financial analysts' predictions including their postdisclosure brokers' actual estimates to determine their intentions to predict managed or unmanaged earnings. According to numerous reports, accurate predictions reward financial analysts in order to preserve their credibility, while others claim that financial analysts predict unmanaged earnings. In the literature, accurate forecasts are described as those that accurately predict reported earnings in order to minimize earnings surprises. Using similar data sample from US market firms, our findings indicate that the analysts predict reported earnings (managed earnings) in order to be more reliable and accurate and avoid unexpected earnings. The findings also show that brokers' actual estimates closely represent managed earnings, and managed earnings forecast errors are distributed closer to zero than forecast errors from unmanaged earnings.

Our third empirical research investigates the effects of earnings management and the earnings surprises on the firms' stock returns adjusted with market returns. Earnings management is the management's discretionary decision to manipulate earnings in order to meet financial goals. Earnings surprise is the disparity between a firms' announced earnings and Wall Street estimates, which has an effect on the firms' stock prices in the immediate aftermath of the announcement and in the long run. In this paper, we claim that, depending on the success of the firms, earnings announcements have an effect on their stock prices. Capital markets respond to the bottom line of financial statements, and firms manipulate their earnings to achieve a constructive and favorable response. Earnings surprise has a similar effect on market share. Positive earnings surprises, or good news, lead to higher market returns, whereas negative earnings surprises, or poor news, lead to lower market returns. The magnitude of earnings



management has a favorable and important relationship with the market-adjusted return of firms, according to our findings by using the extensive sample with period of 2006-18 from US market Non-Accounting and Auditing Enforcement Releases (Non-AAER) firms. Similarly, good news reveals a positive relationship, while bad news reveals a major negative relationship. As a result, the earnings report has a huge impact on the market-adjusted returns of firms.

Overall, we discuss the inability of financial analysts' to predict earnings accurately comes down to the unavailability of the precise information, which prompts firms to use this opportunity to manage their earnings in order to achieve financial targets and minimize the earnings shocks or bad news. In turn, this leads market participants, including potential investors, to make their investing decisions.

## **2 Contributions**

Earnings management is among those research areas, which scholars vastly follow and research. However, major contribution of our thesis rests with the use of events after the earnings announcement. We contribute to the literature by introducing postdisclosure information asymmetry to answer if earnings announcement decreases the information asymmetry or earnings management continues to create information asymmetry. We also introduce ex-post forecasts, specifically, to assess financial analysts' intentions or behavior. There is an extant literature on the study of share returns, but little emphasis has been put on the use of shorter rolling windows to measure share returns. This study contributes to the literature by introducing beta returns (i.e. systematic risk against market), in addition to the use of three shorter rolling windows market adjusted returns.

Furthermore, this thesis provides secondary contributions by empirically employing two separate techniques or measures of earnings management. This serves as the comparative

empirical analysis of the accrual earnings management and the real earnings management in the literature of financial analysts' prediction. Additionally, our study also fills the void of comparative empirical analysis between the ex-ante and ex-post forecasts in the literature.

Finally, our researches contribute to the literature by employing multiple models and methods at each stage of this thesis for the purpose of sensitivity analysis to provide robust results.

### **3 Practical Implications**

This thesis provides potential practical implications especially for the financial analysts, firms, investors and standard setters or regulators. Along with the existing literature, this thesis unequivocally provides evidence that firms manage their earnings in order to achieve the financial targets, especially financial analysts' forecasts.

This thesis finds that the earnings announcement reduces the postdisclosure information asymmetry, which implies that financial analysts receive more information after the firms have issued their financial reporting. This should also be noted that ex-post forecast errors decrease, which means, financial analysts try to predict the managed earnings. Since, financial analysts have a high degree of responsibility to provide better consultation of financial information and predictions of financial performance of the firms to the potential minor investors; they need to collect higher level of precise private information when they make predictions.

Firms, on the other hand, have to be careful when they use their discretionary power to manage earnings, because any bad news or skepticism may lead to serious economic consequences. Continuous use of discretionary choices to manage earnings may cause a bubble and may lead to economic or financial crisis, though this thesis does not provide any evidence of such a situation.

This thesis provides sufficient evidences to the potential investors that firms manage earnings to achieve financial targets. Investors need to be more skeptical and should be able to evaluate long-term financial performance of the firms. Our findings indicate good news increases the market share returns for the firms, but it does not always reciprocate for the investors. They need to apply more diligence and skepticism when they observe slight good news from the firms.

Furthermore, it is also important for standard setters to apply strict measures and minimize the loopholes in the accounting standards to restrict firms in manipulating their earnings. Our findings also point out that firms use goodwill impairment, restructuring charges and lease commitments together with other techniques to manipulate the earnings. Since, there has been a change in a standard relating to lease commitments; more such proactive steps need to be taken to ensure the firms provide better quality financial reporting.

#### **4 Limitations and future research prospects**

Where this thesis delivers contributions to multiple angles of the literature, it also has limitations and provides various prospects for future research. Primarily, this study does not use the various available forecast windows to compare the different effects including latest estimates. We only use 45-days window for the ex-ante forecasts and 180-days for ex-post forecasts. This study does not account for aggressive and conservative behavior of the firms in earnings management. This study fails to incorporate the financial crisis of 2007-08; probably an extensive study may provide answers to these vicious cycles of financial crisis. This research also lacks the extensive sample and only provides evidences for US firms; perhaps an extensive international sample may provide significant dimensions to the literature. It will also be interesting to analyze the attitude of the firms during COVID-19 crisis in comparison to PRE-

COVID period. Earnings management is understood to be inevitable and the available measures are just the best approximation of manipulation, perhaps a more sophisticated model (maybe a combination of accruals and real earnings management) may be interesting.



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