On the Accuracy versus Informativeness of Financial Analyst Forecasts : The Earnings Management Perspective

Syed Kazmi

PSL
UNIVERSITÉ PARIS

THÈSE DE DOCTORAT
DE L'UNIVERSITÉ PSL

Préparée à l'Université Paris-Dauphine

On the Accuracy versus Informativeness of Financial Analyst Forecasts: The Earnings Management Perspective

Soutenue par

Syed Hassan Raza KAZMI

Le 30 novembre 2020

Ecole doctorale n° ED 543

Ecole doctorale de Dauphine

Spécialité

DRM Finance

Composition du jury :

Olivier, RAMOND Professeur des universités, Dauphine	*Président*
Isabelle, MARTINEZ Professeur des universités, Toulouse	*Rapporteur*
Philippe, TOURON Professeur des universités, Sorbonne	*Rapporteur*
Pascal, DUMONTIER Professeur des universités, Dauphine	*Directeur de thèse*

Dauphine | PSL
UNIVERSITÉ PARIS

Acknowledgements

I would thank, first and foremost, my supervisor Pr. Pascal Dumontier, whose charismatic personality and scientific acumen boosted in me the motivation to pursue academia. I cannot thank you enough for your patience and encouragement. I would never have completed this thesis without your tremendous support.

I would like to express my sincere gratitude to my thesis committee member, Dr. Olivier Ramond for his insightful review of my work and for kindly accepting to be a part of my jury. I would also like to express my utmost respect and gratitude to Pr. Dr. Isabelle Martinez and Pr. Dr. Philippe Touron for accepting to be a part of my thesis committee. Thank you so much for your comments and suggestions.

I would like to extend my heartfelt thanks to Dr. Carole Gresse for accepting me warmly into DRM – Finance. Your insight into my research work and your appreciation towards it is highly admirable.

I would like to thank Françoise Carbon for always being cheerful while helping me with the administrative procedures for the conferences. I would also thank Stephanie Salon for her support with the inscription related administrative procedures over all these years.

I would take this opportunity to thank the Higher Education Commission (HEC) of Pakistan for granting me the scholarship to pursue my masters and doctoral studies in France.

I would also thank Jingwen for her help and support during these years. I whole-heartedly thank all my colleagues and my Pakistani friends in France for being a great company away from home.

Thank you, Mama and Papa, for your prayers and unwavering support. Your untiring efforts have borne fruit and I will forever be indebted. Thank you Apya, Mustafa, and Sara for the bundles of joy you sent my way.

Thank you Bhai for you are my true inspiration and a perfect role model. Our never-ending discussions either helped me get through difficult times or pleased me otherwise. You are the ultimate champion.

Thanks a million Fareeha for your unflinching support through thick and thin that has been invaluable throughout this journey.

Contents

List of Figures and Tables

Chapter I

Chapter II

Chapter III

General Introduction

Financial analysts have grown in number and importance over the decades. The first investment analysts' societies can be traced back to 1925 in Chicago, 1937 in New York, and as recent as 1962 in Europe (Graham, 2004). The profession was formalized due to its ever growing presence and utility in the capital markets around the world. Working as liaisons between the management and investors, analysts provide useful information in the form of stock recommendations, price targets, and earnings forecasts. A great deal of research on sell-side analysts and their earnings forecast has been undertaken, progressively as these forecasts increasingly influenced investors as well as the management. A fairly separate yet associated phenomenon – earnings management – has also been under abundant study. This is when management seeks to adjust the earnings figures of their firms, within the limitations of the regulation, for various reasons; they may increase or decrease their reported earnings figure, compromising the quality of reported earnings, depending on their ulterior motive. The literature on the amalgamation of these two topics is scant: what do analysts forecast when earnings are managed? In such a case, the forecasts may be accurate, closer to the manipulated reported earnings, or informative, closer to the unmanaged earnings that reflects the true performance of the firm, or neither, depending on the willingness and ability of the analyst. This dissertation aims to better understand analysts' earnings forecasts specifically when firms manage earnings.

The first chapter presents a detailed literature review of analysts' earnings forecasts, earnings management, and the issue related to the two topics. It outlines the techniques used to manage earnings and the motivations of earnings management documented in the literature such as to avoid reporting losses, during stock offerings, or while mergers and acquisitions (Teoh et al., 1998a; Degeorge et al., 1999; Louis,

2004). Furthermore, it explains analysts' earnings forecasts and their interpretations as used by investors, management, and researchers. Ultimately, the chapter deals with the research question that what do analysts forecast when earnings are managed. Limited studies have attempted to establish a connection between analysts and earnings management (Abarbanell & Lehavy, 2003). Only two contradictory studies focus on analyst forecasts when firm manage earnings; Burgstahler and Eames (2003) show that analysts are unable to predict the managed component of earnings while Louis et al. (2013) report that analysts deliberately forego accuracy and forecast the true earnings figure when firms manage earnings. The chapter critically analyzes the sample, methods, and models used in these studies and it presents three main suggestions for improvement. One, the motivation of earnings management and its direction must be clearly identified in the sample making it easier for analysts to be able to predict the management. Two, the characteristics of the firms must be considered in the empirical models distinguishing firms that systematically manage earnings. Similarly, the characteristics of the analysts, such as experience and forecasting behavior must also be considered as these characteristics impact how accurately (or informatively) the analyst forecasts (Clement, 1999). Three, individual analyst forecasts must be used instead of consensus forecasts to better capture the individuality of the analysts. The idea is that while some analysts may be accurate, some may be informative, and the rest may be neither. Similarly, the same analyst may be accurate at one time and informative the other. These improvements help determine which analysts may be accurate, which may be informative, and under what circumstances, as developed and ascertained by the empirical results of chapters two and three.

The second chapter employs an empirical model to test the association of analyst forecasts with earnings management. It uses a sample of European firms that have issued seasoned equity offerings (SEO) and are expected to significantly manage earnings upwards as heavily documented (Teoh et al., 1998b; Rangan, 1998; Shivakumar, 2000). It also tests for various characteristics of the firm that might affect earnings management, and of the forecast that might affect the analyst's preference or ability to forecast accurately or informatively. The main findings are that analysts generally reduce their forecasts as soon as the SEO is announced indicating a deviation from reported earnings (as they are expected to go up). For SEOs issued after the implementation of the Market Abuse Directive (MAD) in the EU, the decrease in analyst forecast following the SEO announcement is pronounced, especially for affiliated analysts. The directive requires analysts to declare any ties with issuing firms therefore affiliated analysts, those that are employed by brokers that provide services to the issuing firm, are affected most. These results show that analysts generally prefer informativeness for their clients and communicate the true value of the firm, when earnings are expected to be managed. They also show that MAD has successfully achieved its goal of improving transparency in the capital markets barring analysts to curry favor with the management by forecasting 'accurately' to proliferate trading volumes.

The third chapter aims to establish whether informative analyst forecasts also help investors by correctly predicting share prices and returns. The same SEO setting was used as it entails significant upwards earnings management by the firm and provides with a neat cut-off date only after which analysts become aware of the earnings management. Essentially, the model that has been used in prior literature to test the value relevance of earnings was employed (Bradshaw & Sloan, 2002). The intuition is

that if analyst forecasts reflect the true performance of the firm they must be more value relevant than reported earnings therefore predict current and future prices and returns better. The results show that in the short term accurate analysts predict firm value better than reported earnings whereas, in the long term informative analysts predict firm value better than reported earnings. Specifically, analysts who revise their forecasts downwards after the SEO announcement, and those who forecast lower than reported earnings predict firm value better than their counterparts in the year following the SEO issue. Accurate analysts are identified in the short term owing to the phenomenon that the market overvalues issuing firms in the year of issue (Lev & Thiagarajan, 1993). While these analysts forecast accurately and predict firm value better in the year of issue, informative analysts predict firm value better in the following year, especially after the reversal of the market's overpricing. Similarly, forecasts issued by affiliated analysts are more value relevant than by their counterparts after the adoption of MAD, confirming the achievement of the directive's objective. These findings help distinguish accurate and informative analysts and show that forecast accuracy is not the sole objective of all analysts as some prefer informativeness for their clients. It identifies conditions and forecast characteristics that determine whether an analyst successfully attempts to be accurate or informative.

This thesis contributes to the literature on financial analysts, their forecast accuracy and its informativeness, and conditions and characteristics that determine it. Specifically, it contributes to the literature on how financial reporting quality affects the forecasts and forecast accuracy (Bradshaw et al., 2001; Abarbanell & Lehavy, 2003; Burgstahler & Eames, 2003; Louis et al., 2013; Bilinski & Eames, 2019). It also adds to the vast literature on earnings management and earnings quality with respect

to SEOs (Rangan, 1998; Sivakumar, 2000). Another contribution is of the impact of regulation, the MAD (Fauver et al., 2017), and that of analyst forecasts (Feng & McVay, 2010; Sun et al., 2020) around SEOs. It adds to the scant literature that proposes that analysts deliberately forego forecast accuracy for informativeness (Louis et al., 2013). By establishing the preference of some analysts to be informative, this thesis calls for the reinterpretation of analyst forecast accuracy in all future research. Identifying factors that affect analyst forecasting behavior, it also opens up avenues for future research on the other two outputs, stock recommendations and price targets, of financial analysts.

References

Abarbanell, J., & Lehavy, R. (2003). Can Stock Recommendations Predict Earnings Management and Analysts' Earnings Forecast Errors. *Journal of Accounting Research, 41*(1), 1-31.

Bilinski, P., & Eames, M. (2019). Analyst revenue forecast reporting and the quality of revenues and expenses. *Journal of Business Finance & Accounting, 46,* 136-158.

Bradshaw, M. T., & Sloan, R. G. (2002). GAAP versus The Street: An Empirical Assessment of Two Alternative Definitions of Earnings. *Journal of Accounting Research, 40*(1), 41-66.

Bradshaw, M. T., Richardson, S. A., & Sloan, R. G. (2001). Do Analysts and Auditors Use Information in Accruals? *Journal of Accounting Research, 39*(1), 45-74.

Burgstahler, D. C., & Eames, M. J. (2003). Earnings Management to Avoid Losses and Earnings Decreases: Are Analysts Fooled? *Contemporary Accounting Research, 20*(2), 253-294.

Clement, M. B. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics, 27*, 285-303.

Degeorge, F., Patel, J., & Zeckhauser, R. J. (1999). Earnings Management to Exceed Thresholds. *Journal of Business, 72*(1), 1-33.

Fauver, L., Loureiro, G., & Taboada, A. G. (2017). The impact of regulation on information quality and performance around seasoned equity offerings: International evidence. *Journal of Corporate Finance, 44*, 73-98.

Feng, M., & McVay, S. (2010). Analysts' Incentives to Overweight Management Guidance When Revising Their Short-Term Earnings Forecasts. *The Accounting Review, 85*(5), 1617-1646.

Graham, K. A. (2004). The history of investment analysts' societies. *Financial History,* 30-33.

Lev, B., & Thiagarajan, S. R. (1993). Fundamental Information Analysis. *Journal of Accounting Research, 31*(2), 190-215.

Louis, H. (2004). Earnings management and the market performance of acquiring firms. *Journal of Financial Economics, 74*(1), 121-148.

Louis, H., Sun, A. X., & Urcan, O. (2013). Do Analysts Sacrifice Forecast Accuracy for Informativeness? *Management Science, 59*(7), 1688-1708.

Rangan, S. (1998). Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics, 50,* 101-122.

Shivakumar, L. (2000). Do Firms Mislead Investors by Overstating Earnings before Seasoned Equity Offerings? *Journal of Accounting and Economics, 29*, 339-371.

Sun, Q., Cheng, X., Gao, S., & Yang, M. (2020). Are SEO investors miseld by analyst optmisim bias? Evidence from investor bids in SEO auctions. *International Review of Economics & Finance, 68*, 90-104

Teoh, S. H., Welch, I., & Wong, T. J. (1998a). Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance, 53*(6), 1935-1974.

Teoh, S. H., Welch, I., & Wong, T. J. (1998b). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics, 50,* 63-99.

I. What do analysts forecast when earnings are managed? Issues and challenges

Abstract

Financial analysts play a vital role in capital markets as liaisons between managers and investors. When firms manage earnings, analysts must decide whether to include or exclude the managed component from their forecasts. Since earnings management reduces the quality of reported earnings, analysts that exclude this component are called informative while analysts that include it are called accurate. Limited and contradictory literature on the issue exists where most studies conclude that analysts are unable to incorporate earnings management in their forecasts. This study reviews the literature on analyst forecasts when earnings are managed, identifies the gap, and suggests modifications in the research design for future studies. We propose that research focusing on analyst forecasts when earnings are managed should focus on specific transactions that motivate managers to manage earnings whereas upwards and downwards earnings management should be separately tested. We also recommend that firm, forecast, and analyst characteristics should be incorporated in the empirical models as most of these conditions affect both analyst forecast and earnings management. Finally, we propose the use of individual analyst forecasts as it is palpable that while some analysts may prefer informativeness, others would opt for accuracy for various reasons. Therefore, using characteristics and individual forecasts helps differentiate informative from accurate analysts, which is a key aspect in these studies.

Keywords: earnings forecast, earnings management, forecast accuracy, informativeness

1. Introduction

Financial analysts are key players in today's capital markets along with managers and investors. By issuing valuable information regarding the performance of securities they play a vital role in asset pricing. Both managers and investors assign significant weight to the information provided by financial analysts. This information may be in the form of earnings forecast, a buy-hold-sell recommendation, and/or a price target for a specific security. Analysts' earnings forecasts have been subject to extensive study by researchers as these forecasts tend to form an expectation of the earnings of a firm in the market. Subsequently, meeting or beating these expectations is known to reward managers with better stock performance whereas missing these expectations does the opposite (Brown & Caylor, 2005). This phenomenon thus establishes the importance of the analysts' earnings forecasts for both the management as well as the investors. Consequently, managers tend to 'guide' analysts in order to bring their forecasts closer to the reported earnings, or rather drive the targets (expectations) to numbers that are easier to beat. Regulations such as the Market Abuse Directive (MAD) and Prospectus Directive (PD) in the European Union (EU) have made communication between the management and analysts to be public and therefore more transparent for investors. However, managers are also known to beat these targets using widely known techniques of earnings management which may not be as transparent. This is to manipulate the reported earnings figure, within the rules and framework of the Generally Accepted Accounting Principles (GAAP), for some ulterior motive. Literature shows that management has indulged in earnings management to both increase and decrease reported earnings for various reasons. Extensive research on earnings management has been published, which begs the

question: what do analysts forecast when earnings are managed? Extant literature on financial analysts is built on the assumption that analysts tend to forecast reported figures as accurately as possible. Forecast accuracy is a metric widely used by financial institutions that employ these analysts as well as researchers that study analyst forecasts. In addition to the earnings management aspect, managers preannounce (before the release of financial statements) earnings figures that are non-compliant with GAAP sometimes in order to showcase better performance. These figures are generally way off of the actual reported earnings as managers claim they exclude non-recurring and extraordinary items that appear in GAAP figures. These factors combined create ambiguities around the earnings figure that the analysts forecast. Hence, a better understanding of analysts' earnings forecast is needed as issues remain with correctly interpreting the forecast. It must be determined whether analysts follow management guidance and forecast numbers accordingly (non-GAAP), or whether they forecast their own numbers that better represent the performance of the firm; and how they treat the managed component of earnings. This paper explores the studies that address the issue of analyst forecasts when earnings are managed and discusses possible avenues of research on the consolidation of the two topics. It develops methodologies that critically analyze analyst forecasts especially by proposing an approach that enables the capturing of the effect of earnings management on analyst forecasts. Previous studies have failed to conclusively predict analyst forecasts when earnings are managed mostly due to clouded empirical techniques that are unable to separate earnings management from analyst forecasts.

Literature shows that analyst forecast accuracy has been studied in great detail. Researchers have tried to evaluate what makes analysts' forecasts more accurate, that is, closer to the management's reported figures (Clement, 1999). Forecast accuracy

has also been used to determine the integrity of analysts by researchers and the analysts' compensations by their employers (Brown, 2001). If analysts do not prefer accuracy, this criterion will be subject to reinterpretation. The forecasts are also widely used by investors to price securities as shown by investors' reaction to these forecasts releases. Value-irrelevant forecasts (that do not reflect the true performance of the firm) may be dangerous for investors to use as the investment decisions taken using these forecasts may result in losses over the long-term. Similarly, managers use these forecasts to set targets as well as influence them to achieve better stock performance. When it comes to earnings management, existing literature finds that analysts tend to include the earnings management component in their forecasts (Burgstahler & Eames, 2003) revealing their preference for accuracy. So far only one study finds that analysts do not include the earnings management component in their forecasts and rather prefer informativeness for their clients (Louis et al., 2013). Further investigation is thus required to address the conflict in existing literature.

Few studies have discussed analyst forecasts when firms manage earnings (Abarbanell & Lehavy, 2003; Burgstahler & Eames, 2003; Louis et al., 2013). These studies rely on specific cases of earnings management that may be convoluted in the context of analyst forecasts. For example, studying analyst forecasts when firms manage earnings to meet or beat analyst forecasts is erroneous. This set-up does not segregate analyst forecasts from earnings management as firms are managing earnings to meet or beat these very forecasts. The problem is of a circular measurement error which makes interpretations of the results less dependable. Burgstahler and Eames (2003) study analyst forecasts when firms manage earnings to avoid reporting losses or earnings decreases. Again, it is hard to establish whether analysts are aware of and follow these motivations of earnings management and forecast accordingly. Louis et

al. (2013), on the other hand, generalize all cases of earnings management by considering abnormal accruals. While this set-up is better it is still subject to the assumption that analysts are well aware of abnormal accruals beforehand. Moreover, the inability to differentiate upwards from downwards earnings management remains an issue in both studies. Not surprisingly, both studies reach opposite conclusions where Burgstahler and Eames (2003) claim that analysts are accurate while Louis et al. (2013) report that they are informative. Therefore, focusing on specific cases of earnings management and segregating analyst forecasts from the earnings management would yield consistent results. We identify management's motivations of earnings management beyond those that have been studied in the literature on the issue. These include behavioral, contracting, regulatory, storage, and capital market motivations of managers to manage earnings. Focusing on one of these motivations would greatly improve the predictability of the model if analysts are also aware of the existence of the motivation and their forecasts are independent of the earnings management. Most of these motivations also differentiate between upwards and downwards earnings management, for example, Initial Public Offerings (IPOs) are known to be lead with upwards whereas Management Buyouts (MBOs) are lead with downwards earnings management. This differentiation is crucial in identifying analyst preference for accuracy or informativeness.

We further postulate that characteristics of the firm, the forecast, and the analyst play a huge role in the determination of whether the analyst is accurate or informative. First, it must be established that the firm under study has managed earnings, ideally in one direction, upwards or downwards. This firm must then have specific characteristics that make it more likely to manage earnings, as documented in the literature. Firm characteristics such as size, auditors, and board integrity should be

used not only as control variables but as delimiters between analyst forecasts and earnings management. Second, the characteristics of the forecasts and analysts themselves should also be used to determine analyst forecasting behavior. For example, experience, portfolio complexity, and resources as identified by Clement (1999) impact the forecast accuracy of analysts. It can be argued that these characteristics may also affect informativeness. Finally, we propose the use of individual analyst forecasts instead of the consensus forecast used by almost all of the previous studies. The consensus forecast fails to capture the individuality of each analyst as it generalizes the results and claims all analysts to behave in one way. Like all individuals are not created equal, all analysts can never be equal either. In fact, it is quite probable that the same analyst may prefer to be accurate at one time and place would prefer to be informative at another. Therefore, the use of individual analyst forecasts in conjunction with firm and analyst specific characteristics would ensure improved models with consistent results.

The rest of the study is organized as follows. Section 2 explains the importance of earnings management and its motivations. Section 3 explains the role and significance of financial analysts in capital markets. Section 4 discusses the interpretations of analysts' earnings forecasts and associated problems. Section 5 reviews the literature on the topic, discusses the problems, and presents avenues for future research while Section 6 concludes.

2. Earnings management and its widespread practice

2.1. Definition of earnings management and its techniques

It is the responsibility of the firm's management to prepare the books of accounts of the company, and present performance through financial statements. These statements

are prepared according to rules and guidelines commonly known as Generally Accepted Accounting Principles (GAAP) that are designed by international accounting bodies. One of the key takeaways from these statements is the earnings figure. How much the firm has earned over the period is a vital indicator of performance, among others. This earnings figure has been and will probably be a hot topic of discussion in the future since GAAP leaves some room for discretion in what the firm has actually earned. This discretion lies with the management who prepare the statements which indicates the subjectivity of the earnings figure. Thus, the management indulges in exercising the discretion to manage the earnings of the firm, for various reasons. Earnings management has been defined differently according to different producers and consumers of the definition. Researchers differ in defining earnings management based on their findings though the majority see it as exercising discretion within the limitations of GAAP (Schipper, 1989; Healy & Wahlen, 1999). Similarly, investors, policy makers, and the management themselves would define earnings management on their own terms. However, the general consensus is that earnings management is a purposeful intervention in financial reporting, not necessarily violating regulation, through the choice of accounting policies, to under or overstate earnings which may mislead stakeholders. We explore the methods and techniques used to achieve, and the motivations behind, this vastly documented phenomenon.

Managers have at their disposal two main methods to manage their GAAP earnings: real management and discretionary accruals management. Real earnings management is when firms actually improve sales or reduce expenses just to meet certain thresholds. This may be done through timing the occurrence of revenues and expenditures in such a way that would change the earnings figure which would have

otherwise been reported differently. For example, a construction company may delay accepting a contract to shift the recoded revenues to the next quarter manipulating both the earnings of this (decreasing earnings) and the next (increasing earnings) quarter. Note that the manipulation may be in both the directions, increasing as well as decreasing. Bartov (1993) finds that managers deliberately time the sale of their assets in order to manipulate earnings. However, real earnings management is extremely difficult as it comes with great costs. First, the GAAP numbers are audited and such earnings management is easily detectable by auditors who might then devalue the quality of earnings reported by the firm causing problems for its reputation. Second, real earnings management works like a quicksand where manipulating earnings temporarily may have long-term implications. Once managers muddle with the operating revenues and expenditures of the firm it becomes hard to revert to routine numbers without disastrous results. Again as an example, as the construction company reports increasing earnings over the years, additional pressure is mounted for it to report even better earnings in the future. This may cause it to either continue manipulating and risk being caught eventually, or give up and report the reality which may be far below investor expectation. Therefore, managers look towards accruals management which is a form of earnings management much more discreet and discretionary than real earnings management. Accruals management originates from the concept of accrual accounting where revenues and expenditures are recorded as they are realized (contractual obligation) and not as they are materialized (cash transfer). Some of the accruals appearing in the income statements of companies are discretionary, that is, the value of these accruals is decided by the management. Depreciation and amortization of fixed assets, provisions for receivables, and anticipated bonuses are a few examples of discretionary accrual

expenses. Simply put, the management can choose to increase (decrease) these expenses in times of higher (lower) revenues in order to smooth earnings. These discretionary expenses may also be used to meet earnings targets. Higher discretionary accruals relate to income-increasing whereas lower (or negative) discretionary accruals relate to income-decreasing earnings management.

In a nutshell, management uses various techniques to manage earnings to influence perception of the firm's performance in the market. Black et al. (2014) report that managers are likely to first resort to real earnings management, then to accrual earnings management, and when they cannot manipulate their earnings within the limitations of GAAP, they use pro forma reporting to influence investor perception. Pro forma and non-GAAP reporting is discussed in detail in section 4.3. We know from evidence that firms manage their earnings and this might cause wealth transfers if the market does not see through the earnings management.

2.2. Motivations to manage earnings

There exist several motivations for management to manipulate earnings, upwards or downwards, to influence perception of the firm's performance in the market. We categorize and discuss key motivations that lead managers to manage earnings.

Behavioral: Corporate managers suffer from behavioral biases that lead them to manage accounting figures to report smoothed earnings and to meet or exceed specific thresholds. Degeorge et al. (1999) compiled statistical evidence to show that management does manipulate its earnings to meet specific behavioral thresholds. Figure 1a, 1b, and 1c show historical data from 1974-1996 of firms 'sustaining performance', 'reporting positive earnings', and 'meeting analysts' expectations' respectively. Each of the histogram shows a significant surge of reported numbers in

the area of the targets that would not be normally expected. The management's incentive to report improved EPS figures than that of the previous period (Figure 1a) shows its intention to 'smooth' earnings. That is, management wants a steady increase in their earnings over time which the investors also prefer. Most studies find that income smoothing is informative to investors (Tucker & Zarowin, 2006). The second histogram (Figure 1b) relates to managers avoiding reporting losses which send out a bad signal in the market. Management would manipulate its earnings and make sure it does not have to report a loss. The third histogram (Figure 1c) though shows management's incentive to manipulate earnings to meet analysts' expectations, which has greater impact in the market than the other two thresholds, as discussed later in the paper. Management focuses more on meeting this threshold as investors also value such targets. Management usually meets this threshold by either guiding the analysts or managing its own earnings.

Insert Figure 1 about here

Storage and Regulatory: Firms tend to report strong losses aimed at storing earnings in case of inescapable poor performance that may be foreseeable. This practice is sometimes known as big bath accounting where managers transfer future losses to current periods to be able to report smooth earnings in the future. Prior studies have found both positive and negative consequences of big baths on the information environment. Hope and Wang (2018) discuss manager deception and big bath accounting using a linguistic analysis and find that when deceptive managers use big bath accounting, the information asymmetry is significantly higher in the market than when truthful managers do the same. This motivation is somewhat similar to the behavioral motivation; however, storage refers to the management being able to

'store' performance for future periods. This leads the management to report strong one-time losses as opposed to only smoothening earnings figures under behavioral motivations. This also occurs when there is a change in the management as the new management tends to blame the old one for the current write-down and aims to showcase better performance consequently, for example, in the case of a CEO turnover (Murphy & Zimmerman, 1993). Earnings are also managed to circumvent industry regulation such as meeting capital requirements in the banking industry or regulating prices in the utility sector. Management would manipulate earnings also to benefit from tax-savings by reporting lower earnings. Shane and Stock (2006) report that firms shift earnings from quarter to quarter to benefit from a tax reform.

Contracting: Earnings management by the firm aims to monitor and regulate contracts and earn credit ratings based on accounting numbers. These contracts may relate to management compensation, long-term debts, or credit ratings that affect borrowing. With respect to management compensation, accrual policies of managers are related to income-reporting incentives of their bonus contracts. Healy (1985) finds that managers manipulate earnings downwards when their bonuses are at maximum. That is to 'save' excess earnings for future to maximize the gain from bonuses based on current performance. Moreover, research finds that earnings management using discretionary accruals is more pronounced when CEO compensation is directly associated with the value of stock and option holdings (Bergstresser & Philippon, 2006; Burns & Kedia, 2006; Cornett et al., 2008). With respect to borrowing, studies show that earnings are managed upwards before issuing bonds to obtain debt at a lower cost as well as around the time of offering convertible bonds (Chou et al., 2009; Liu et al., 2010). Moreover, Demirtas and Cornaggia (2013) find that abnormal

current accruals are significantly positively related to initial credit ratings and are high around the issue of these ratings.

Capital market: One of the biggest aims of earnings management is to influence stock price performance, especially in case of an Initial Public Offering (IPO), Seasoned Equity Offering (SEO), share repurchase, Management Buyout (MBO), or Merger and Acquisition (M&A). Research shows that firms time an IPO either after an unusually high cash flow or boost cash flows right before the IPO and then use accruals to smoothen earnings (Teoh et al., 1998a; DuCharme et al., 2001). Earnings management persists during the year around the SEO as evidenced by higher than normal accruals (Teoh et al., 1998b; Rangan, 1998; Shivakumar, 2000). Rangan (1998) finds that firms manage earnings upwards in the quarter of and the quarter following the SEO in order to boost share prices to generate higher proceeds. During MBOs, managers manage earnings downwards in the year prior to the announcement of a bid for control of the company (Perry & Williams, 1994). Acquiring firms manage earnings upwards to increase their stock price before stock for stock mergers and face post-merger reversal effects (Erickson & Wang, 1999; Louis, 2004). The management also tends to take advantage of overvalued shares by timing. Under Jensen's overvaluation of equity, overvaluation is related to income-increasing earnings management (Chi & Gupta, 2009).

All these motivations to manage earnings exist and are well documented in the literature. However, when it comes to analyst forecasts, the few studies that exist have focused only on behavioral motivations of earnings management. If not, studies consider the general case where firms that experience abnormal accruals are believed to have managed earnings though the reason for the manipulation is not established.

Before considering analyst forecasts when earnings are managed, we must establish the significance of analysts and their forecasts.

3. The role and significance of financial analysts

Financial analysts are researchers who dedicate their time and effort to studying information available in capital markets in order to aid investors. They carry out in-depth analysis of the obligatory and voluntary information produced by companies and also consider macroeconomic factors affecting the industry and the economy. As a result, they produce research reports that help investors better assess the value of the investment product under the analyst's study. Hence, analysts are key market players that may help reduce information asymmetries between management and investors. While auditors assess the integrity of the financial statements produced by the management of a company, analysts take into account several factors to provide an insight to these numbers. They study thoroughly the annual reports published by companies and use financial as well as non-financial information to assess the company's value. Apart from the annual reports, analysts use all sorts of information disseminated in the market by the management such as earnings forecasts, project announcements, and extraordinary items. In addition, they take into account the macroeconomic factors such as interest rates and inflation affecting the stock, as well as the industry conditions of the product under study. Different analysts will use different types of information to analyze the investment yet eventually all analysts' objective is to signal to their clients (investors) through their reports whether a specific security is worth investing in or not.

Financial analysts are of two types, credit and equity. Credit analysts analyze the solvency of a firm, that is, they study whether a company would be able to repay a

debt or not. There are private credit analysts who work for banks or credit institutions. They are interested in finding out the financial strength of a company with respect to its ability to payback a loan that might be issued by their employers. And there are public credit analysts who work for credit rating agencies such as Moody's and Fitch. These agencies issue credit ratings to all debt instruments available in the market with the help of the analysis of credit analysts. The second type of analysts, the ones that have been in the spotlight for their significant role in the capital markets, are equity analysts. The ultimate aim of these analysts is to forecast the earnings of a company, forecast the target stock price, and recommend investors to buy, hold, or sell the stock. The earnings forecast may be quarterly or annual and the analyst may continue updating it from time to time according to the information s/he has available. By forecasting the earnings the analyst is able to inform investors how the company may be performing through the fiscal period. Investors may compare these numbers with the previous period's reported earnings or with the management's own forecast and assess the value of the firm. Nonetheless, the analyst also issues a recommendation to the investors which can take any value from strong buy (outperform), buy, hold, sell, or strong sell (underperform). Similar to credit analysts, the equity analysts may either be private or public. Private equity analysts work for institutional investors such as hedge funds or pension funds. These analysts are also known as buy-side analysts. The managers of these funds employ the financial analysts who then produce reports directly addressed to the fund managers assisting them in the investment decisions. There are also private independent research firms that sell their research to whoever is interested to buy. However, the financial analysts who are mostly under the microscope are public equity analysts, also known as sell-side analysts. These analysts are employed by investment banks, brokerage firms, and integrated firms and

their research is made public usually through the internet. Effectively, the information made public is the earnings forecast, the target stock price, and the recommendation made by the analyst whereas the detailed report may be accessed by clients of the investment bank or the broker.

Financial analysts play a significant role in the capital markets through their investment research. For example, credit analysts employed by the big three credit agencies (S&P's, Moody's, and Fitch Group) played a vital role in the most recent global financial crisis. One can link the inflated investment grades given to investment products to the inefficiency of the analysts who failed to evaluate the true ratings of these products (The Financial Crisis Inquiry Commission, 2011). Similarly, equity financial analysts are also key players in the market. Investors give a significant amount of weight to what the analysts say and stock markets reflect the information released by these analysts. Retail investors especially use crude valuation techniques such as the price-earnings ratio to evaluate the performance of a stock using numbers published by analysts. Considering that investors in capital markets follow the analysis and published results of financial analysts, it is safe to claim that the analysts' research has a significant impact in the market.

A great amount of literature exists on how analysts' recommendations affect stock prices and generate abnormal profits or losses. Davies and Canes (1978) were one of the first few authors who studied the effect of analysts' stock recommendation announcements in the Wall Street Journal and rejected previous studies claiming analysts' recommendations to be worthless. They examined the effect of 785 recommendations published in the journal from the period 1970-1971 using Fama's market residual technique. The journal was the first platform for these recommendations' exposure to public, however, the analysts made sure that the

recommendations were transmitted to their respective clients first. Nonetheless, the time between the clients' receipt of the recommendation and the publication ranged from a few days to two weeks. The authors found that (1) stock prices adjust to revisions in analysts' recommendations, (2) the information that is first released to a small group of investors by the analysts subsequently has a significant impact on stock prices, and (3) in general, the analysts' recommendations provide inside information to the clients. They also concluded that the publication of such recommendations does not leave the market inefficient as information available in the journal is very quickly incorporated into stock prices. That is, subscribers of the journal cannot exploit this information for abnormal profits of their own. Other researchers furthered the study of Davies and Canes concluding that, buy (sell) recommendations are associated with positive (negative) significant abnormal profits following the publication (Beneish, 1991), and significant abnormal returns are associated with higher trading volume in the two days preceding the publication (Liu et al., 1990). In essence, research has shown that investors give importance to financial analysts and the information they release in the market through abnormal profits and trading volumes as seen in Figure 2. Figure 2a shows the average residuals (difference between actual and predicted returns where predicted returns represent the movement in the general level of prices) of buy recommendations whereas Figure 2b shows the average residuals of sell recommendations.

Insert Figure 2 about here

It can be observed that the market's reaction to sell recommendations is greater in magnitude than to buy recommendations. Although Davies and Canes (1978) do not directly address this peculiar observation in their paper, later

researchers have discussed this idea in detail. It has been hypothesized that the market reacts more to bad news than to good news. Nonetheless, the significance of financial analysts' recommendations has been well established in other empirical and experimental studies as well. For example, Barber and Loeffler (1993) study recommendations published in another column of the Wall Street Journal and find positive abnormal returns of about 4% following the publication. Also, Barber et al. (2001) investigate the performance of consensus forecasts (mean or median of all the analysts following a specific firm) and conclude that highly recommended shares generate 4.2% of excess returns if transaction costs are ignored. An experimental study about investors' reaction to financial analysts' reports shows that investors value the opinion of sell-side analysts greater than that of independent analysts especially in the case of unfavorable recommendations (Hirst et al., 1995). Thus, the value and significance of financial analyst cannot be ignored in capital markets as they influence managers, investors, and security valuation.

4. Earnings forecasts and their interpretations

4.1. Analysts' earnings forecasts

Apart from recommendations, an earnings forecast is one of the outputs of financial analysts that has been studied deeply by researchers. A taxonomy on financial analyst forecasting literature reveals that about 250 papers on financial analysts' earnings forecasts have been published in eleven journals since 1992 (Ramnath et al., 2008). The earnings figure is one of the most relevant and significant figure in capital markets that helps determine the value of stocks. It is a figure that analysts forecast, one that management itself predicts, and a figure based on which many investors take decisions and the market reacts accordingly. During a financial year, with all sorts of

forecasts and predictions coming from analysts and the management, the investment community develops an expectation of the earnings of a company. This may very well be in the form of analysts' consensus figures, that is, the average forecast figure of all analysts following a particular company. The consensus figure is usually compiled by sell-side analyst tracking services also known as forecast data providers such as I/B/E/S, First Call, or Zacks. These service providers track analysts, record their forecasts, and provide a general consensus of analysts' forecasts for investors, apart from other services. The consensus thus forms to be the market's expectation. When the company is able to meet this expectation at the time when the actual earnings figure is reported, the market generally reacts positively or at least how the managers expect it to react. However, surprises never go too well with the market and especially if they are unfavorable. If the company reports an earnings figure lower than that of the market expectation, they pay a steep price in terms of poor stock performance in the market. As also seen earlier, the market reacts more significantly to bad news as to good news. One explanation of this phenomenon is that since sell-side analysts may be subject to conflicts of interest, investors give more weight to the unfavorable predictions of the analysts than to the favorable predictions. This is because sell-side analysts work for investment banks that in turn underwrite stock offerings for companies and thus require analysts to paint a pretty picture for the companies they work with. In that case when analysts issue unfavorable analyses about the company they may be affiliated with, investors believe it to be truer than any favorable analyses. However, research has found that the market recognizes analysts' conflicts of interest and discounts their opinion accordingly (Agarwal & Chen, 2008). Nevertheless, the analysts' earnings forecast figure remains to be vital in the valuation dynamics of capital markets.

As discussed earlier, financial analysts forecasts these earnings figures through extensive analyses of information in the market, such as financial and non-financial information within and outside the annual reports of companies. Researchers have questioned how financial analysts come up with these forecasts. Lev and Thiagarajan (1993) identified 12 fundamentals that analysts claim to be useful in security valuation through earnings forecast, and that do increase the explanatory power of earnings with respect to returns. These are inventories, receivables, capital expenditures, R&D, gross margin, selling and administrative expenses, provision for doubtful receivables, effective tax rate, order backlog, labor force, LIFO earnings, and audit qualification. Almost all of these fundamentals can be found in the annual reports of companies but analysts need to gain this information before the publication of reports in order to forecast the numbers. Hence, analysts rely heavily on information provided by management and this is where the game between managers and analysts begins. Throughout the financial period, analysts stay in constant liaison with the management to gain insights about the performance of the current period. Before the implementation of the Regulation Fair Disclosure (Reg FD) in the US in 2000, management used to communicate with analysts in conferences closed for the general public. Since the Reg FD, all such communication has also been made public enhancing the transparency of information available in the market and of analysts' forecasts. This communication between the managers and the analysts is known as "management guidance" in the literature, where the management 'guides' the analysts towards an earnings figure. Suppose the analysts' consensus of earnings is way above what the management thinks the company's earnings will be this period. To avoid the consequences of bad news, the management tries to lower the market's expectation by usually releasing its own earnings estimate during the period. The analysts may then

follow the guidance by revising their estimates or may remain stern on their own estimates. It is alleged that managers tend to guide analysts' forecasts to beatable numbers so that they stay clear of unwanted unfavorable reactions of the market in terms of falling stock prices. On the other hand, analysts may follow the guidance if they want their forecasts to be more accurate, or may digress if they believe that their forecasts are realistic and achievable by the management. Brown and Caylor (2005) noted that since the mid-1990s, managers have focused more on meeting the earnings forecasts of analysts because this entailed greater rewards for them. They found that managers gave more importance to meeting the analysts' forecasts than to avoid earnings decreases or even avoid reporting losses. That is, suppose a manager has an earnings figure of 10€ in the previous year and expects a loss of 2€ in the next year, s/he will not worry about reporting that loss more than s/he will worry about the analysts' forecasts, which is suppose a profit of 2€. The manager will try to 'guide' the analysts downwards to a loss of 2€ or something close which s/he might be able to beat. This guidance may very well be in the form of earnings pre-announcements by the management itself. The researchers concluded through empirical evidence that this was because investors rewarded (penalized) firms for meeting (missing) the analysts' threshold more than they did for avoiding earnings decreases or losses. They attributed this behavior of investors to greater media coverage given to analysts' forecasts, greater analyst following, higher number of firms being covered by analysts, and a gradual increase in the accuracy and precision of analysts' forecasts. This gameplay between the analysts and managers where greater power lies with the analysts makes it imperative for us to study more about the decision contexts of analysts' earnings forecasts.

4.2. Interpretations of analysts' forecasts

Financial analysts release several earnings forecast figures throughout the financial period. Or better said, they start with a figure and keep on revising it according to the information they receive. Different analysts may report different numbers for the same firm. Of course this dispersion in the analysts' forecasts may be due to the differences in the techniques the analysts use to forecast. However, there may also be differences in the objectives of analysts when forecasting an earnings figure. For example, some analysts may prefer reporting a figure that holds true for the short-term while others may prefer an earnings figure more relevant to the long-term prospective of the firm. When a financial analyst forecasts an earnings figure for a firm, an investor might interpret it in several ways. We narrowed down four possible, but not mutually exclusive, interpretations of the earnings forecast figure:

1. It is what would be the reported earnings of the firm according to the accounting standards it uses to prepare its accounts (GAAP).
2. It is what the true earnings of the firm is (or should be) which reflects the true (long-term) value of the firm reflected in its stock price according to the analyst.
3. It is what managers would report in their financial statements regardless of what the analyst thinks should be the value.
4. It is what the true earnings of the firm is (or should be) which reflects the true (long-term) value of the firm reflected in its stock price according to the management as predicted by the analyst.

The first two interpretations resort to the notion of informativeness within an analyst's forecast. This indicates that the analyst prefers to be more informative to his/her

clients who would want to know the earnings figure which should be reported or the earnings figure that reflects the value of the firm in order to predict stock prices. Intuitively, short-term investors would want the analyst to predict a figure calculated through GAAP which should appear in the financial statements of the company. On the contrary, long-term investors who want to see a bigger picture of the firm would want the analyst to predict a figure which presents the true earnings of the firm in order to better predict its future value. The last two interpretations depict the analyst's willingness to be rather accurate than informative. Forecast accuracy is seen as one of the benchmarks to assess the quality of a financial analyst. Simply defined, it is the difference between the last earnings forecast of the analyst and the reported earnings figure of the firm. Investors and researchers alike have always given much importance to analyst forecast accuracy. Various magazines including the Wall Street Journal ranks analysts based on various factors including forecast accuracy (Cullen, 2004). Investors believe accurate forecasts allow them to better predict stock prices. Brown (2001) confirms that analyst's past forecast accuracy is significant in assessing future accuracy. This focus on analysts' forecast accuracy leads to the idea of managers and analysts grouping up to improve accuracy as well as market reactions to earnings announcements, given the discussion of how much investors value a manager meeting the analysts' expectations. Hence, when an analyst follows management guidance and tries to predict exactly what the management would report, s/he prefers forecast accuracy. Which of the two (3 or 4) interpretations the analyst's forecast entails then depends on how the management reports its earnings figure and how they guide the analyst.

These four interpretations may also be classified differently if we assume an environment where managers and analysts work closely together. Interpretation 1 and

3 can be grouped together that highlight the analyst's as well as management's desire to announce an earnings figure according to the prevalent accounting standards. On the contrary, interpretations 2 and 4 relate more to announcing an earnings figure that better represents the true performance of the firm. This classification suggests there is a difference between an earnings figure estimated under GAAP and a figure estimated to reflect true earnings. The idea behind such a classification is that financial accounting standards such as U.S. GAAP or IFRS are not systematically fully relevant to estimating the true value of the firm. A blatant indication of this is the difference in the earnings figures reported through each of these standards themselves. Since U.S. GAAP earnings differ from IFRS earnings it is not hard to infer that earnings that reflect the true value of the firm may be different from the earnings reported using any of these accounting standards. Eventually, interpretations 1 and 3 are relevant when managers and analysts stick to the standards and assign value to perceived accuracy for investors, whereas interpretations 2 and 4 are relevant when they try to predict an earnings figure that reflects true firm performance and assign value to informativeness for investors.

4.3. The relevance of non-GAAP reporting

So what may be the earnings that reflect true firm performance and how do managers and analysts estimate these? Extensive literature exists on the fact that managers as well as financial analysts deviate from earnings calculated according to GAAP in their earnings announcements and earnings estimates respectively. One of the earliest studies that discuss this deviation is by Bradshaw and Sloan (2002) who investigate the modified GAAP earnings being reported to investors by managers and analysts alike. They quote a Wall Street Journal article that describes the process of modifying

GAAP earnings; since accounting rules do not define 'operating' income, companies increasingly remove one-time, non-cash expenses from the earnings forecast which readily inflate earnings. Moreover, companies entice analysts to exclude certain expenses, such as employee stock-based compensation or goodwill, to showcase improved earnings figures. Bradshaw and Sloan (2002) identify several other such expenses including research and development expenditure, merger and acquisition costs, restructuring charges, write-downs and impairments, and certain results of subsidiaries. All the items identified to be excluded are expenses whereas no revenues were identified to be excluded from GAAP earnings. Apparently, excluding these expenses is management's trick to send out positive signals in the market with higher earnings. However, why analysts exclude these expenses from their forecasts is a point to ponder. Assuming the analysts work with due diligence, there must exist strong reason to exclude expenses from earnings forecasts that may otherwise be included when calculating the earnings using GAAP. One reason can be that exclusion of such expenses actually increases the value of the earnings figure with respect to predicting future firm performance. For example, employee stock-based compensation expense was one expense that was made obligatory to be recognized in 1995 by the Financial Accounting Standards Board but due to political pressures it was allowed to be disclosed in the footnotes while recognition was made voluntary. After the accounting scandals in early 2000s, the expense was again made obligatory to be recognized. Similarly, one-time non-cash expenses such as goodwill amortization is required by GAAP to be recognized although earnings calculated in such a way would not truly represent the firm's current or future performance. Thus, it may very well be rational for analysts to exclude expenses from earnings forecasts if they are trying to reflect the firm's performance through their forecasts.

Researchers have defined non-GAAP earnings reported by managers as “pro forma” earnings whereas non-GAAP earnings predicted by analysts as “street” earnings (Barth et al., 2012). Pro forma earnings appear when firms present their earnings announcement during the financial period. These are earnings that exclude some components as discussed earlier. Street earnings have varying definitions in literature but can generally be attributed to the earnings forecast analysts make when excluding certain earnings components otherwise included under GAAP. Specifically, street earnings are the ex post consensus earnings number disclosed by forecast data providers that generally deviate from GAAP earnings (Christensen, 2012). Since the concept of non-GAAP earnings was relatively new then, Bradshaw and Sloan refer to “pro forma” and “street” earnings conjointly as “street” earnings defining it as “numbers announced by corporations in their press releases and tracked by analyst estimate clearinghouse services” (2002, p. 42). Their research was the first to empirically test the growing importance of street earnings. Figure 3 shows the quarterly cross-sectional means of earnings metric for both GAAP and street earnings from 1985-1997. The graphs show the increasing deviation between the two definitions especially since the early 1990s. The researchers interviewed one of the officials from I/B/E/S, one of the forecast data providers, and found that the early 1990s is actually the time when the data providers redefined earnings to exclude certain items. The researchers report that the difference between the two metrics of earnings is significant beginning 1990s for each quarter.

Insert Figure 3 about here

The researchers then investigate whether the market assigns more value to the emerging definition of earnings that excludes certain expenses considered to be

transitory by managers and analysts. They find that the street forecast errors are more correlated to stock returns than the GAAP forecast errors. The explanatory power of street forecast error regressions was found to be much greater than the GAAP forecast errors suggesting that investors focus more on the street numbers. The researchers split the sample period in pre-1992 and post-1992 eras and found street earnings to be even more significant for the post-1992 period. The study also finds using a time-series regression of stock returns against each of the earnings metric that the street earnings are more value-relevant than the GAAP earnings. The idea of value-relevance of accounting numbers is old and has been well discussed in the literature. When recent studies suggested that accounting numbers were losing their value-relevance (such as the power of earnings per share to explain stock prices and returns), Bradshaw and Sloan (2002) showed that this value-relevance was shifting towards street earnings figures. Later research, however, showed that this increasing explanatory power of street earnings is attributable to measurement error in earnings surprises because of different definitions of actual and forecasted earnings used by I/B/E/S and lack of good proxies for GAAP earnings (Cohen et al., 2007). This also indicates the usefulness of defining clearly each of the type and definition of earnings used by managers and analysts separately. Finally, they also show using press releases and announcements of earnings figures by managers that the managers proactively promoted street earnings more in their sample of the period 1998-1999 than in their sample of the period 1986-1987. Although this study highlights the growing rift between GAAP and non-GAAP earnings being reported, it does not examine the differences in the non-GAAP earnings reported by managers compared to that forecasted by analysts.

Pro forma and street earnings: In light of our study's focus on analysts' earnings forecasts, we must explore the possible deviations in the non-GAAP earnings forecasts of managers and analysts. It is important to note these differences as it forms the basis of our study which tries to explain the decision context of financial analysts when estimating earnings forecasts when earnings are managed. As explained earlier, since the beginning of 1990s managers of public companies have more frequently announced earnings figures that are different from GAAP earnings in their press releases. These earnings figures usually exclude non-cash, non-recurring, and various other miscellaneous expenses increasing their reported figures significantly. As an example, in the fourth quarter of 2001 AT&T released an earnings figure of $0.05 per share in a press release whereas the reported GAAP income showed a loss of $0.39. Interestingly, the consensus analyst forecast was $0.04 which AT&T had convincingly beaten with its own "pro forma" earnings figure (Doyle et al., 2003). Such practice of reporting increased earnings figures by public companies can be worrisome for investors. While the pro forma number might be relevant in the very short-term, it is quite possible that it might have severe long-term implications on the financial position of the company. Managers defend their definition of pro forma earnings by claiming they provide better measures of the future prospects of the firm. That is, excluding such expenses gives a better picture of firm performance to the investors. Regulators have alleged that these over-optimistic figures are manipulative and affect investors' perceptions. After the accounting scandals in 2001-2002, the U.S. Securities and Exchange Commission (SEC) made it mandatory for management to reconcile their pro forma earnings with the GAAP earnings. However, no such regulation exists outside of the U.S. (Black, 2016). Although Black and Christensen (2009) show that investors are aware of management's manipulative reporting,

Bhattacharya et al. (2007) claim that less sophisticated investors are at a disadvantage due to non-GAAP reporting. Literature shows that pro forma earnings are highly associated with earnings announcement stock returns indicating pro forma earnings are more relevant (Bhattacharya et al., 2003; Lougee & Marquardt, 2004). However, since management is supposedly influencing investors with their pro forma figures, earnings announcement stock returns are supposed to be associated with pro forma numbers leaving these studies limited in their results. Doyle et al. (2003), on the other hand, find that in the long-run, pro forma figures have less predictive ability than GAAP figures. That is, GAAP earnings predict future earnings better than non-GAAP earnings. The researchers built a hedge portfolio that earned an average of around 30% over three years with buying stocks of firms reporting earnings closer to GAAP earnings and selling stocks of firms reporting pro forma earnings, that are higher than GAAP earnings.

As for the street earnings figures predicted by analysts, researchers hypothesized two possible reasons for analysts to exclude certain expenses when calculating the earnings figure; analysts grab the opportunity of being more accurate and follow management's pro forma earnings figure, or, they actually believe that excluding some expenses increases the value of the earnings forecast and is rather informative for investors (Barth et al., 2012). Gu and Chen (2004) find that analysts are experts in processing earnings information and that the items they include in earnings forecasts have higher value in terms of stock returns than the items they exclude. However, the excluded items also show predictive ability, in the sense that they are relevant to future earnings (Lambert, 2004). Lambert's (2004) critique of Gu and Chen's (2004) paper claims that it is not really analysts making these exclusion or inclusion decisions, it may be the forecast data providers that exclude or include

expenses from their consensus forecasts based on the majority. They also suggest that the analysts' street earnings number is related to the management's pro forma earnings number, although they are not the same. Assuming that analysts follow management guidance, the inclusions/exclusions could well be credited to the management's expertise and not the analysts'. In fact, Christensen et al. (2011) conclude that managers actively guide analysts and influence street earnings. They show that when managers guide, analysts exclude expenses more than when they do not guide and that the incremental exclusion is significant. In another study examining the exclusion of a particular item from pro forma and street earnings, Barth et al. (2012) find conclusive evidence that managers exclude the item to be able to increase, manage, or smooth earnings but the exclusion does not increase the predictive ability of the earnings figure. On the contrary, evidence suggests that analysts exclude the item to increase the predictive ability of their earnings forecast.

4.4. The earnings management context

Analysts' earnings forecasts may be interpreted in several ways and the meaning of their forecasts depends on their motivation and objective. Broadly, analysts may either prefer to be accurate or to be informative in their forecasts. They achieve accuracy through carefully following management's guidance and informativeness through reporting earnings figures that are different from GAAP earnings as they better assess firm performance. However, management guidance and non-GAAP reporting can obfuscate these interpretations. The question then arises that if non-GAAP earnings do actually represent the firm performance better than GAAP earnings, why are there different interpretations of management's and analysts' non-GAAP earnings numbers? This deviation between management's and analysts'

earnings forecasts calls to further investigate the purpose, meaning, and motivation behind analysts' earnings forecasts. When earnings are managed, the numbers reported by managers may cause analysts to reconsider their own forecasts and thus deviate from the management's figures. Black et al. (2014) identify pro forma reporting and earnings management as two of several tools that management uses to shape investors' perceptions. Hence, earnings management might help explain the difference between the forecasts of managers and analysts even in the presence of management guidance. Essentially, our 4 different interpretations of analysts' earnings forecasts can be summarized in Figure 4.

Insert Figure 4 about here

For simplicity, we club pro forma reporting and earnings management since pro forma reporting also involves manipulating earnings to the favor of the management. The matrix allows us to contextualize analysts' earnings forecasts and the decisions pertaining to it. The first row of forecasts describes situations when analysts pay less heed to the management and focus on being informative to investors. Here they forecast earnings using their own calculations coming up with a figure they think should be the earnings of the firm. Essentially, this is when the analysts are setting earnings targets for the management to meet. The second row owes to analysts' forecast accuracy when they predict what the management might report. This explanation comes with the idea of management guidance and when analysts prefer to forecast management's numbers accurately. This is also known as analysts "curry favoring" the management allowing them to meet their forecasted earnings targets. The transition from the top row to the bottom row owes to earnings management. This would be earnings manipulation in the GAAP column, when management

manipulates earnings within GAAP whereas it would be the rift from street to pro forma earnings in the non-GAAP column. The columns again highlight the two objectives of analysts' earnings forecasts in a different setting. The first column accrues to accuracy in the sense that forecasts are made to be as close as possible to the GAAP earnings number. The second column represents forecasts that value the value-relevance of the earnings figure to be more informative to investors. The transition also represents the value-relevance of the forecasts as non-GAAP earnings are known to have greater predictive ability and explanatory power. The underlying assumption in the column-wise interpretation is that analysts work closely with managers to come up with similar forecasts. We have seen, however, that this is not always the case. Earnings forecasts of managers and analysts vary and this may very well be attributed to earnings management, as seen in the row-wise interpretation.

5. Analyst forecasts when earnings are managed

5.1. Current literature

While much research exists on analysts' earnings forecasts in light of non-GAAP reporting, very few studies examine analysts' earnings forecasts in a manipulated earnings environment. Abarbanell and Lehavy (2003) analyze whether stock recommendations encourage earnings management for managers to meet analysts' forecasts. They claim that analysts are unable or not motivated to anticipate earnings management in their forecasts, hence name forecast accuracy as an incentive to manage earnings. The important assumption in their analysis is that analysts do not completely account for the effect of earnings management in their forecasts. There exist two major yet contradicting studies that directly address the question of financial analysts including earnings management in their forecasts: Burgstahler and Eames

(2003) and Louis et al. (2013). Burgstahler and Eames (2003) test whether analysts forecast an earnings management component in their earnings forecast in the case when firms want to avoid reporting losses or earnings decreases. They find that analysts do anticipate earnings management to avoid reporting losses in their forecasts but are unable to do so accurately. That is, analysts usually predict earnings management that is not realized and fail to predict one that is realized (Burgstahler & Eames, 2003, p. 256). They do this by analyzing the earnings forecasts of an analyst and note higher frequency of forecasts just to the right of zero earnings but no such frequency for the corresponding reported earnings. Through similar technique, the authors find weak evidence of analysts predicting earnings management to avoid earnings decreases concluding that analysts do not correctly anticipate which firms would be involved in earnings management and so the analysts are not a significant source of such earnings management. The authors invite other researchers to theorize their findings since intuition says that analysts should be well aware of earnings management especially with respect to the firms they follow. And if analysts frequently misjudge the earnings management what is the interpretation of their 'post-managed' earnings forecast? The probable explanation of analysts' misjudgment is that earnings management to avoid earnings decreases or losses may be too small for analysts to distinguish. These manipulations are low in magnitude as firms only look to meet or slightly beat these targets. Another limitation of their paper is that they consider two motivations of earnings management (avoiding losses and earnings decreases) whereas there exist several other explanations as discussed earlier.

On the contrary, Louis et al. (2013) present a comprehensive view of the accuracy and informativeness of analysts' earnings forecasts accompanied by theoretical explanations. The authors are the first to argue that analysts' primary

concern is not forecast accuracy and that they value informativeness for their clients. They support this idea by understanding analysts through their reports that tell that analysts routinely deviate from management guidance and provide estimates they know will differ from reported earnings. They explain that the analysts' reports are targeted towards clients with medium to long term investment horizons and so include forecasts that better predict long-term value. Analysts also tend to explain the reasons for their possible deviations from management's earnings figures in their reports. The authors explain that analysts do this because they have financial incentive to do so; their employers compensate them on investor feedback as well as stock picking ability whereas forecast accuracy is not factored in. The assumption in this paper is that analysts do not forecast an earnings figure and then remove possible earnings management, but that they come up with their own estimates of earnings they believe to be true. Later with the management's earnings preannouncement, analysts either revise these estimates following management guidance or ignore the preannouncement indicating possible earnings management. They show that analysts do sacrifice their forecast accuracy for informativeness mostly for their clients. Their results show significant negative association between earnings management (using abnormal accruals proxy) and the deviation between analyst earnings forecast and management's preannounced earnings (analyst estimate minus preannounced earnings). That is, greater negative (positive) deviation is associated with greater positive (negative) abnormal accruals. So if a firm's estimate is higher than the analyst's there will be a negative deviation and positive abnormal accruals indicating income-increasing earnings management. Additionally, the authors also show that the analysts' deviation is actually informative to investors by finding no evidence of abnormal accrual mispricing when analysts deviate from preannounced earnings.

Thus, they conclude that analysts prefer informativeness over accuracy. There are some concerns with this research: (1) while the researchers look closely at the analyst reports, they do not consider individual analyst forecasts in most of their tests; (2) the study does not differentiate between upwards and downwards earnings management which may cause analysts to forecast differently; and (3) the findings are dependent on abnormal accruals which although is the best proxy for earnings management, is still a proxy, while no underlying motivation of the management to manipulate earnings is established.

5.2. Suggestions for future research

We identify three main problems with the existing research on analyst forecasts when firms manage earnings. One, current research either fails to identify specific motivations of earnings management when considering analyst forecasts or focuses on the motivations that make it difficult to segregate manipulation from the forecasts. We suggest using particular motivations of earnings management, especially those that differentiate between upwards and downwards earnings management. Once such motivation is identified, analyst forecasts can then also be expected to move in one direction allowing better interpretation. Abnormal accruals may still be used to confirm the existence of earnings management in addition to the identified motivation by the firm. Two, current research does not address the characteristics of firms that may affect the earnings management, or the characteristics of analysts that may affect the forecast's accuracy or informativeness. We propose identifying firm characteristics that affect the earnings management, such as size of the firm and including them in the empirical models. Similarly, analyst characteristics such as experience, portfolio complexity, and resources available should also be incorporated.

These characteristics ensure that the tested models distinguish between existence and non-existence of earnings management as well as between the accuracy and informativeness of analyst forecasts. Three, current research considers consensus analyst forecasts that do not reflect the individuality of analysts and risk the cancelling out of accurate and informative forecasts. We recommend using individual analyst forecasts in the studies to differentiate clearly accurate analysts from informative ones. As all analysts may not behave and forecast similarly, generalizing their forecasts using mean or median consensus forecasts is dubious. Thus, by addressing these three problems future research can improve its empirical models and have consistent results with greater implications.

The analysts' forecasts are important because investors assign higher values to them and some rewards and compensations for the analysts themselves are associated with forecast accuracy. Higher accuracy may entail increased compensation and bonuses from employers, greater reputation and media coverage, and better career prospects. On the contrary, analysts would also want to be more informative to and protect their clients by foregoing accuracy especially when earnings are managed. Also, research suggests that much of analysts' compensation is based on their stock picking performance and feedback from customers. To study what the analyst's earnings forecast figure actually represents has implications for the analyst's clients, investors, and even the management of the firm the analyst follows. To clients, the analysts may communicate the information directly; however, less sophisticated investors who follow the analysts must be aware of the accurate interpretation of the reported figure. For management, this figure is important because they want to see whether their guidance affects analysts, or whether analysts are able to discover their manipulation techniques. Management needs to know what earnings figure the analyst

is going to forecast, GAAP, non-GAAP, managed, unmanaged, or something else, in order to assess its ability to meet or beat the analyst's forecast. Again, it is important for the management to meet this forecast to avoid being punished by investors in terms of negative earnings surprises affecting stock prices. Apart from the players in the capital market, the earnings forecast figure of the analyst is vital for academic purposes. With numerous studies using forecast errors as proxies, a better understanding of the forecast figure is essential to correctly interpret the findings of such studies. Lambert (2004) also suggests researchers to be careful when interpreting forecast surprises and forecast errors, if analysts are not forecasting GAAP numbers. This is because various studies simply find the difference between reported GAAP earnings and analysts' latest earnings forecasts to calculate forecast errors. As this study aims to improve the interpretation of analysts' earnings forecasts given earnings management by firms, it aids both the professional and academic world to better utilize these forecasts.

6. Conclusion

This chapter recognizes the role and significance of financial analysts in capital markets and aims to better understand their earnings forecasts. We identify issues such as GAAP and non-GAAP reporting tampering the interpretation of the analysts' forecasts. Moreover, we identify earnings management as a key issue that hampers better interpretation of the analysts' earnings forecast. Extensive literature review reveals that analysts' forecasts are highly significant for all market players including investors and managers as well as for academic researchers. Investors use analysts' forecasts to price securities and base their investment decisions. Managers use these forecasts to set earnings targets. And researchers use these forecasts (especially forecast accuracy) to evaluate analysts and the implications of their outputs. We establish that analysts may choose to forecast earnings that are either accurate (closer to management's figures) or informative (reflecting true performance) or some combination. One major component that affects this decision is earnings management by the firm. The research on analysts including or excluding an earnings management component in their forecasts is conflicting. While a few studies show analysts include an earnings management component in their forecasts, one study explains how analysts choose to exclude, or ignore such component. Analysts may choose to side with accuracy by including the component as it seems easier but may also choose to be more informative to their clients by predicting an earnings figure that reflects true firm performance. In this chapter we propose modifications in existing empirical models, namely, the recognition and use of (1) specific motivations of earnings management, (2) firm and analyst characteristics, and (3) individual analyst forecasts. We employ these modifications in the next two chapters which helps fill an important

gap in the literature of the need to better understand analysts' forecasts in the light of earnings management by firms.

References

Abarbanell, J., & Lehavy, R. (2003). Can Stock Recommendations Predict Earnings Management and Analysts' Earnings Forecast Errors. *Journal of Accounting Research, 41*(1), 1-31.

Agarwal, A., & Chen, M. A. (2008). Do Analyst Conflicts Matter? Evidence from Stock Recommendations. *Journal of Law and Economics, 51*, 503-537.

Barber, B. M., & Loeffler, D. (1993). The "Dartboard" Column: Second-Hand Information and Price Pressure. *Journal of Financial and Quantitative Analysis, 28*(2), 273-284.

Barber, B. M., Lehavy, R., McNichols, M., & Brett, T. (2001). Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns. *The Journal of Finance, 56*, 531-563.

Barth, M. E., Gow, I. D., & Taylor, D. J. (2012). Why do pro forma and Street earnings not reflect changes in GAAP? Evidence from SFAS 123R. *Review of Accounting Studies, 17*(3), 526-562.

Bartov, E. (1993). The Timing of Asset Sales and Earnings Manipulation. *The Accounting Review, 68*(4), 840-855.

Beneish, M. D. (1991). Stock Prices and the Dissemination of Analysts' Recommendation. *The Journal of Business, 64*(3), 393-416.

Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511-529.

Bhattacharya, N., Black, E. L., Christensen, T. E., & Larson, C. R. (2003). Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings. *Journal of Accounting and Economics, 36*, 285-319.

Bhattacharya, N., Black, E. L., Christensen, T. E., & Mergenthaler, R. D. (2007). Who trades on pro forma earnings information? *The Accounting Review, 82*, 581-619.

Black, D., & Christensen, T. (2009). US managers' use of 'pro forma' adjustments to meet strategic earnings targets. *Journal of Business Finance and Accounting, 36*, 297-326.

Black, E. L. (2016). The Ethical Reporting of Non-GAAP Performance Measures. *Revista Contabilidade & Finanças, 27*(70), 7-11.

Black, E. L., Chirstensen, T. E., Joo, T. T., & Schmardebeck, R. (2014, March 1). *The Relation between Earnings Management and Pro Forma Reporting.* Retrieved May 30, 2016, from Social Science Research Network: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2259379

Bradshaw, M. T., & Sloan, R. G. (2002). GAAP versus The Street: An Empirical Assessment of Two Alternative Definitions of Earnings. *Journal of Accounting Research, 40*(1), 41-66.

Brown, L. (2001). How Important is Past Analyst Forecast Accuracy? *Financial Analysts Journal, 57*, 44-49.

Brown, L., & Caylor, M. (2005). A Temporal Analysis of Quarterly Earnings Thresholds: Propensities and Valuation Consequences. *The Accounting Review, 80*, 423-440.

Burgstahler, D. C., & Eames, M. J. (2003). Earnings Management to Avoid Losses and Earnings Decreases: Are Analysts Fooled? *Contemporary Accounting Research, 20*(2), 253-294.

Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of Financial Economics, 79*(1), 35-67.

Chi, J. D., & Gupta, M. (2009). Overvaluation and Earnings Management. *Journal of Banking and Finance, 33*(9), 1652-1663.

Chou, D.-W., Wang, C. E., Chen, S.-S., & Tsai, S. (2009). Earnings Management and the Long-Run Underperformance of Firms Following Convertible Bond Offers. *Journal of Business Finance & Accounting, 36*(1-2), 73-98.

Christensen, T. E. (2012). Discussion of ‘‘Why do pro forma and street earnings not reflect changes in GAAP? Evidence from SFAS 123R". *Review of Accounting Studies, 17*(3), 563-571.

Christensen, T. E., Kenneth, J. M., Jennifer, W. T., & Venkataraman, S. (2011). Do managers use earnings guidance to influence street earnings exclusions? *Review of Accounting Studies, 16*, 501-527.

Clement, M. B. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics, 27*, 285-303.

Cohen, D. A., Hann, R. N., & Ogneva, M. (2007). Another look at GAAP versus the Street: an empirical assessment of measurement error bias. *Review of Accounting Studies, 12*(2), 271-303.

Cornett, M. M., Marcus, A., & Tehranian, H. (2008). Corporate governance and pay-for-performance: The impact of earnings management. *Journal of Financial Economics, 87*(2), 357-373.

Cullen, A. (2004, October 18). *The Bias of Wall Street Analysts*. Retrieved May 24, 2016, from HBS Working Knowledge - Harvard Business School: http://hbswk.hbs.edu/item/the-bias-of-wall-street-analysts

Davies, P. L., & Canes, M. (1978). Stock Prices and the Publication of Second-Hand Information. *The Journal of Business, 51*(1), 43-56.

Degeorge, F., Patel, J., & Zeckhauser, R. J. (1999). Earnings Management to Exceed Thresholds. *Journal of Business, 72*(1), 1-33.

Demirtas, K. O., & Cornaggia, K. R. (2013). Initial credit ratings and earnings management. *Review of Financial Economics, 22*(4), 135-145.

Doyle, J. T., Lundholm, R. J., & Soliman, M. T. (2003). The Predictive Value of Expenses Excluded from Pro Forma Earnings. *Review of Accounting Studies, 8*(2-3), 145-174.

Gu, Z., & Chen, T. (2004). Analysts’ treatment of nonrecurring items in street earnings. *Journal of Accounting and Economics, 38*, 129-170.

Healy, P. M. (1985). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics, 7*, 85-107.

Healy, P. M., & Wahlen, J. M. (1999). A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons, 13*(4), 365-383.

Hirst, D. E., Koonce, L., & Simko, P. J. (1995). Investor Reactions to Financial Analysts' Research Reports. *Journal of Accounting Research, 33*(2), 335-351.

Hope, OK., & Wang, J. (2018). Management deception, big-bath accounting, and information asymmetry: Evidence from linguistic analysis. *Accounting, Organizations and Society, 70*, 33-51.

Lambert, R. A. (2004). Discussion of analysts’ treatment of non-recurring items in street earnings and loss function assumptions in rational expectations tests on financial analysts’ earnings forecasts. *Journal of Accounting and Economics, 38*, 205-222.

Lev, B., & Thiagarajan, S. R. (1993). Fundamental Information Analysis. *Journal of Accounting Research, 31*(2), 190-215.

Liu, P., Smith, S. D., & Syed, A. A. (1990). Stock Price Reactions to The Wall Street Journal's Securities Recommendations. *The Journal of Financial and Quantitative Analysis, 25*(3), 399-410.

Liu, Y., Ning, Y., & Davidson, W. N. (2010). Earnings Management Surrounding New Debt Issues. *The Financial Review, 45*(3), 659-681.

Lougee, B., & Marquardt, C. (2004). Earnings informativeness and strategic disclosure: An empirical examination of 'pro forma' net income. *The Accounting Review, 79*, 769-795.

Louis, H. (2004). Earnings management and the market performance of acquiring firms. *Journal of Financial Economics, 74*(1), 121-148.

Louis, H., Sun, A. X., & Urcan, O. (2013). Do Analysts Sacrifice Forecast Accuracy for Informativeness? *Management Science, 59*(7), 1688-1708.

Murphy, K. J., & Zimmerman, J. L. (1993). Financial performance surrounding CEO turnover. *Journal of Accounting and Economics, 16*(1-3), 273-315.

Perry, S. E., & Williams, T. H. (1994). Earnings management preceding management buyout offers. *Journal of Accounting and Economics, 18*(2), 157-179.

Ramnath, S., Rock, S., & Shane, P. (2008). The Financial Analyst Forecasting Literature: A Taxonomy With Suggestions for Further Research. *International Journal of Forecasting, 24*, 34-75.

Rangan, S. (1998). Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics, 50*, 101-122.

Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons, 3*(4), 91-102.

Shane, P. B., & Stock, T. (2006). Security Analyst and Stock Market Efficiency in Anticipating Tax-Motivated Income Shifting. *The Accounting Review, 81*(1), 227-250.

Shivakumar, L. (2000). Do Firms Mislead Investors by Overstating Earnings before Seasoned Equity Offerings? *Journal of Accounting and Economics, 29*, 339-371.

Teoh, S. H., Welch, I., & Wong, T. J. (1998a). Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance, 53*(6), 1935-1974.

Teoh, S. H., Welch, I., & Wong, T. J. (1998b). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics, 50*, 63-99.

The Financial Crisis Inquiry Commission. (2011). *The Financial Crisis Inquiry Report.* Washington, D.C.: U.S. Government Printing Office.

Tucker, J. W., & Zarowin, P. A. (2006). Does Income Smoothing Improve Earnings Informativeness? *The Accounting Review, 81*(1), 251-270.

Appendix: Figures

Figure 1: Behavioral motivations of earnings management

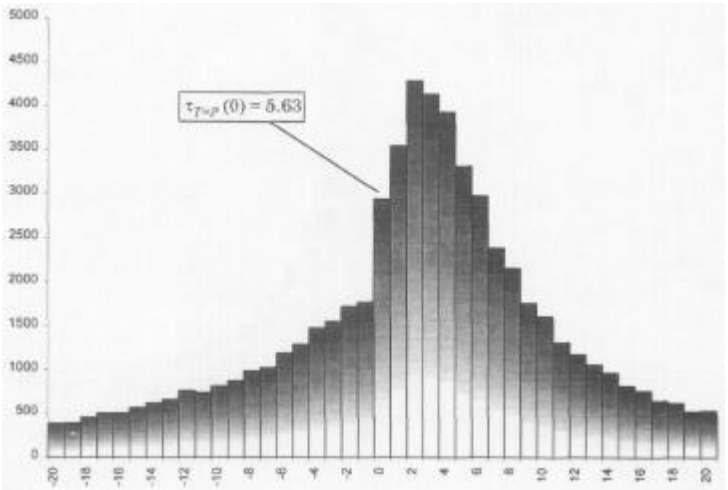


Figure 1a: Histogram of change in quarterly EPS depicting sustaining performance

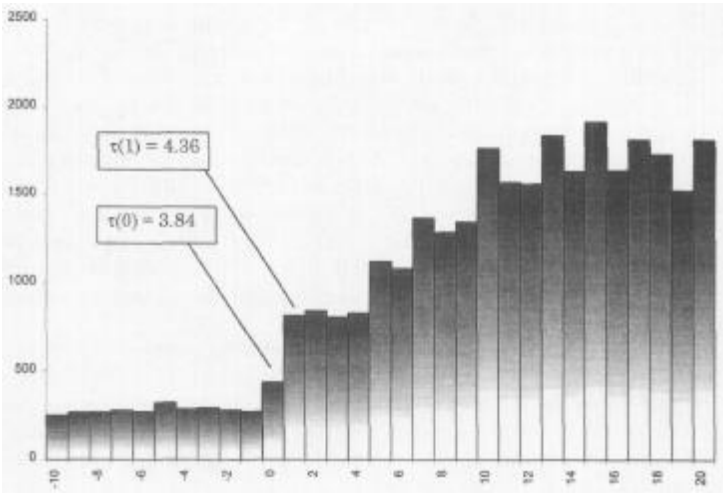


Figure 1b: Histogram of EPS depicting reporting positive earnings

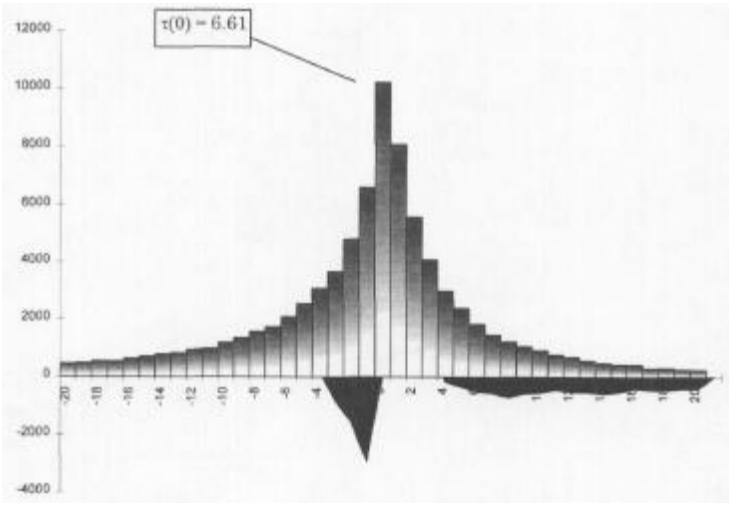
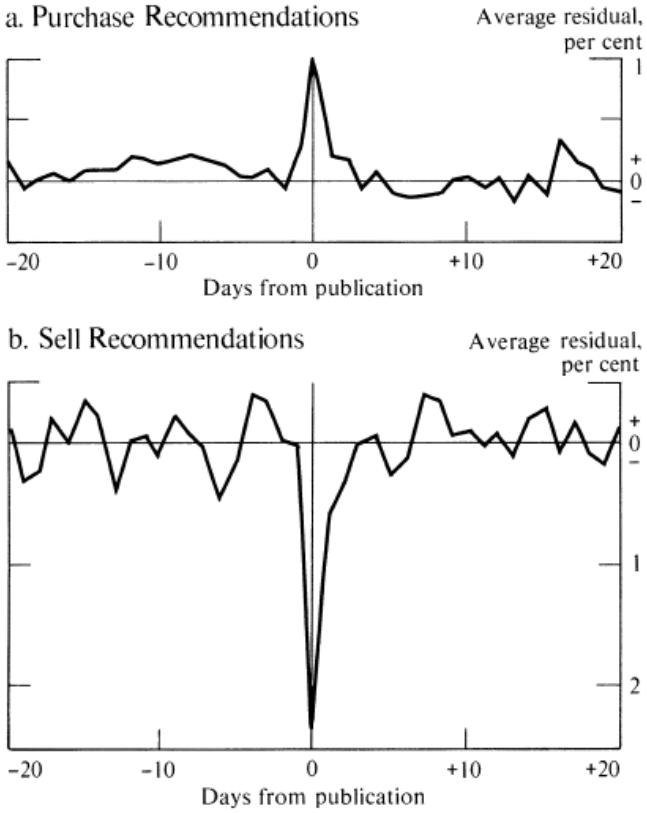


Figure 1c: Histogram of forecast error for EPS depicting meeting analysts' expectations

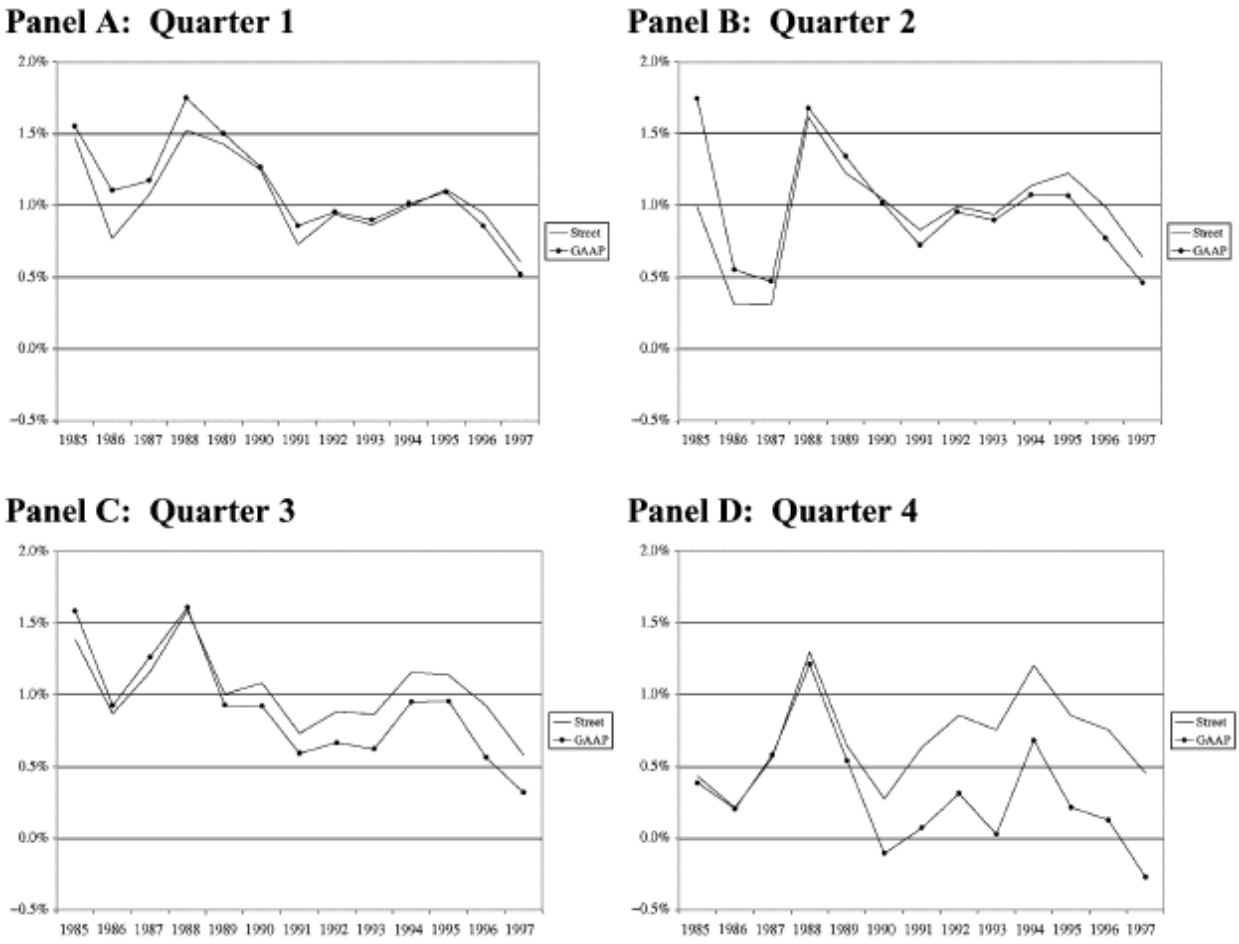
Source: (Degeorge et al., 1999)

Figure 2: Investor reactions around analyst recommendations



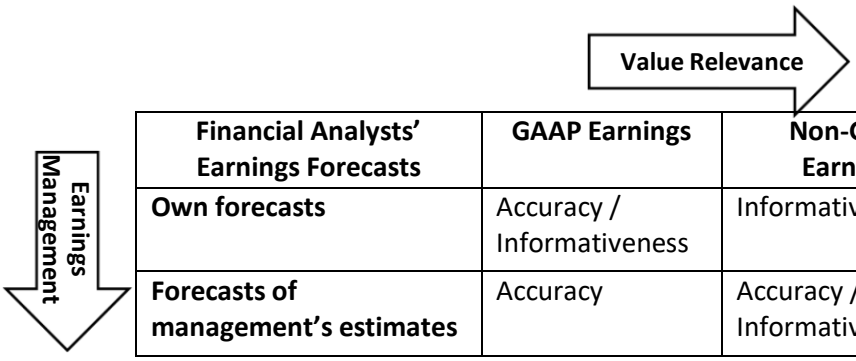
Source: (Davies & Canes, 1978)

Figure 3: Value relevance of GAAP and street earnings



Source: (Bradshaw & Sloan, 2002)

Figure 4: Interpretations of analysts' earnings forecasts



Financial Analysts' Earnings Forecasts	GAAP Earnings	Non-GAAP Earnings
Own forecasts	Accuracy / Informativeness	Informativeness
Forecasts of management's estimates	Accuracy	Accuracy / Informativeness

Source: Author

II. Are analysts informative? The case of seasoned equity offerings

Abstract

When firms manage earnings, financial analysts are presented with a choice: to include or exclude the managed component of earnings from their forecasts. Given that earnings management is detrimental to market participants since it weakens the value-relevance of accounting figures, analysts are said to be informative if they exclude the managed component of earnings to issue forecasts of the firm's unmanaged (true) earnings. In contrast, they are said to be accurate if they include the managed component of earnings to issue forecasts close to the reported earnings. Scant literature on this issue presents contradictory evidence as to whether analysts prefer accuracy or informativeness. This study investigates analysts' forecasts around Seasoned Equity Offerings (SEOs) when significant upwards earnings management is suspected, as extensively documented in the literature. Using individual analyst forecasts around SEOs issued in the EU from 2000 to 2016, we find that analyst forecasts generally decrease after SEO announcements indicating analyst preference for informativeness. We analyze several characteristics of the SEOs and forecasts that affect the changes in earnings forecasts induced by SEO announcements. We show that the decrease in forecasts is lesser for bigger firms that are less likely to manage earnings because of greater analyst following. In the same vein, we find a greater decrease in earnings forecasts for SEOs issued after the implementation of the EU Market Abuse Directive that forces analysts to declare any business tie with recommended firms.

Keywords: analyst forecast, earnings management, seasoned equity offerings, forecast accuracy, informativeness, Market Abuse Directive

1. Introduction

This study contributes to the literature on financial analyst earnings forecasts when firms manage earnings. We add to the limited evidence that analysts may deviate from being accurate when forecasting earnings that are managed in order to help their clients make better investment decisions. Louis et al. (2013) were the first to argue that analysts deviate to favor informativeness. This is in contrast to the implicit assumption that analysts forecast earnings as precisely as possible (Butler & Lang, 1991; Brown et al., 1987). Earnings forecasts of financial analysts have been extensively discussed in the literature. Earnings management has also been greatly studied. However, current literature is scant on the consolidation of the two topics. Few attempts have been made to find out what analysts do when earnings are managed. If they want to be accurate, they would forecast the managed component of earnings, even though this component is known to be transitory and, therefore, does not reflect the true long-term performance of the firm (Rangan, 1998). In contrast, if they want to be informative, analysts would exclude the managed component of earnings from their forecast to focus on the unmanaged earnings, which represent the true performance of the firm.

Our research considers a specifically well-documented case of earnings management, Seasoned Equity Offerings (SEO). It examines analyst forecasts around SEOs to evaluate whether analysts prefer accuracy, which is to forecast earnings that are expected to be reported, or informativeness, which is to forecast an earnings figure devoid of any managed component. While being accurate makes sense for analysts due to forecast accuracy being a benchmark of their performance (Clement, 1999), being informative seems rather counter-intuitive. Yet, analysts may prefer to issue

forecasts of the unmanaged earnings only if they believe that unmanaged earnings capture the true performance of the firm. The argument of Louis et al. (2013) is that analysts may deviate from management guidance in order to be more informative for their clients. We find that analysts reduce their forecasts after an SEO announcement, thereby removing totally or partially the managed earnings component when forecasting earnings, foregoing accuracy for informativeness.

Firms indulge in systematic and significant upwards earnings management around SEOs as shown in extant literature (Teoh et al., 1998; Rangan, 1998; Shivakumar, 2000). Firms overstate reported earnings to boost stock prices and increase the offering proceeds. In this situation, analysts may increase, decrease, or leave their forecast unchanged. Analysts regularly follow management guidance which occurs when managers issue earnings forecasts publicly or privately to analysts only to "guide" their forecasts (Matsumoto, 2002; Cotter et al., 2006; Givoly et al., 2008). Management guidance often intends to lower the market's expectations of earnings to get a positive stock price reaction at the higher than expected earnings announcement. When an SEO is announced, analysts become aware that earnings are likely managed upwards as literature suggests. If they want to be accurate they are most likely to either increase their forecasts or leave them unchanged. Increases in earnings forecasts following SEO announcements are expected if analysts did not follow management guidance prior to the SEO announcement and want to be accurate. The management who plans to offer a stock issue discloses its own forecast of managed earnings before the SEO announcement, either publicly or privately to analysts. It is unlikely for an analyst to not have followed this guidance and still aim for accuracy as reiterating management guidance leads to better forecast accuracy (Louis et al., 2013). Therefore, an analyst who wants to be accurate would most likely

leave her/his forecast unchanged after an SEO announcement given s/he usually follows the management guidance.

Analysts who want to be informative, on the other hand, would decrease their forecasts after an SEO announcement to correct for the implicit managed component of earnings in their forecasts from the management guidance prior to the SEO announcement. Before this announcement these analysts could not know that earnings would be managed upwards. After the announcement they know they have been 'fooled' by the management guidance and therefore remove the managed component of earnings from their forecasts to issue value-relevant forecasts useful to investors. Whether the analysts are successful in removing the right magnitude of the managed component or whether they over or underestimate it is another issue. The purpose of this decrease, nonetheless, is to signal to their clients that earnings will be managed indicating a deviation of reported earnings from the true performance of the firm.

For a sample of 1,733 EU SEOs issued in the years 2000-2016 by firms for which forecasts issued by at least two distinct analysts are available, we find that SEO announcements impacts analyst forecasts negatively. Analysts reduce their forecasts after the SEO filing[1], thereby removing the managed component of earnings, indicating their preference for informativeness. The decrease in analyst forecast is robust to different horizons around the SEO announcement. It is also robust to a control sample of firms in the same industry and same country that do not issue equity during the same period, and thus are not likely to have managed earnings upwards systematically.

[1] We use the SEO filing date instead of the announcement date as only these dates were available in the Thomson One Banker database whereas further research indicated that 90% of the filing dates are first announcement dates for SEOs.

On average, analyst forecasts for firms that issue SEOs decline following the announcement of the SEO suggesting that analysts are informative rather than opportunistic. The determinants of the decline in these forecasts are twofold. They are related to the issue's characteristics which determine the firm's incentive and ability to manage earnings, and to the forecast's characteristics which determine the analyst's incentive to be informative, rather than accurate. The issue's characteristics that we consider include firm size, analyst following, total accruals, value of the SEO issued, and the firm's auditor. Larger firms may have greater influence over analysts yet they have stronger internal controls and governance systems reducing both the incentive and ability to manage earnings. Our results indicate that the decline in the forecasts for these firms is lesser owing to less likelihood of earnings management. Similarly, firms with greater analyst following are less likely to manage earnings because of greater analyst monitoring (Hong et al., 2014; Yu, 2008) so we find that the decline is lesser, yet significant, for such firms. Firms with greater total accruals are better able to manage earnings using these accruals though we report that it does not affect the analyst forecast. The value of the SEO may also affect the firm's incentive to manage earnings as high-value issues would generate greater proceeds and find that forecasts decline in greater magnitude for high-value SEOs. Last, big four auditors would reduce the likelihood of the earnings management though we find that this firm characteristic does not significantly impact analyst forecast.

The forecast's characteristics that we test are analyst conflicts of interest, analyst experience, the number of firms the analyst follows, and the Market Abuse Directive adoption. If the analyst is employed by an investment firm that is also one of the underwriters of the SEO issue, the analyst faces a conflict of interest. We find that such conflicted analysts do not behave differently from their counterparts. We

also consider analyst experience and the number of firms the analyst follows which adds complexity to the analyst's portfolio. We find that the least experienced analysts do not change their forecasts around the SEO announcement indicating their preference for forecast accuracy. Young analysts need to build a reputation before they can become leaders. It is not surprising to find that such analysts favor accuracy. However, more experienced analysts as well as analysts with greater portfolio complexity decrease their forecasts similarly preferring informativeness. Last, we consider the Market Abuse Directive (MAD) adoption brought as part of the Financial Services Action Plan in the European Union. Fauver et al. (2017) report that the magnitude of earnings management around SEOs significantly reduced after the implementation of MAD for all EU countries. Nevertheless, we find that the decline in earnings forecasts around SEOs is greater since the MAD adoption. We further investigate this characteristic with respect to conflicted analysts who have ties with the issuing firm, as the directive affects these analysts. We show evidence that conflicted analysts increased their forecasts around SEOs before the MAD adoption for better accuracy. They decrease their forecasts since the directive adoption suggesting preference for informativeness.

Our study contributes to the growing body of literature which reports that analysts may forego accuracy deliberately to focus on the only components of earnings that are value-relevant. Whilst building on this evidence we find that analysts may behave differently in different conditions, but generally prefer informativeness. It shows that market conditions as well as analyst characteristics might affect the choice of an analyst to be accurate or informative. Analyst forecasts may not be easily generalized to be either accurate or informative without considering these crucial aspects. Our findings have important implications for existing research especially for

studies that consider forecast accuracy as the ultimate benchmark to gauge analyst performance. We also initiate the exploration of analyst forecasts using the informative dimension. Once analyst forecasts are established to be informative, and more value-relevant by deliberately deviating from the reported earnings, the reported earnings figure would then become less useful for all key players in capital markets. Management, who already focuses less on reported earnings, would chase analyst forecasts while investors would give more weightage to the forecast than the reported earnings. Researchers would also have to redefine these variables in their studies for better conclusions.

This study also adds value as it considers individual analyst forecasts unlike any of the few studies before it (Louis et al. 2013). Almost all previous studies dealing with analyst forecasts and earnings management (Burgstahler & Dichev, 1997; Burgstahler & Eames, 2003) consider mean consensus forecasts rather than individual analyst forecasts. While the mean forecast is easier to calculate and work with, it loses the individuality of analysts by assuming that all analysts adopt the same behavior when earnings are obviously managed. If an analyst is a leader who does not follow the mean consensus, the mean would not represent his/her forecasting ability or intention. Less experienced analysts are also known to follow the mean consensus forecast causing it to have greater weightage but lesser meaning. Different analysts may forecast differently as one might prefer accuracy while the other prefers informativeness. The mean consensus is a calculation done by databases which has errors and omissions such as inclusion of forecasts that are too old. These problems make the mean consensus a worse estimate to be used for analysis than individual forecasts themselves. Considering individual forecasts adds to the dynamic attributes of individual analysts that help draw better conclusions about their earnings forecasts.

Additionally, we work on a European sample which is much more diverse than the conventional US sample allowing us to make better generalizations.

The next section discusses the literature on the issue at hand. Section 3 defines the hypotheses and describes the research design. Section 4 describes the sample and its characteristics. Section 5 discusses the results while section 6 concludes.

2. Existing literature on analyst forecasts and earnings management

2.1. Importance of analyst forecasts

The motivation of this study is to better understand analysts' earnings forecasts for much weight is assigned to them by the capital markets. Analyst forecast accuracy has been studied in great detail. Researchers have tried to evaluate what makes analysts' forecasts more accurate, that is, closer to the management's reported figures. Over 250 papers in eleven journals have been published about financial analysts (Ramnath et al., 2008). Since forecast accuracy is how close the analyst forecasts earnings to the actual reported figure, intuitively, all analysts strive to be accurate. As a forecast is simply a prediction of the actual and the more accurate it is the better, analysts would want to be as accurate as possible. However, an earnings forecast is just one component of the analyst report. Analysts routinely issue stock recommendations as well as price targets for firms in their reports. This means that analysts primarily focus on providing valuable information to their clients which means they may not always intend to be accurate. Considering cases when reported earnings do not reflect the true performance of the firm, analysts might tend to forecast earnings that do reflect such performance. Hence, when an analyst forecast is not accurate, it must be informative meaning that it reflects the true (unmanaged) earnings of the firm, barring forecasts issued by naïve analysts that may be neither. These forecasts, along with other

indicators, are widely used by investors to price securities as shown by investors' reaction to these forecasts releases. Value-irrelevant forecasts (that do not reflect the true performance of the firm) may be dangerous for investors to use as the investment decisions taken using these forecasts may result in losses over the medium and long-term. Forecast accuracy has also been used to determine the integrity of analysts by researchers and the analysts' compensations by their employers. Better compensation or even fame from forecasting 'accurately' might motivate analysts to be accurate. Clement (1999) studies what makes analysts more accurate while *The Wall Street Journal* and *Institutional Investor* rank analysts based on popularity (Emery & Li, 2009). On the contrary, if analysts try to provide valuable information to their clients they would not prefer accuracy, and this criterion will be subject to reinterpretation. Cowen et al. (2006) find that analyst compensation is based on how much business the analyst brings, hence, how helpful s/he is for the client. Thus, informativeness is a key dimension in analyst earnings forecasts.

Similarly, managers use analyst forecasts to set targets as well as influence them to achieve better stock performance. Firm managers also issue their own forecasts to influence market participants' decisions. As managers tend to predict earnings figures far from the reported GAAP numbers, analysts are also known to exclude certain items to 'better' forecast firm performance (Gu & Chen, 2004) indicating analysts' preference to be more informative. Therefore, it is also important for the managers to fully understand what the analysts are forecasting in order to be able to meet or beat the market's expectations. This, however, turns into a guidance game between the analysts and the management as they try to outsmart each other when their interests are conflicted. Analysts would want to predict the true performance of the firm, when not trying to predict the reported earnings, whereas the

management would try to lower their expectations. For example, if managers want to avoid reporting a decline in earnings which causes a negative market reaction for stock prices, which happens frequently as documented in the literature, they would not want the analysts to be informative. Nonetheless, analyst forecasts are relevant and crucial for all market participants and therefore must be explored deeper especially in circumstances that affect capital markets such as earnings management.

2.2. Earnings management and analysts' treatment

The literature on financial analysts' treatment of earnings management in their forecasts is conflicting. Abarbanell and Lehavy (2003) study the effect of stock price sensitivity to earnings news on earnings management and analysts' forecast errors. Using stock recommendations and consensus forecasts, they find that firms are more likely to manage earnings when rated 'Buy' whereas analysts are either incapable or not motivated to anticipate completely the managed component of such earnings. Burgstahler and Eames (2003) investigate analysts' earnings forecasts when firms avoid losses and small earnings decreases. They conclude that analysts do anticipate such earnings management in their forecasts to be more accurate; however, analysts are unable to consistently identify the firms that manage earnings to avoid small losses, leaving forecasts to be inaccurate (but not informative). Whereas the former study does not establish analysts' intent to forecast the managed earnings component, the latter indicates that analysts do have such an intention. Burgstahler and Eames find that analysts usually predict earnings management that is not realized and fail to predict one that is realized (Burgstahler & Eames, 2003, p. 256). They do this by analyzing the earnings forecasts of an analyst and note higher frequency of forecasts just to the right of zero earnings but no such frequency for the corresponding reported

earnings. Through similar technique, the authors find weak evidence of analysts predicting earnings management to avoid earnings decreases concluding that analysts do not correctly anticipate which firms would be involved in earnings management and so the analysts are not a significant source of such earnings management. The authors invite other researchers to theorize their findings since intuition tells us that analysts should be well aware of earnings management especially with respect to the firms they follow. And if analysts frequently misjudge the earnings management what is the interpretation of their 'post-managed' earnings forecast? Another limitation of this paper is that they consider two motivations of earnings management (avoiding losses and earnings decreases) whereas there are several other explanations as discussed later.

Porter (2006) finds that analysts include the effects of earnings management in their forecasts pointing out that Abarbanell and Lehavy's finding that analysts overlook the managed component is due to managers 'last minute' earnings manipulation and not because analysts want to exclude this component. This means that analysts do prefer accuracy but they are unable to be accurate, as pointed out by Burgstahler and Eames. Shane and Stock (2006) find that analysts fail to anticipate earnings management in the case when firms tend to shift income from quarter to quarter to benefit from tax reductions. They further show that this exclusion of the managed component is not because of a decision to ignore the shift in income but because of the incapability to identify temporary components of reported earnings. Our study addresses these issues directly by focusing on SEOs where the transaction is certain after its announcement and earnings are documented to have been managed unlike income shifting which is difficult for the analyst to predict for a firm. Givoly et al. (2008) identify cases where earnings are most likely to be managed upwards and

find that analysts predict the earnings number that the firm will eventually report, indicating analyst preference for accuracy. They also report that the earnings management affects future analyst forecasts and recommendations upwards. Their sample which uses firms that have restated earnings as a benchmark for earnings management may not be the best case scenario while the problems with the use of the consensus forecast has been discussed.

On the contrary, Louis et al. (2013) present a comprehensive view of the accuracy and informativeness of analysts' earnings forecasts accompanied by theoretical explanations. The authors are the first to argue that analysts' primary concern is not forecast accuracy and that they value informativeness for their clients. They support this idea by understanding analysts through their reports that tell that analysts routinely deviate from management guidance and provide estimates they know will differ from reported earnings. They explain that the analysts' reports are targeted towards clients with medium to long term investment horizons and so include forecasts that better predict long-term value. Analysts also tend to explain the reasons for their possible deviations from management's earnings figures in their reports. The authors explain that analysts do this because they have financial incentive to do so; their employers compensate them on investor feedback as well as stock picking ability whereas forecast accuracy is not factored in. The assumption in this paper is that analysts do not forecast an earnings figure and then remove possible earnings management, but that they come up with their own estimates of earnings they believe to be true. After the management's earnings preannouncement, analysts either revise these estimates following management guidance or ignore the preannouncement indicating possible earnings management. They show that analysts do sacrifice their forecast accuracy for informativeness mostly for their clients. Their results show

significant negative association between earnings management (using abnormal accruals proxy) and the deviation between analyst earnings forecast and management's preannounced earnings (analyst estimate minus preannounced earnings). That is, analysts deviate from the guidance as earnings are managed. Additionally, the authors also show that the analysts' deviation is actually informative to investors by finding no evidence of abnormal accrual mispricing when analysts deviate from preannounced earnings. Thus, they conclude that analysts prefer informativeness over accuracy.

One weakness of the studies mentioned above is that they all use mean consensus forecasts for most of their tests which may not fully capture the individuality of analysts. It is quite possible that some of the analysts included in the consensus may prefer accuracy while others opt for informativeness. Considering the mean forecast may well mitigate such effects to an extent. Furthermore, mean forecasts may be meaningless if the forecast dispersion is large. Also, these studies estimate earnings management only by using discretionary accruals as a proxy, which has its own pitfalls since earnings management is difficult to predict if it is routine management. They do not consider any other specific cases where earnings management is more systematic. While they may argue that the earnings are likely to be managed in their sample owing to higher discretionary accruals, we use a sample where earnings are better documented to have been managed upwards significantly.

3. Hypotheses development and research design

To investigate whether analyst forecasts are accurate or informative we use a sample of firms that are highly suspected to manage earnings upwards. There exist several motivations for firms to manage earnings which have been well documented in the

literature. Healy (1985) presented that managers use discretionary accruals to manipulate earnings upwards when their bonuses are linked to these earnings. Burgstahler and Dichev (1997) report that firms manage earnings to avoid reporting earnings decreases or losses. Healy and Wahlen (1999) review that managers may manage earnings to inflate stock prices around capital market transactions such as mergers and acquisitions, debt issue, or stock issue. For our analysis, we chose to study analyst forecasts around an SEO issue for several reasons. One, it is well documented in the literature that firms systematically manage earnings only upwards, and not downwards, around an SEO issue as we discuss shortly. A decrease in the analyst forecast after an issue announcement would be a clear indication of the analyst going opposite to what the reported earnings may be. Two, the SEO filing date gives us a neat benchmark to pick analyst forecasts before and after that date to analyze the change. Three, SEO issue is reported to motivate managers to manipulate earnings using both accrual-based as well as real earnings management activities (Cohen & Zarowin, 2010). This means that the firm is more likely to manage earnings than in any of the cases or transactions considered in previous studies. Analysts may not be able to identify the methods management uses to manage earnings but they can still predict a possible decline in future earnings. And four, the magnitude of expected earnings management around SEOs is high allowing us better margins to capture the effect of the SEO announcement on analyst forecast, for if the magnitude was low it would be harder to conclude whether the forecast excludes the managed component or not.

It follows from the literature that reported earnings around SEOs have significant impact on future earnings, allowing us to capture the complexity of forecasts around these transactions. Previous studies suggest that SEOs are followed

by a decrease in earnings as well as stock performance (Spiess & Affleck-Graves, 1995; Rangan, 1998; Shivakumar, 2000) suggesting that reported earnings are not relevant in the sense that they do not provide a clear view of the firm's future prospects as they are systematically biased upwards. These earnings essentially do not reflect the true performance of the firm. The poor stock price performance following the SEO suggests that investors are not aware of the bias in earnings at the time of the issue and are probably 'fooled' by the managed earnings. Therefore, we are considering a transaction where the role of the analysts if particularly crucial. And so, analysts might prefer estimating unmanaged earnings that reflect the true performance of the firm in the medium and long-term. However, earnings management under any circumstance could lead to poor performance in the medium and long-term for firms, so, using SEO issue does not bias our study toward analyst preference for informativeness.

Using seasoned equity offerings from 1976 to 1989 Teoh et al. (1998) show that issuers report higher net income (than performance matched industry peers) in the year of issue and report underperformance in the subsequent two years. Rangan (2008) documents that earnings management, proxied by discretionary accruals, are positive and significant in the quarters 0 and 1 where quarter 0 is defined as the quarter that has the first earnings announcement after the SEO announcement. This relationship is further cemented by Shivakumar (2000) who finds positive abnormal accruals from quarters -4 to 4. These findings suggest that managers engage in systematic and significant upwards earnings manipulation around the time of an SEO issue. Rangan (2008) further tests whether these SEO issues are 'timed' when accruals are high and finds no evidence. This means that firms engage in management when issuing SEOs and not the other way around. It can then be concurred that when

as SEO is announced, analysts are fully aware of possible earnings manipulation. We analyze the relationship between an SEO issue and analyst forecast using individual analyst forecasts before and after the SEO. We therefore pursue the important question addressing analyst forecasts that whether analysts intentionally incorporate earnings management in their forecasts for better accuracy, or remove it for informativeness.

The goal of this study is to look for the association between analysts' earnings forecast and the earnings management and explore the nature of this association. If analysts prefer accuracy a positive or no association between the forecast and earnings management should exist. On the other hand, if analysts prefer informativeness we expect a negative association between their forecasts and known earnings manipulation. Basing our study on Louis et al. (2013) who report findings against the majority of literature on analysts preferring accuracy, we hypothesize that analysts exclude from their earnings forecasts the earnings management component for better informativeness for their clients. For reasons explained earlier including providing quality information to their clients, we expect analysts are likely to exclude earnings management from their forecasts. If analysts include the earnings management component it will have implications for investors relying on their forecasts as well as researchers using these forecasts for further studies. We expect analysts to decrease their forecasts around the SEO issue which is around the time when management is known to manipulate earnings following our formal hypotheses:

H1: Analysts decrease their earnings forecasts following an SEO announcement

H2: The decrease in forecasts is affected by the factors that influence the firm's ability and incentives to manage earnings

H3: The decrease in forecasts is affected by the analysts' ability and incentive to be informative

We test H1 using individual analyst forecasts around SEOs using the following baseline model:

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 EPS_{jt-1} + \alpha_3 EPS_{jt-2} + \alpha_4 CHE_j + \alpha_5 OCF_{jt-1} + FX + \varepsilon \quad (1)$$

The variables are as follows:

AF is the earnings forecast issued by analyst *i* for firm *j* at year *t*, scaled by beginning share price;
SEO is a binary variable that takes the value one if the forecast is made after the SEO filing and zero otherwise;
EPS_{jt-1} is earnings for firm *j* at year *t-1*, scaled by beginning share price;
EPS_{jt-2} is earnings for firm *j* at year *t-2*, scaled by beginning share price;
CHE_j is the change in EPS for firm *j* from year *t-2* to year *t-1*, scaled by beginning share price;
OCF_{jt-1} is the operating cash flow for firm *j* at year *t-1*, scaled by beginning market capitalization;
FX are country, industry, year, or country-year fixed effects; while ε is the error term

The model aims to compare, all things equal, forecasts issued before the SEO announcement to forecasts issued after the announcement. The dummy variable SEO is our variable of interest that equals one if the forecast is made after the SEO filing and zero otherwise. According to H1, α_1 is expected to be negative if analysts decrease their forecasts after the SEO filing. Year 0 is the financial year in which the SEO is issued. As soon as the SEO is announced, analysts would figure that the management guidance may already include an earnings management component and would attempt to remove it from their forecasts. This explanation is contrary to the assumption made by Louis et al. (2013) that analysts come up with their own forecasts. However, literature suggests that analysts regularly follow management guidance and even overweigh it when the guidance is credible and useful (Feng &

McVay, 2010). It would then be practical for analysts to attempt to deviate from such guidance when they feel that it is no more credible or useful. Thus, analysts would remove the managed component of earnings from their forecasts causing the coefficient of SEO to be negative. In contrast, and contrary to our hypothesis α_1 should be positive or zero if analysts prefer forecast accuracy and/or forecast earnings closer to the reported managed earnings figure.

Our model is based on the review of forecasting literature by Brown (1993) who points out that the literature suggests that analyst impound both private and publicly available information in their forecasts. We include two previous reported earnings (*EPS*) as well as the change in earnings (*CHE*) because analysts evidently base their forecasts on these values as shown by greater number of forecasts around earnings announcements. These variables also help control for the variation in the forecast. We control for financial performance by including operating cash flow (*OCF*) as better operating performance leads to higher forecasts. We include country, industry, and year fixed effects as our sample varies greatly among these aspects.

To test H2 and H3 we investigate the determinants of forecast changes around SEO announcements, and adapt our baseline model by introducing several characteristics in equation (1) to get the equation (2) where *CHAR* is an issue or forecast characteristic. The interaction term between the SEO and the characteristic allows us to capture the combined effect of the SEO and the relevant characteristic on analyst forecasts, therefore α_3 is the coefficient of interest.

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 CHAR_j + \alpha_3 SEO*CHAR_j + \alpha_4 EPS_{jt-1} + \alpha_5 EPS_{jt-2} + \alpha_6 CHE_j + \alpha_7 OCF_{jt-1} + FX + \varepsilon \quad (2)$$

3.1. Characteristics of the issue affecting earnings management

The issue characteristics include the size of the firm, dollar value of the SEO being issued, number of analysts following the firm, total accruals available to the firm, and the firm's auditors. The size of the firm is a crucial dimension as large corporations are always under scrutiny and it may be hard for them to manage earnings. Analysts may notice that the large firm may not engage in aggressive earnings management and may not decrease their forecasts. Since large firms attract media quickly so analysts forecasting for these firms would be careful. Brown et al. (1987), Collins et al. (1987), and Freeman (1987) show that analysts forecast better (relative to time-series models) for larger firms. This means that if analysts are opportunistic, they will be more accurate for larger firms comparatively. It is also possible that analysts may prefer accuracy for larger issues as these firms are more prestigious and might bring more recognition for the analyst. Also, larger firms may be able to influence and sway analyst forecasts in their own favor. Therefore, we include a proxy (*SIZE*) – the log value of the market capitalization of the firm – which controls for the size of the firm.

Analyst following is also a metric that is loosely related to the size of the firm: larger firms have greater analyst following. However, if more analysts are following a firm it would therefore be under greater observation making it harder for the firm to manage earnings. It is also harder for firms to influence analysts when they are greater in number and so they prefer to report earnings diligently without having manipulated earnings. Yu (2008) find that firms followed by more analysts manage earnings less while Hong et al. (2014) report that firms with lower level of accrual-based earnings management attract greater analyst following. We capture this metric by taking the log value of the number of analysts who issued a forecast for the firm in the financial year 0 (*FOW*) and expect the coefficient of the interaction term to be positive

As firms engage in earnings manipulation through accruals, it is likely that a firm with higher total accruals will manage earnings upwards around SEOs. The accruals dimension has been discussed in detail in literature as studies show that firms report higher accruals around SEOs. Therefore, we include a variable that captures total accruals of the issuing firm (*TACC*). We calculate total accruals using the cash flow method: earnings before extraordinary items less net cash flow from operating activities and net cash flow from investing activities[2] scaled by the market capitalization of the firm. We take into account whether the firm is capable of managing earnings by calculating the total accruals available to it from the previous year to manipulate earnings in this year. Higher total accruals would indicate greater ability to manage earnings and therefore greater likelihood so we expect the coefficient of the interaction term to be negative.

Analysts might notice the earnings manipulation before an SEO issue only if that SEO is of higher value relative to the size of the firm. This is because a high-value SEO means that the firm has generated relatively higher revenue with the SEO issue, which is usually achieved by boosting stock prices through earnings management. Moreover, research exploring the idea of earnings management around SEOs ends up with a sample tilted towards larger firms and higher value SEO issues (Rangan, 1998; Shivakumar, 2000). We therefore capture the SEO value by taking the value of the proceeds from the SEO issue scaled by the market capitalization of the firm before the offer taken from Thomson One Banker (SEOVAL). The interaction term between SEO and SEOVAL is expected to be negative indicating greater decrease in analyst forecasts for firms with high-value issues.

[2] We also calculate total accruals using the balance sheet method and find similar results

Lastly, we observe whether the firm was audited by one of the Big Four (Big Five before 2002) in the previous year as it is evidently harder for firms to manage earnings when they are audited by them. If the firm is audited by the big four analysts would suspect it less to have manipulated earnings and therefore may not decrease their forecasts as much. We include a binary variable (*BIGF*) that takes the value one if the firm is audited by the big four in year -1.

3.2. Characteristics of the forecast affecting the analyst

We also incorporate forecast characteristics that may influence the analyst's incentive to be informative in our model to test H2. Since we deal with SEO issues and sell-side analysts, our sample contains analysts that work for financial institutions that are also book runners or lead managers of said SEO issues. These institutions mostly have the responsibility of carrying out the SEO by selling shares in the market. When an analyst employed by an institution issues a forecast for a firm that also employs that institution as a book runner, it is expected that the analyst would forecast over-optimistic earnings. If the analyst works for a broker that is also the underwriter of the SEO, there is a conflict of interest. The analyst might want to be more accurate in this case and forecast the managed component of earnings, or even forecast earnings upwards to bias the mean consensus. It is in the interest of the analyst's employer to report higher earnings which would then facilitate its task of underwriting. Thus, we include a binary variable (BRO) that takes the value one if the analyst is employed by the same financial institution that is a book runner or manager of the firm for which the analyst provides a forecast, and zero otherwise.

Analyst forecasts are also be affected by how experienced the analyst is as well as his/her portfolio complexity (Clement, 1999). Experienced analysts may feel

more confident and may not be swayed by the mean consensus as opposed to less experienced analysts. Experienced analysts are likely to be leaders who forecast ahead of the curve. These analysts may also identify firms that have managed earnings better than their less experienced counterparts. Analysts that follow greater number of firms may also have greater experience of how firms behave in certain circumstances. This knowledge might change the characteristic of the analyst forecast with respect to the firm. We therefore include a control for analyst experience (EXP) calculated by the log number of days between the first forecast available of that analyst on IBES and the forecast date. Since our sample begins decades after the first available analyst forecasts on IBES, there will be no measurement errors for analysts who have experience before their first forecast appears on IBES. We also add a control for analyst portfolio complexity (FOL) measured by the log number of firms that the analyst has issued at least one forecast for in the previous year.

Finally, we consider the EU Market Abuse Directive that may affect analysts and their forecasts. Fauver et al. (2017) find that the Market Abuse Directive has influenced European capital markets positively reducing information asymmetry and enhancing transparency. They show using a control sample of non-EU firms as well as a control sample of non-SEO firms that earnings management around SEOs has significantly reduced whereas post-offer stock performance has improved after the enactment of MAD. They report that European firms that were affected by the Market Abuse Directive saw a decline in earnings management and therefore an improvement in earnings quality after the adoption of the directive by the respective countries. They examine the affected countries by examining SEOs issued by EU firms and testing them against a control sample of non-issuing EU firms as well as non-EU issuing firms. They find that the practice of earnings management has reduced after the

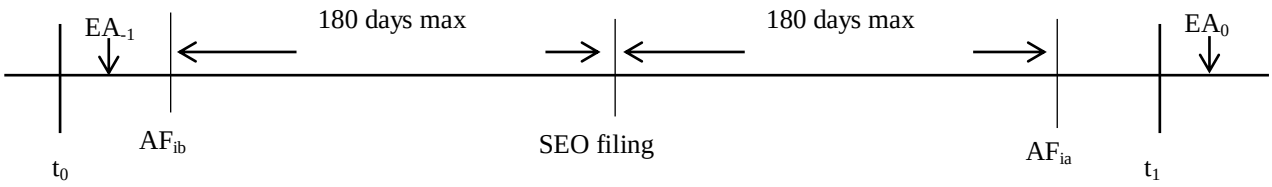
implementation of the directive. However, they do not claim that such practice has been completely eradicated after the regulation. In fact, they find evidence of earnings management for EU firms around SEOs in general by comparing them to non-issuers. The MAD also affects analysts who have conflicts of interest with firms for which the issue forecasts. The directive requires the firms and analysts to disclose private information or any business ties with the recommended firm. It is therefore imperative to study analyst forecasts before and after the enactment of MAD in order to better understand analyst forecasts around SEOs, especially for such conflicted analysts. For the EU firms in our sample, we use the implementation date of MAD for each country to identify whether the forecast was made before or after the implementation. We use the binary variable *MAD* which takes the value one if the forecast was made after the implementation of the directive in the respective country, and zero otherwise. Furthermore, we introduce a three-way interaction between SEO, MAD, and BRO in order to test the effect of the directive on analysts with suspected conflicts of interest around SEO announcement.

4. Sample

We obtained an initial sample of all seasoned equity offerings from 2000-2016 by all publicly listed European firms through Thomson One Banker Deals Analysis database. Financial services firms, real estate firms, and firms with duplicate issues on the same date were excluded following Rangan (1998). Next, we obtained the individual analyst forecasts, forecast period end dates, actual reported earnings from I/B/E/S, and other financial data required for our tests from Compustat Global IQ for the remaining observations. We dropped observations with missing data, as well as observations in excess of 100% in absolute value for analyst forecasts or earnings

following Rangan (1998). A final sample of 1,733 offerings from 1,100 firms remains for our main tests. We use the SEO filing date as the benchmark to define forecasts before and after. As found in previous studies, more than 90% of firms first announce the SEO on the filing date (Purnanandam & Swaminathan, 2006). The SEO filing date hence proxies the SEO announcement date accurately. This means that analysts, as well as investors and other market participants, are unaware of SEO issue before this date. Hence we include the last analyst forecast before the filing date and the first analyst forecast after the filing date in our analysis. Analysts that issued estimates before the SEO filing and not after, or vice versa, were dropped. These analysts do not provide us with incremental information about the change in their forecasts and are hence dropped. Forecasts made more than 180 days before or 180 days after the filing date were also dropped as older forecasts may contain information other than SEO announcement. Figure 1 shows the timeline of a sample firm-year. Each offering has an average of approximately 13 forecasts before and after the issue so the total number of observations is 22,626.

Figure 1: Timeline of analyst forecast and SEO issue

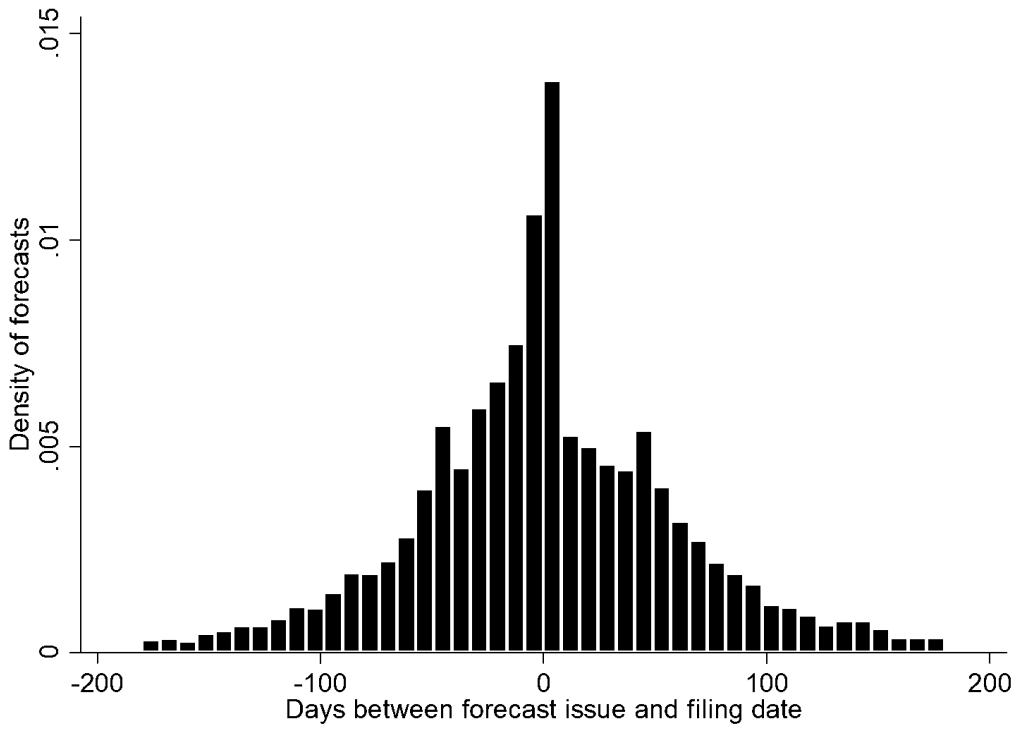


EA_{-1} is the last earnings announcement before the SEO filing.
EA_0 is the earnings announcement of the year of issue.
AF_{ib} is the forecast by analyst i for year 0 before the SEO filing.
AF_{ia} is the forecast by analyst i for year 0 after the SEO filing.

All forecasts issued on the day of the SEO filing are considered to have been issued after the SEO filing as the information is now publicly available. There are

approximately an average of 44 days between the forecast and the filing on either side of the issue. Figure 2 shows a histogram of analyst forecasts around the SEO filing date. An evident spike around the filing date shows that analysts rush to update their forecasts by incorporating the new information in the market. This does not necessarily mean that analysts will include or exclude the earnings management component in their forecasts; it simply indicates that analysts wish to revise their estimates after this new information. As Louis et al. (2013) conjecture that analysts form their own estimates rather than following the management and that an SEO issue leads to poor subsequent earnings performance (Teoh et al., 1998), analysts may tend to this and other aspects when revising their forecasts.

Figure 2: Histogram of analyst forecasts around SEO filing



The distribution of the 1,733 SEOs in our sample is presented in Table 1. 2009 is the year with the greatest number of SEOs issued with 202 whereas a general increasing trend over time is observed in the sample. 560 SEOs were issued by UK

firms followed by 206 German and 197 French firms. The distribution of the SEOs among the industries is fairly balanced with Industrials and High technology firms issuing more than others in our sample. 437 SEOs have forecasts issued by four or less analysts in our sample whereas 259 SEOs have forecasts issued by twenty-five or more analysts. This means that the latter will have at least fifty forecasts each that enter the sample. Most of the firms in our sample issue only once during the sample period (702 or 64%) while 55 firms issue four or more times during the period.

Insert Table 1 about here

Table 2 presents descriptive statistics about the SEOs as well as other variables from equation (1). Our SEO sample is skewed heavily towards the right as average total assets before the issue as well as total proceeds from the issue are larger than their respective medians. The median value of assets before the issue is $941 million while the median proceeds from the issue are $81 million. Table 2 also presents summary statistics of the dependent variable, analyst forecasts. The mean analyst forecast is 6.7% of the share price while Table 2 also reports the breakdown statistics of the forecasts before and after the issue. Financial performance of the SEO firms in our sample for year -1 shows that the average reported earnings is 2.5% of the share price and average operating cash flow is 11% of the share price.

Insert Table 2 about here

---

5. Results

5.1. Change in analyst forecasts around SEOs

We run a multiple linear regression using equation (1) with clustered standard errors and the results are presented in Table 3. As expected, we find a negative effect of SEO on AF as seen by the significant coefficient of SEO. An SEO issue corresponds to a decline in average analyst forecast by 0.2% of the share price which is about 3% of its mean. This result indicates analyst preference for informativeness as the negative impact shows analysts undoing the earnings management from their forecasts. Our model captures 67.5% of the variation in analyst forecasts as shown by the R-squared figure. EPS_{t-1} and OCF_{t-1}, indicators of performance are positively associated with analyst forecasts with both statistical and economic significance. It shows that analysts base their forecasts on previous reported earnings which are also what the management uses to guide analysts. The magnitude of the decrease in forecasts, however, is subject to further tests exploring whether analysts are able to successfully capture the managed component of earnings. EPS_{t-2} and CHE show insignificant association with analyst forecast also indicating analysts' reliance on management guidance rather than the trend in earnings.

Insert Table 3 about here

5.2. Change in analyst forecasts for various issue characteristics

Table 4 reports the results from equation (2) using various issue characteristics:

Firm size: Column (1) of Table 4 shows that the coefficient of *SEO* remains negative and significant while the coefficient of the variable capturing size is insignificant when we introduce *SIZE* in the model. The interaction term between

SEO and *SIZE* is positive and significant. This shows that analysts generally decrease their forecasts after an SEO issue whereas this decline is lesser for larger firms. This positive association of firm size with the SEO issue indicates that since larger firms have better controls and are under greater scrutiny, they are less likely to manage earnings. The results show that the forecasts generally decline even for larger firms, but the magnitude is lesser as the firm size increases. This does not mean that larger firms do not engage in earnings management around SEOs.

Analyst following: Column (2) of Table 4 shows the results from equation (2) controlling for analyst following. The coefficient of *SEO* remains negative, the coefficient of *FOW* is positive, while the coefficient of the interaction term between *SEO* and *FOW* is small, yet positive and significant. As expected, a greater number of analysts following the firm decreased the likelihood of the firm manipulating its earnings. The greater number of analyst following discourages firms to manipulate earnings as much and thus causes analysts to not reduce their forecasts for these firms as much as for others with less following. Since these firms are less likely to manage earnings around SEO issues, analysts do not decrease their forecasts as much as for other firms, indicated by the positive coefficient of the interaction term. In effect, when a firm is followed by approximately 40 or more analysts, the forecasts remain unchanged from before the SEO announcement to after the SEO announcement. Thus, analysts still prefer informativeness as this no-change in the forecast is because they do not expect these firms to have managed earnings.

Total accruals: The results from equation (2) controlling for total accruals is shown in column (3) of Table 4. In general, analysts still decrease their forecasts after an SEO announcement, however, it is not affected by the total accruals available to the firm. This result is contrary to our expectation as higher total accruals were

expected to cause a greater decline in the analyst forecast. One explanation of the disassociation between analyst forecast and total accruals is that the total accruals may be high for all firms in our sample which would not impact the forecasts. Also, discretionary accruals may be a more relevant metric to test this association and that is why we do not find an impact in the total accruals.

SEO value: Column (4) in Table 4 presents the regression results from equation (2) controlling for the value of the SEO issued scaled by market capitalization. The interaction term which captures the association between analyst forecast and SEO value when SEO equals one, is negative indicating that analyst forecasts decline in higher magnitude after an SEO announcement that is of higher value. The ulterior motive of firms to manage earnings upwards around SEOs is to showcase better performance using higher reported earnings attracting investors and eventually hiking up the share price to generate more proceeds through the SEO. The higher the value of the SEO, relative to the size of the firm, the more likely it is to manage earnings upwards to gain this advantage. Firms that issue an SEO which is proportionately low compared to its current market capitalization would be less likely to engage in significant upwards earnings management as such proceeds would not have a major impact on the value of the firm. Hence, firms that issue high-value SEOs are most likely to manage earnings upwards for their benefit. Therefore, analysts tend to decrease their forecasts after the SEO announcement in greater magnitude for such firms as they are more likely to have managed earnings. The impact is pronounced for relatively high values of the variable *SEOVAL* as the coefficient of the interaction term is small. For instance, for an SEO issue that is 33% of the market capitalization

of the firm[3] there is a decline in the average analyst forecast by 0.1%[4] of the share price which is 1.5% of its mean.

Big four auditor: Column (5) in Table 4 presents the regression results from equation (2) controlling for whether the firm was audited by a big four auditor. Here we find no association between the analyst forecast and the interaction between *SEO* and *BIGF*. This indicates that analysts generally forecast similarly for firms issuing SEO that are audited by the big four compared to firms that are not. With the introduction of the interaction term, the coefficient of *SEO* becomes insignificant indicating that when the firm is not audited by a big four auditor, the change in the analyst forecast around SEO is insignificant or zero. It seems that, on average, analysts do not change their forecasts for firms not audited by one of the big four auditors. We further investigated the subsample of these firms and unstipulated results show that other issue characteristics, such as firm size and analyst following, impact the forecasts similar to the entire sample. Thus, the insignificant coefficient of the interaction term indicates that the auditor does not impact the change in analyst forecasts around SEO announcement.

Insert Table 4 about here

5.3. Change in analyst forecasts for various forecast characteristics

Table 5 reports the results from equation (2) using forecast characteristics that affect the analysts' incentive to be informative or otherwise.

Underwriter: Column (1) in Table 5 presents the regression results from equation (2) using analyst conflict of interest. The interaction term in column (1)

[3] The mean value of *SEOVAL* is 18% while 33% is around the 90th percentile

[4] The coefficient of the interaction term times the value of *SEOVAL* when *SEO* equals one [-0.003 x 0.33 = -0.001]

shows that being employed by an institution that is also the book runner of the firm does not affect analyst forecast around the SEO announcement. This indicates that analysts are not affected by possible conflicts of interest and forecast similar to their counterparts even if being accurate may be in the best of their employer's interest. This may be due to the tight regulation in the European market which actively regulates issues focusing on conflicts of interest and improving transparency for market participants.

Analyst experience and portfolio complexity: Columns (2) and (3) in Table 5 introduce analyst experience and portfolio complexity that may influence the analyst's incentive to be accurate or informative. In unreported results, we first use analyst experience as a continuous variable (log value of the number of days of experience of the analyst) and find that analyst experience does not impact the change in forecast around SEO announcement. However, we do note that the coefficient of *SEO* becomes insignificant with the introduction of the analyst experience. This indicates that analysts with practically no experience do not change their forecasts around SEO announcement preferring forecast accuracy. We then test specifically for these inexperienced analysts by redefining the experience variable as follows: it takes the value one if the analyst has less than 6 months of experience and zero otherwise. We choose 6 months as it is the usual probation period of a young financial analyst looking to make his/her mark. Column (2) of Table 5 shows that while all analysts generally decrease their forecasts around SEO announcement, the least experienced analysts increase their forecasts. The positive coefficient of the interaction term which is greater in magnitude than the coefficient of *SEO* shows that less experienced analysts are looking for forecast accuracy in order to establish themselves in the market. Similarly, we redefine the firms followed by the analyst in the previous year

as follows: it takes the value one if the analyst followed more than seven different firms in the previous year and zero otherwise. Column (3) of Table 5 reports that portfolio complexity does not affect the analyst forecast around SEO announcement as seen by the insignificant coefficient of the interaction between *SEO* and *FOL*. This shows that the analyst's choice to be informative does not depend on how big or complex his/her portfolio is.

Regulation: The results from equation (2) using the *MAD* variable are reported in column (4) of Table 5. The coefficient of *SEO* remains negative while the coefficient of the interaction is insignificant. This indicates that the regulation did not affect the analyst forecasts around SEO announcements in general. As the directive aimed to reduce information asymmetry and increase transparency in transactions in the capital markets, especially targeting analysts with conflicts of interest, we further tested an interaction between *BRO* and *MAD*. The directive required analysts to declare any ties with the firms for which they issue forecasts. It can therefore be expected that the directive will affect these analysts the most. Column (5) of Table 5 presents results from the regression of the three-way interaction between *SEO*, *BRO*, and *MAD*. The coefficient of *SEO*BRO* is positive showing that conflicted analysts generally increase their forecasts before MAD adoption whereas the coefficient of *SEO*BRO*MAD* is negative indicating that conflicted analysts generally decrease their forecasts after MAD adoption. The coefficients are significant at the 10% level. These results outline that the regulation has affected analysts with conflicts of interest who may have preferred accuracy before the directive in order to benefit their employers who are underwriters. After the adoption of the directive, such analysts decrease their forecasts around SEO announcement similar to their non-conflicted counterparts.

Insert Table 5 about here

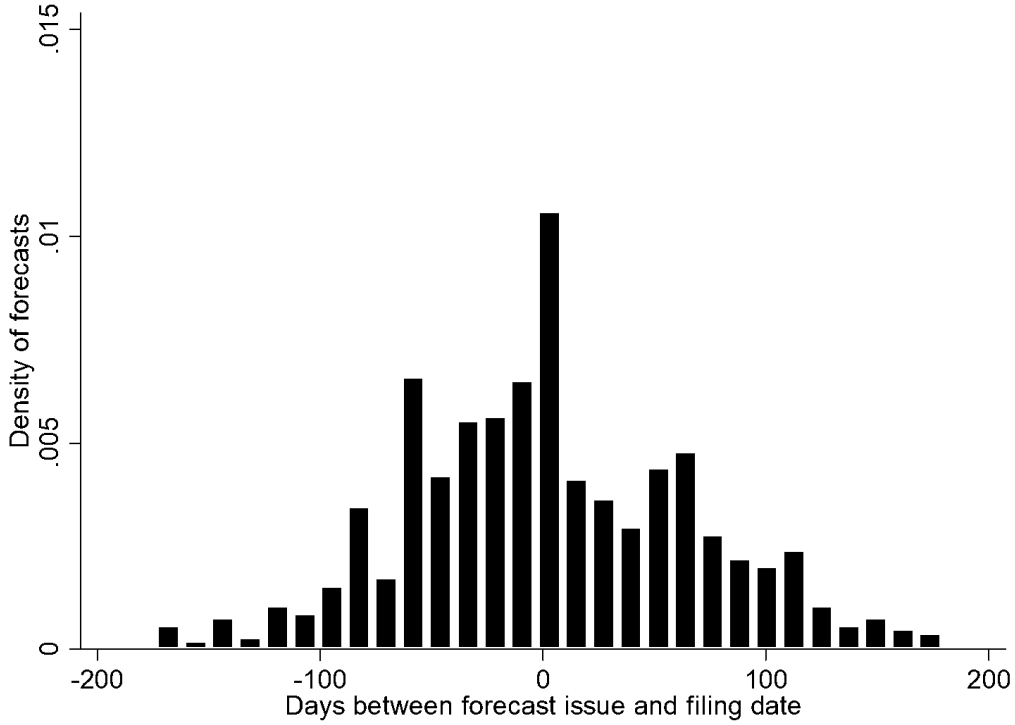
5.4. Robustness checks

It may seem that as we consider analyst forecasts 180 days prior to the SEO filing date as well as 180 days after it, our results may contain noise from all the other events happening during that period. We conduct our tests on forecasts that were issued within three days of SEO filing, which is when the density of forecasts in our sample is the highest as seen in Figure 2. Therein, we consider only forecasts that were issued within 3 days of the filing and include the corresponding analyst forecast before the filing. The average number of days before the SEO filing and analyst forecast is 46 while the median is 37. These forecasts are ones that are reacting immediately to the SEO filing and are expected to incorporate information solely from the SEO issue. Column (1) of Table 6 presents results from the regression of equation (1) using a subsample of forecasts that were issued within three days of the SEO filing date. The coefficient of SEO remains negative and significant for forecasts made right after the SEO filing. It shows that analysts who update their forecasts immediately after the SEO filing also reduce their forecasts like their counterparts who update the forecasts later. This shows that leading analysts are quick to react to the SEO filing and revise their forecasts downwards whereas the followers follow suit. The adjustment in their forecast right after the SEO shows at least they are not looking to incorporate earnings management in their forecasts validating our hypothesis for informativeness.

For an additional robustness check, we introduce a control sample of firms to mimic firm characteristics as well as analyst characteristics for firms that issue SEOs. The control sample would add to the robustness of our results indicating that analysts

decrease their forecasts given a sample of control firms. We collected an initial sample of 430 firms (1,762 firm-years compared to 1,733 firm-years of the treatment sample) that had no structural changes in equity or debt, and no major transactions during the period under consideration. These conditions enable us to claim that these firms are least suspected to have managed their earnings in the given firm-year. The firm-years were then matched with the treatment sample according to the year, industry, and country of the respective treatment firm. Each matched firm-year corresponded to a unique SEO deal as no firm in our treatment sample has issued an SEO twice in the same financial year. The control sample was adjusted the same way as the treatment sample with respect to scaling and modifying the variables to be used in the regression. The filing date of the matched SEO was used as a proxy in the control sample to determine the last analyst forecast before and the first forecast after the assumed issue. Figure 3 shows a histogram of analyst forecasts around this date. We note the absence of an abnormal spike around the assumed SEO filing date in the control sample.

Figure 3: Histogram of analyst forecasts around SEO filing in the control sample



We run the regression using equation (1) with an addition of a variable controlling for the sample. The variable *SAMPLE* takes the value one if the analyst forecast is for a firm-year that belongs to the treatment sample and zero if it belongs to the control sample. The results are reported in column (2) of Table 6. The coefficient of the interaction term is negative and significant indicating that analysts reduce their forecasts after the SEO controlling for the control sample. The mean impact is a decrease of 2.1% of the share price which is also economically significant. We also tested the model using only the control sample. Unreported results show that the coefficient of SEO (proxy for the filing date of a matched deal) is insignificant indicating that analysts do not change their forecasts for similar firms if that firm has not issued an SEO and is not suspected to have managed earnings. This shows that as analysts follow management guidance they stick to their forecasts for unsuspected firms while decrease their forecasts for suspected firms.

Insert Table 6 about here
---

6. Conclusion

Analyst forecasts are important because they are assigned high values by investors, management is keen on meeting or beating analyst targets, and researchers use forecast accuracy rampantly in capital market studies. Rewards and compensations for the analysts themselves are associated with forecast accuracy. Higher accuracy may entail increased compensation and bonuses from employers, greater reputation and media coverage, and better career prospects. This should lead analysts to favor forecast accuracy systematically. However, analysts may prefer informativeness to protect their clients by foregoing accuracy in cases such as significant earnings management.

Our results indicate that analysts generally prefer informativeness over accuracy for various characteristics of the issue as well as the forecast. We assume that analysts follow management guidance unlike Louis et al. (2013) who base their study on the assumption that analysts come up with their own forecasts; our conclusions are similar nonetheless. By observing firms that issue SEOs and are likely to have manipulated earnings upwards, we find a negative impact of SEO issue on analyst forecast for different specifications of our model. This indicates that as analysts follow management guidance, after the SEO is announced, analysts reduce their forecasts by removing the component of managed earnings from them. We control for variables that are best known to predict analyst forecasts such as previous earnings, trend in earnings, and performance measures. We further investigate analyst forecasts around SEOs controlling for various firm/issue characteristics including firm size, analyst following, total accruals, SEO proceeds, and firm auditor. We also test

for possible analyst conflicts of interest, analyst experience and portfolio complexity, and market regulation that may affect the forecasts. We separately test forecasts that were issued immediately after the SEO filing and also use a control sample for robustness. We find that as size and greater analyst following and decrease the likelihood of the firm to manage earnings, analyst forecasts also decrease less for such firms. We also find that least experienced analysts behave differently and may prefer forecast accuracy. We find similar results for post-MAD forecasts by conflicted analysts as the directive targeted such analysts.

Our study contributes to the literature by studying analyst forecasts around SEOs, a time when earnings management is widespread. Previous studies have failed to systematically prove whether analysts deliberately include or exclude earnings management and remain conflicting. We also consider individual analysts rather than the consensus which none of the previous studies do. By doing so, we aim to understand the nature of individual analysts by characterizing them according to their behavior in terms of incorporating earnings management in their forecasts. We add to the literature by identifying issue and forecasts characteristics that influence analysts to be accurate or informative. Additionally, we look at the data from the European Union rather than the United States. The US market is known to act and behave in a certain traditional way and that all studies that originate in the US may not have implications around the world. The EU is a market much more diverse and multicultural allowing the studies conducted in it to have greater implications.

References

Abarbanell, J., & Lehavy, R. (2003). Can Stock Recommendations Predict Earnings Management and Analysts' Earnings Forecast Errors. *Journal of Accounting Research, 41*(1), 1-31.

Bartov, E. (1993). The Timing of Asset Sales and Earnings Manipulation. *The Accounting Review, 68*(4), 840-855.

Black, E. L., Chirstensen, T. E., Joo, T. T., & Schmardebeck, R. (2014, March 1). *The Relation between Earnings Management and Pro Forma Reporting.* Retrieved May 30, 2016, from Social Science Research Network: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2259379

Brown, L. D. (1993). Earnings forecasting research: its implications for capital markets research. *International Journal of Forecasting, 9*, 295-320.

Brown, L. D., Hangerman, R. L., Griffin, P. A., & Zmijewski, M. E. (1987). Security analyst superiority relative to univariate time-series models in forecasting quarterly earnings. *Journal of Accounting and Economics, 9*(1), 61-87.

Burgstahler, D. C., & Eames, M. J. (2003). Earnings Management to Avoid Losses and Earnings Decreases: Are Analysts Fooled? *Contemporary Accounting Research, 20*(2), 253-294.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*, 99-126.

Butler, K. C., & Lang, L. H. (1991). The Forecast Accuracy of Individual Analysts: Evidence of Systematic Optimism and Pessimism. *Journal of Accounting Research, 29*(1), 150-156.

Ciccone, S. J. (2001). Analyst Forecast Properties, Financial Distress, and Business Risk.

Clement, M. B. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics, 27*, 285-303.

Cohen, D. A., & Zarowin, P. (2010). Accrual-Based and Real Earnings Management Activities Around Seasoned Equity Offerings. *50*(1).

Collins, D. W., Kothari, S. P., & Rayburn, J. D. (1987). Firm size and the information content of prices with respect to earnings. *Journal of Accounting and Economics, 9*(2), 111-138.

Cotter, J., Tuna, I., & Wysocki, P. D. (2006). Expectations Management and Beatable Targets: How Do Analysts React to Explicit Earnings Guidance? *Contemporary Accounting Research, 23*(3), 593-624.

Dechow, P., Sloan, R., & Sweeney, A. (1996). Causes and Consequences of Aggressive Financial Reporting. *Contemporary Accounting Research, 13*, 1-36.

Degeorge, F., Patel, J., & Zeckhauser, R. J. (1999). Earnings Management to Exceed Thresholds. *Journal of Business, 72*(1), 1-33.

Emery, D. R., & Li, X. (2009). Are the Wall Street Analyst Rankings Popularity Contests? *Journal of Financial and Quantitative Analysis, 44*(2), 411-437.

Fauver, L., Loureiro, G., & Taboada, A. G. (2017). The impact of regulation on information quality and performance around seasoned equity offerings: International evidence. *Journal of Corporate Finance, 44*, 73-98.

Feng, M., & McVay, S. (2010). Analysts' Incentives to Overweight Management Guidance When Revising Their Short-Term Earnings Forecasts. *The Accounting Review, 85*(5), 1617-1646.

Freeman, R. N. (1987). The association between accounting earnings and security returns for large and small firms. *Journal of Accounting and Economics, 9*(2).

Givoly, D., Hayn, C., & Yoder, T. (2008). What do Analysts Really Predict? Inferences from Earnings Restatements and Managed Earnings. Pennsylvania.

Gu, Z., & Chen, T. (2004). Analysts' treatment of nonrecurring items in street earnings. *Journal of Accounting and Economics, 38*, 129-170.

Healy, P. M. (1985). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics, 7*, 85-107.

Healy, P. M., & Wahlen, J. M. (1999). A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons, 13*(4), 365-383.

Hong, H., & Kubik, J. D. (2003). Analyzing the Analysts: Career Concerns and Biased Earnings Forecasts. *The Journal of Finance, 58*(1), 313-351.

Hong, Y., Huseynov, F., & Zhang, W. (2014). Earnings Management and Analyst Following: A Simultaneous Equations Analysis. *Financial Management, 43*(2), 355-390.

Louis, H., Sun, A. X., & Urcan, O. (2013). Do Analysts Sacrifice Forecast Accuracy for Informativeness? *Management Science, 59*(7), 1688-1708.

Matsumoto, D. A. (2002). Management's Incentives to Avoid Negative Earnings Surprises. *The Accounting Review, 77*(3), 483-514.

O'brien, P. C. (1988). Analysts' forecasts as earnings expectations. *Journal of Accounting and Economics, 10*(1), 53-83.

Porter, J. C. (2006). *DO ANALYSTS REMOVE EARNINGS MANAGEMENT WHEN FORECASTING EARNINGS?* Athens: University of Georgia.

Purnanandam, A. K., & Swaminathan, B. (2006). Do Stock Prices Underreact to Seo Announcements? Evidence from Seo Valuation.

Ramnath, S., Rock, S., & Shane, P. (2008). The financial analyst forecasting literature: A taxonomy with suggestions for further research. *International Journal of Forecasting, 24*(1), 34-75.

Rangan, S. (1998). Earnings Management and the Performance of Seasoned Equity Offerings. *Journal of Financial Economics, 50*, 101-122.

Richardson, S., Teoh, S. H., & Wysocki, P. D. (2010). The Walk-down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives. *Contemporary Accounting Research, 21*(4), 885-924.

Shane, P. B., & Stock, T. (2006). Security Analyst and Stock Market Efficiency in Anticipating Tax-Motivated Income Shifting. *The Accounting Review*, 227-250.

Shivakumar, L. (2000). Do Firms Mislead Investors by Overstating Earnings before Seasoned Equity Offerings? *Journal of Accounting and Economics, 29*, 339-371.

Spiess, D., & Affleck-Graves, J. (1995). Underperformance in Long-run Stock Returns Following Seasoned Equity Offerings. *Journal of Financial Economics, 38*(3), 243-267.

Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings Management and the Under-performance of Seasoned Equity Offerings. *The Journal of Financial Economics, 50*, 63-99.

Yu, F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics, 88*(2), 245-271.

Appendix: Tables

Table 1: Sample characteristics

Panel A: Breakdown of the sample SEOs by year, country and industry

Year	# of SEOs	Country	# of SEOs	Industry	# of SEOs
2000	36	UK	560	Industrials	372
2001	32	Germany	206	High Technology	243
2002	30	France	197	Healthcare	210
2003	44	Norway	133	Energy & Power	197
2004	98	Sweden	110	Materials	184
2005	84	Spain	81	Media & Entertainment	125
2006	78	Switzerland	53	Consumer Products	124
2007	71	Finland	52	Consumer Staples	117
2008	64	Italy	51	Retail	82
2009	202	Netherlands	48	Telecommunications	78
2010	144	Denmark	39	Other	1
2011	137	Belgium	35		
2012	131	Poland	33		
2013	165	Austria	21		
2014	148	Turkey	21		
2015	126	Portugal	18		
2016	143	Other	75		
Total	1,733	Total	1,733	Total	1,733

Panel B: Distribution of analysts, bookrunners and SEOs per firm

Analyst following	# of SEOs	Bookrunners/SEO	# of SEOs	SEOs/firm	# of firms
2-4	437	1 book runner	1,195	1 issue	702
5-14	735	2-3 book runners	470	2 issues	247
15-24	302	4 or more	68	3 issues	96
25 or more	259			4 or more	55
Total	1,733	Total	1,733	Total	1,100

Panel A of the table shows the distribution of the 1,733 SEOs in the final sample by year (column 1), country (column 2), and industry (column 3). Panel B gives analyst following per firm around SEO (column 1), the number of book runners per SEO (column 2), and the number of SEOs per firm over the period under study (column 3).

Table 2: Descriptive statistics

Panel A: Descriptive statistics of the issuing firms

	Mean	St. Dev.	Q1	Median	Q3
Assets before offer (in millions of $)	8,277	25,141	190	941	4,042
SEO proceeds (in millions of $)	298	695	25	81	247
Shares offered (in millions)	72.8	604.5	2.7	9.2	30.0
Reported EPS_{t-1} (scaled by share price)	0.025	0.131	0.014	0.056	0.086
Reported EPS_{t-2} (scaled by share price)	0.029	0.112	0.013	0.053	0.082
Change in Earnings (scaled by share price)	0.000	0.202	-0.018	0.005	0.025
OCF_{t-1} (scaled by share price)	0.110	0.222	-0.006	0.051	0.168

Panel B: Descriptive statistics of the forecasts

	Mean	St. Dev.	Q1	Median	Q3
Analyst forecasts (all – per share price)	0.067	0.084	0.040	0.068	0.098
• Forecasts per share before SEO filing	0.068	0.083	0.041	0.068	0.098
• Forecasts per share after SEO filing	0.066	0.084	0.038	0.068	0.098
Days between forecast and filing (before)	44	38	62	33	14
Days between forecast and filing (after)	44	41	10	35	65

Panel A of the table gives descriptive statistics for variables characterizing the 1,733 SEOs under study. Panel B gives the same statistics for the 22,626 forecasts understudy (11,313 before and 11,313 after the SEO filing). Earnings forecasts per share are scaled by beginning stock prices. All variables are winsorized at the 1% level.

Table 3: Changes in earnings forecasts around SEO announcements

AF	Coefficient	t-value
SEO	-0.002***	-3.67
EPS_{t-1}	0.347***	6.59
EPS_{t-2}	0.080	1.42
CHE	0.017	0.27
OCF_{t-1}	0.034***	2.65
Country-Year fixed effects	Yes	
Industry fixed effects	Yes	
# obs.	22,626	
R^2	0.675	

The table gives the results from the baseline regression model (1):

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 EPS_{jt-1} + \alpha_3 EPS_{jt-2} + \alpha_4 CHE_j + \alpha_5 OCF_{jt-1} + FX + \varepsilon \quad (1)$$

AF is the analyst forecast scaled by beginning share price; *SEO* is a binary variable that takes the value one if the forecast is made after the SEO filing and zero otherwise; EPS_{t-1} is earnings per share for year t-1 scaled by beginning share price; EPS_{t-2} is earnings per share for year t-2 scaled by beginning share price; *CHE* is the change in EPS from year t-2 to year t-1 scaled by beginning share price; OCF_{t-1} is the operating cash flow per share for year t-1 scaled by beginning market capitalization; *FE* are country, industry, and year fixed effects. All variables are winsorized at the 1% level. All regressions were run without the intercept. T-values are based on standard errors adjusted for country-industry-year clusters. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 4: Impact of issue characteristics on changes in forecasts around SEO announcements

	(1) Firm size (*SIZE*)	(2) Analyst Following (*FOW*)	(3) Total Accruals (*TACC*)	(4) SEO Value (*SEOVAL*)	(5) Big Four Auditor (*BIGF*)
SEO	-0.006***	-0.008***	-0.002***	-0.001***	-0.001
	(-2.60)	(-3.90)	(-3.51)	(-2.99)	(-0.78)
$CHAR_n$	-0.000	0.002	0.004	0.017	0.004
	(-0.16)	(0.65)	(0.27)	(1.52)	(0.93)
$SEO*CHAR_n$	0.001**	0.002***	0.001	-0.003*	-0.001
	(2.05)	(3.28)	(0.31)	(-1.86)	(-0.71)
Controls	Yes	Yes	Yes	Yes	Yes
Country-Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
# obs.	22,626	22,626	21,192	22,030	22,590
R^2	0.675	0.675	0.687	0.679	0.674

The table gives the results from the regression of equation (2):

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 CHAR_j + \alpha_3 SEO*CHAR_j + \alpha_4 EPS_{jt-1} + \alpha_5 EPS_{jt-2} + \alpha_6 CHE_j + \alpha_7 OCF_{jt-1} + FX + \varepsilon \quad (2)$$

AF is the analyst forecast scaled by beginning share price; *SEO* is a binary variable that takes the value one if the forecast is made after the SEO filing and zero otherwise; $CHAR_j$ is one of the five following issue characteristics:

(1) *SIZE*: A proxy for firm size calculated as the log value of the market capitalization;
(2) *FOW*: Log number of analysts following the firm during year 0;
(3) *TACC*: Total accruals available to the firm calculated using the cash flow method: (earnings before extraordinary items less net cash flow from operating activities and net cash flow from investing activities) from year t-1 scaled by market cap;
(4) *SEOVAL*: The value of the proceeds from the SEO issue scaled by beginning market capitalization;
(5) *BIGF*: A binary variable that takes the value one if the firm was audited by one of the big four during year t-1.

Control variables are as defined in Table 3. All regressions were run without the intercept. T-values are based on standard errors adjusted for country-industry-year clusters. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 5: Impact of forecast characteristics on changes in forecasts around SEO announcements

	(1) Underwriter (*BRO*)	(2) Analyst Experience (*EXP*)	(3) Firms Followed (*FOL*)	(4) Regulation (*MAD*)	(5) Underwriter & Regulation (*BRO* x *MAD*)
SEO	-0.002***	-0.002***	-0.003***	-0.003*	-0.003**
	(-3.54)	(-3.84)	(-2.83)	(-1.79)	(-2.54)
$CHAR_1$	0.002	0.001	-0.002	-0.005	-0.006*
	(0.79)	(0.19)	(-1.45)	(0.494)	(-1.79)
SEO*$CHAR_1$	0.000	0.006*	0.001	0.001	0.003**
	(0.06)	(1.77)	(1.10)	(0.53)	(2.12)
$CHAR_2$					-0.006
					(-0.95)
SEO*$CHAR_2$					0.001
					(0.92)
SEO*$CHAR_1$*$CHAR_2$					-0.004*
					(-1.87)
Controls	Yes	Yes	Yes	Yes	Yes
Country-Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
# obs.	22,626	22,626	21,842	21,240	21,240
R^2	0.675	0.675	0.677	0.664	0.664

The first four columns of the table give the results from the regression of equation (2), an adaptation of the baseline model:

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 CHAR_j + \alpha_3 SEO*CHAR_j + \alpha_4 EPS_{jt-1} + \alpha_5 EPS_{jt-2} + \alpha_6 CHE_j + \alpha_7 OCF_{jt-1} + FX + \varepsilon \quad (2)$$

AF is the analyst forecast scaled by beginning share price; *SEO* is a binary variable that takes the value one if the forecast is made after the SEO filing and zero otherwise; $CHAR_j$ is one of the four following forecast characteristics:

(1) *BRO*: A binary variable that takes the value one if the analyst is employed by one of the underwriters of the SEO issue;
(2) *EXP*: A binary variables that takes the value one if the analyst experience as at the forecast issue date is less than 6 months;
(3) *FOL*: A binary variable that takes the value one if the analyst followed more than 7 firms in the previous 12 months;
(4) *MAD*: A binary variable which takes the value one if the forecast was made after the implementation of the directive in the respective country;

Column (5) gives the results from the regression that introduces a three-way interaction between *SEO*, *BRO*, and *MAD* where $CHAR_1$ is *BRO* and $CHAR_2$ is *MAD*. Control variables are as defined earlier. All regressions were run without the intercept. T-values are based on standard errors adjusted for country-industry-year clusters. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 6: Impact of SEO on analyst forecasts – robustness checks

	(1) Shorter Window	(2) Control Sample
SEO	-0.002** (-2.03)	0.019*** (2.65)
SAMPLE		0.020*** (2.76)
SEO*SAMPLE		-0.021*** (-2.89)
Controls	Yes	Yes
Year fixed effects	No	Yes
Country fixed effects	No	No
Industry fixed effects	Yes	Yes
Country-year fixed effects	Yes	No
# obs.	3,382	23,254
R^2	0.671	0.608

The table gives the results using a restricted subsample in column 1 from the regression of equation (1) and a control sample in column 2 using the following equation:

$$AF_{ijt} = \alpha_1 SEO + \alpha_2 SAMPLE + \alpha_3 SEO*SAMPLE + \alpha_4 EPS_{jt-1} + \alpha_5 EPS_{jt-2} + \alpha_6 CHE_j + \alpha_7 OCF_{jt-1} + FX + \varepsilon$$

AF is the analyst forecast scaled by beginning share price; *SEO* is a binary variable that takes the value one if the forecast is made after the SEO filing and zero otherwise; each column represents a different sample:

(1) Shorter window: A subsample where only analyst forecasts that are issued within 3 days following the SEO filing date and their corresponding forecast before the SEO filing enter the sample;

(2) Control sample: A sample of firms that are not suspected to manage earnings enter the sample for comparison, *SAMPLE* is a binary variable that takes the value one if the observation belongs to the treatment sample, and zero otherwise;

Control variables are as defined earlier. All regressions were run without the intercept. T-values are based on standard errors adjusted for country-industry-year clusters. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

III. Do analyst forecasts predict firm value better than reported earnings? Evidence from seasoned equity offerings

Abstract

Recent studies have identified that financial analysts increasingly forego forecast accuracy for informativeness. That is, they forecast earnings that deviate from reported earnings when the latter fail to reflect the true performance of the firm, especially when earnings are managed. Using data from European firms this study compares the value relevance of analyst forecasts and reported earnings around Seasoned Equity Offerings (SEO), when upwards earnings management is extensively documented. The empirical findings are as follows. (1) The value relevance of consensus analyst forecasts is superior to the value relevance of reported earnings in, (a) the year of the SEO issue owing to the over optimism bias of opportunistic analysts, and (b) the year following the issue, specifically after the reversal of the investor overpricing of SEOs, owing to analyst informativeness. (2) Analysts who, (a) revise their forecasts downwards after the SEO announcement, or (b) forecast lower than reported earnings in the year of issue, forecast earnings that are more value relevant than that of their counterparts in the year following the SEO. (3) After the adoption of the Market Abuse Directive, forecasts issued by affiliated analysts involved in the SEO process are more value relevant than forecasts issued by unaffiliated analysts following the reversal of SEO overpricing. These findings, consistent with the investor over-optimism hypothesis around SEOs, indicate that while some analysts surpass accuracy to favor with the management or attract trading volume in the short-term, other analysts better predict the performance of issuing firms in the long-term in a bid to be informative. This study confirms that some analysts prefer informativeness that is discussed scantily in the literature, and contributes by identifying conditions and characteristics instigating this preference.

Keywords: forecast accuracy, informativeness, value relevance, seasoned equity offerings

1. Introduction

Forecast accuracy has been unanimously seen as a key performance indicator of financial analysts by capital market participants for decades. It is known, however, that analysts may compromise forecast accuracy when facing conflicting incentives or suffering from cognitive failures (Lim, 2001).[5] Recent literature shows that financial analysts may willingly issue unbiased forecasts that deviate from reported earnings, sacrificing accuracy, even if they face no conflicts of interest. Louis et al. (2013) report that analysts forego forecast accuracy, when firms engage in earnings management compromising the quality of reported earnings, for the sole benefit of their clients. Such forecasts are called informative as they are expected to have greater value relevance – the ability of accounting information to predict firm value – than earnings that have been manipulated. The value relevance of earnings, on the other hand, has also been studied in detail initiating from Ball and Brown (1968). Three broad definitions of earnings have been used in the literature: (1) the earnings figure prepared by managers according to the Generally Accepted Accounting Principles (GAAP), better known as reported or GAAP earnings; (2) the earnings figure issued by managers through press releases, better known as pro forma earnings; and (3) the earnings figure reported by forecast data providers (FDPs) such as I/B/E/S, better known as street earnings. The latter two definitions encompass the idea that the mandated earnings figure may be of low quality and needs to be supplemented by a more sustainable or recurring earnings figure (Entwistle et al., 2010). The second definition adjusts GAAP earnings for transitory items identified by the management,

[5] Analysts facing conflicts of interest forecast less accurately when it is beneficial for their employers (Michaely & Womack, 1999), for their careers (Hong & Kubik, 2003), or when it increases their commission (Jackson, 2005). They may also deviate due to a cognitive bias and over optimism (Chen & Jiang, 2006; Beyer & Guttman, 2011).

whereas the third definition adjusts GAAP earnings for similar items identified by analysts.[6] This paper investigates whether informative analysts who convey valuable information in their forecasts are more value relevant, and therefore, predict firm value better than GAAP or street earnings. This scenario is plausible when firms engage in earnings management deteriorating the quality of GAAP earnings. FDPs adjust either the GAAP or pro forma figures available in the market, both supplied by managers, to come up with the actual street earnings figure. As they would be unable to undo the unobvious manipulation, the street earnings figure may contain a value-irrelevant earnings management component. However, adjustments made to GAAP earnings may also lose the earnings management component contained in certain items. Therefore, both GAAP and street earnings are pertinent to compare with analyst forecasts. Analysts would then have to decide whether to forecast accurate earnings by including this component or informative earnings by excluding it. In the case when both GAAP and street earnings misrepresent the true performance of the firm, analysts may give up forecast accuracy to try and communicate informative forecasts to investors.

The Seasoned Equity Offering (SEO) environment used in this study is best known to incubate significant upwards earnings management behavior in issuing firms (Teoh et al., 1998; Rangan, 1998). Assuming analysts are unaware of an upcoming SEO, forecast revisions after the SEO announcement would be useful to study analyst behavior and intention. An upward revision in the analyst forecast after the announcement indicates analyst preference for accuracy as s/he would expect earnings to be managed upwards. A downward revision confirms informativeness,

[6] In the case of I/B/E/S, they themselves adjust actual earnings released into the market place for comparability with the majority of analysts supplying the respective forecast (I/B/E/S International Inc., 2000, p. 7).

given this revision increases the eventual forecast error (street minus forecast). The downward revision goes against the analyst over-optimism theory and any conflicts of interest that usually inflate negative forecast errors, as this revision would increase positive forecast errors. A no-change in the analyst forecast could be interpreted either way (see section 2.3 for a detailed discussion). Literature also shows that investors overvalue issuing firms and are subsequently disappointed with negative returns from the first and up to five years after the issue (Spiess & Affleck-Graves, 1995; Loughran & Ritter, 2000). Informative analysts would therefore forecast earnings that reflect the true long-term performance of the firm and not the overvalued or managed component of earnings. Thus, the SEO set-up allows the drawing of the conclusion that analysts deliberately forego forecast accuracy for informativeness to provide useful information to their clients.

This study compares the value relevance of analyst forecasts issued after the SEO announcement with that of GAAP earnings as well as street earnings reported by I/B/E/S. Specifically, we test the ability of analyst forecasts, GAAP earnings, and street earnings in the year of, and the year following SEO issue to predict price levels and returns. Using modified versions of the Ohlson model (1995) we test two different models for each earnings metric separately. We compare the adjusted-R^2s in each of the models by means of the Vuong *Z* test (1989) to determine which metric better predicts price levels and returns. For 1,692 SEOs issued in Europe during 2000-2016, we find that the consensus analyst forecast predicts share prices better than reported earnings in the year of the issue though not the year following the issue. Further tests show that the consensus analyst forecast has greater value relevance once the market expectedly corrects itself for the overpricing of SEOs. Similar tests on a control sample of firms, that are not susceptible of managing earnings, show no

significant differences between the predictive ability of analyst forecasts and reported earnings. Furthermore, we test whether specific forecast characteristics namely, reaction to the SEO announcement, forecast errors, and conflicts of interest affect this predictive ability. We find that in the year following the SEO issue, analysts who react negatively to the SEO announcement by revising their forecasts downwards predict share prices and returns better than opportunistic analysts who revise upwards. Likewise, analysts who record positive forecast errors (forecasts lower than street earnings), evidently foregoing accuracy, predict prices and returns better than over-optimistic analysts with zero or negative forecast errors in the year following the issue. Although the opportunistic and over-optimistic analysts' forecasts have greater value relevance in the year of the SEO issue, but, informative analysts' forecasts are more value relevant in the following year. We also find that affiliated analysts, who are employed by either one of the underwriters of the SEO or a brokerage or institution that helps with the underwriting process, predict firm value better than unaffiliated analysts in the year following the SEO issue, especially after the adoption of the Market Abuse Directive (MAD) in the EU. As a test of robustness, we check and confirm that street earnings predict firm value better than GAAP earnings in the year of the SEO issue but not in the following year. All results are also robust to controlling for country, industry, and year fixed effects.

These results suggest that not all analysts forecast similarly. Some analysts may strive to be accurate or even surpass accuracy to curry favor with the management, attract trading volume, or generate underwriting business. Others may sacrifice accuracy just to be informative, to forecast earnings that reflect the true performance of the firm, and to help their clients make better long-term investment decisions. As explained by the investor optimism hypothesis (Teoh et al., 1998), the

market overvalues SEOs in the year of issue. Analysts looking to take advantage of this overvaluation would forecast managed earnings misleading investors and generating greater trading volume. The forecasts of these analysts are therefore more value relevant in the year of the issue, consistent with both the analyst bias and over-optimism hypothesis around SEOs (Feng & McVay, 2010). Contrarily, analysts looking to be informative would forecast the unmanaged component of earnings which would not be as value relevant in the year of the issue. The forecasts of these analysts, thus, have greater predictive ability only in the following year when actual earnings and prices begin to decline. This is in line with numerous studies that report that the decline in share prices and negative returns are concentrated in the year following the SEO issue (Rangan, 1998; Denis & Sarin, 2001; Iqbal et al., 2009). Therefore, forecasts of these informative analysts are more relevant for long-term investors who are interested in the true value of the firm, especially in the SEO setting where the long-term performance of the firm matters. Earnings forecasts, recommendations, and reports are generally directed towards these clients thus providing an informative forecast is most useful to them (Louis et al., 2013). The fact that these analysts forecast earnings with large positive forecast errors supports the informativeness hypothesis. The insignificance of forecast errors after the SEO announcement signifies that this component does not add value to the earnings figure. Furthermore, specific analyst and forecast characteristics and behavior help distinguish the informative analysts from others. These analysts communicate their informativeness by either downgrading forecasts after the SEO or increasing their *ex post* forecast errors. Affiliated analysts, contrary to popular belief, also behave similar to informative analysts by forecasting responsibly in the best interest of their clients especially after MAD. While most analysts may be accurate or informative, there may

also be analysts that are neither. Such analysts may be naïve or inexperienced though we expect them to be limited.

This study contributes to the literature on how financial reporting quality affects financial analysts' forecasts and forecast accuracy (Bradshaw et al., 2001; Louis et al., 2013; Bilinski & Eames, 2019). It also adds to the literature on earnings management, information quality, and the impact of regulation around SEOs (Rangan, 1998; Lee & Masulis, 2009; Fauver et al., 2017) and the impact of analyst forecasts around SEOs (Feng & McVay, 2010; Sun et al., 2020). It adds to the recent and underdeveloped notion that analysts may forego forecast accuracy for informativeness for their clients. It partly addresses the suggestion that research needs to 'establish whether analysts lack the sophistication to anticipate accrual-induced earnings reversals' made by Bradshaw et al. (2001, p. 73). This is done by detecting that around SEOs which are accompanied by high accruals, informative analysts are able to predict prices and returns better than their peers. While the overarching conclusion is similar to that of Louis et al. (2013), this study differs from theirs in a number of ways. First, they conclude that all analysts are informative whereas we categorize accurate and informative analysts based on certain characteristics. Second, the methodologies are different in that they test the impact of earnings management on analyst forecast deviations from preannounced earnings while we compare the value relevance of analyst forecasts and reported earnings. Third, they do not directly test the value relevance of the forecasts whereas we use tested models to draw the conclusions. Fourth, they use mean consensus forecasts for almost all of their tests while we use individual analyst forecasts when distinguishing informative analysts. The mean consensus is affected by extreme values and ignores the individualistic nature of different financial analysts. By using individual forecasts we are able to

examine specific forecast characteristics that make some analysts informative, demonstrating the importance of this difference. Fifth, they do not differentiate between upwards and downwards earnings management and use discretionary accruals as a proxy while we focus only on upwards earnings management using SEOs. While discretionary accruals are the most popular proxy for earnings management in the literature[7], their use in this context makes it hard for analysts to know beforehand that earnings will be managed. The SEO announcement date in this study provides a neat benchmark that ensures analysts become aware of upwards earnings management only after that date. The inferences made in this study are therefore more robust and add value to the growing body of literature on the accuracy versus informativeness of analyst forecasts. It contributes specifically by identifying conditions, such as regulation, and characteristics, such as forecast revision and forecast errors, that make analyst forecasts more informative and thus more value relevant.

The next section discusses the background and literature relevant to this study. Section 3 defines the hypotheses and describes the research design. Section 4 describes the sample and its characteristics. Section 5 discusses the results while section 6 concludes.

2. Background

2.1. Why would financial analysts give up forecast accuracy?

Financial analysts, and their earnings forecasts, have been studied in great detail as they play a vital role in capital markets. Managers and investors alike are more than

[7] Some studies also use real earnings management (Cohen & Zarowin, 2010). See Black et al. (2017) for further details.

interested in how and what analysts forecast as they indirectly affect share prices (Park & Stice, 2000).[8] Accurate forecasts have universally been implied as being superior to inaccurate forecasts for ages (Ramnath et al., 2008, p. 42). Two broadly defined theories explain why analysts might diverge from issuing accurate forecasts (Lim, 2001). (1) Analysts might face conflicts of interest such as being employed by brokerage firms that have underwriting relationships with a firm the analyst follows (Michaely & Womack, 1999). Such analysts may issue overvalued forecasts to generate business that would in turn benefit their employers. (2) Analysts have a cognitive bias where they overweight positive information and underweight negative information causing forecasts to be systematically overoptimistic (Chen & Jiang, 2006; Dichev & Tang, 2009; Drake & Myers, 2011). Bradshaw et al. (2001) find that analysts are over-optimistic for firms with higher accruals while Dichev and Tang (2009) show that analyst forecast errors systematically increase with greater earnings volatility. These studies indicate that forecast accuracy deteriorates when earnings are difficult to forecast, though none of them implies that this deterioration is exchanged by informative or value relevant forecasts.

Louis et al. (2013) were the first to argue that analysts deliberately give up forecast accuracy to provide valuable information to their clients, calling it analyst informativeness.[9] They claim that since the primary objective of analysts is to provide valuation input for their clients, analysts forego accuracy to issue forecasts that best reflect the true performance of the firm. They show that for firms that engage in earnings management, thereby reducing earnings quality, the mean consensus analyst forecast deviates from the management's preannounced earnings in favor of

[8] Park and Stice (2000) show that the market reacts strongly to forecast revisions by analysts who have high firm-specific accuracy in the previous two years

[9] Louis et al. (2013) do not particularly present their explanation of why analysts might deviate from forecast accuracy as a novel theory. They base it on previous studies that support either the conflicts of interest theory or the cognitive bias theory.

informativeness. The analysts in their study are assumed to have no particular conflicts of interest, bias, or over-optimism. In fact, these analysts are credited with carefully removing the earnings management component from their forecasts for informativeness. This study improves on their theory by using a robust methodology with individual analyst forecasts, and finds certain conditions and forecast characteristics that define informative analysts.

As analysts help their clients make investment decisions, they must forecast figures that better reflect share prices and increase the value relevance of their forecasts. Bilinski and Eames (2019) show that analysts provide supplemental information for firms with low earnings quality for the benefit of investors. However, they imply that analyst forecasts for these firms suffer from low value relevance based on previous literature (Bradshaw et al., 2001). Bradshaw et al. (2001) do report the inability of forecasts to predict future earnings of firms with high accruals. However, they do not directly test the predictive ability of these forecasts with respect to the firm value.[10] We confirm that analyst informativeness leads to forecasts that are more value relevant than reported earnings by directly testing the predictive ability of each metric.

2.2. Which earnings figure do analysts forecast?

Analyst forecasts are more value relevant than reported earnings when the latter showcase poor earnings quality. However, it is important to first understand value relevance and reported earnings. Value relevance – the ability of accounting information to convey the true value of the firm – has been studied in great detail by

[10] Bradshaw et al. (2001) use I/B/E/S data from 1988-1998 which has measurement errors (see Christensen (2007) for a detailed discussion on this issue). Additionally, they do not differentiate between positive and negative accruals and use consensus forecasts that ignore the individualistic characteristics of analysts.

accounting researchers. From the seminal work of Beaver (1968) and Ball and Brown (1968) who use earnings to predict firm value, researchers have explored the value relevance of several accounting figures. Still, the earnings figure has been scrutinized the most by researchers and investors alike and has undergone numerous deformations in accounting history. It is the responsibility of firms' managers to report these earnings according to accounting standards such as IFRS or US-GAAP, commonly known as GAAP earnings. Yet, discretion exists in determining what the firm has truly earned in a given financial period. This discretion causes variations in the reported figures across similar firms as well as deviations from the market value of the firm. GAAP earnings have therefore been the subject of study with respect to their usefulness and relevance in contemporary financial accounting as well as in financial investments. Almeida (2019) suggests that analysts, investors, and firms should stop focusing on earnings-per-share (EPS) as a measure of performance as it increasingly fails to reflect the true performance of the firm. Collins et al. (1997), report that the incremental value relevance of bottom line earnings has declined over the years 1953-1993. That is, earnings including extraordinary and special items have become less relevant in determining the market value of the firm. This decline in the value relevance of reported earnings indicates that investors assign greater value to other earnings metrics while making investment decisions.

An ever growing body of literature has identified that managers and analysts deviate from GAAP earnings in their earnings announcements and earnings estimates respectively (Marques, 2017). These supplementary earnings figures reported by managers in press releases or by analysts in their forecasts increasingly exclude items that they consider transitory and irrelevant to firm value (Black et al., 2018). The terms 'Alternative Performance Measures', 'Pro Forma Earnings', and 'Street

Earnings' have been used but collectively these figures are known as non-GAAP earnings. Some distinction has been made between the terms, for example, pro forma earnings are released by managers whereas street earnings are tracked by forecast database providers such as I/B/E/S or First Call. Essentially, they represent similar earnings figures that exclude value-irrelevant items from GAAP earnings.

Bradshaw and Sloan (2002) investigate non-GAAP earnings being reported to investors by managers and analysts alike. Firms remove one-time, non-cash expenses from earnings such as employee stock-based compensation, research and development expenditure, merger and acquisition costs, restructuring charges, write-downs and impairments, and certain results of subsidiaries. All the items identified to be excluded from GAAP earnings are expenses which cause street earnings to increase, whereas no revenues are identified to be excluded. In fact, Bradshaw and Sloan (2002) identify Amazon as one company that includes non-cash revenue in its non-GAAP earnings. Apparently, these exclusions seem to be management's trick to increase earnings and send out positive signals in the market. However, the exclusion of such expenses increases the value of the earnings figure with respect to predicting future firm value according to a vast body of literature (Bradshaw & Sloan, 2002; Brown & Sivakumar, 2003; Aubert, 2010). Analysts also exclude these expenses from their forecasts when they believe they are not informative (Gu & Chen, 2004). Later research, however, showed that this increase in value relevance is attributable to measurement errors in earnings surprises because of different definitions of actual and forecasted earnings used by I/B/E/S (Cohen et al., 2007). Abarbanell and Lehavy (2007) also show that statistical findings to support the GAAP versus street literature are not robust. These papers criticize studies conducted using North American data which differs considerably from European data. Choi et al. (2007) and Aubert (2010),

using data from UK and France respectively, conclude that non-GAAP earnings are significantly more informative and value relevant than GAAP earnings. Since analysts forecast street earnings, we use street earnings as the benchmark to judge analyst forecast accuracy.

2.3. The SEO set-up and previous studies on the value relevance of analyst forecasts

The SEO environment provides near laboratory conditions to test analyst forecast informativeness and its subsequent value relevance. This is because analysts are expected to be informative when earnings are managed and SEOs are widely reported to be surrounded by abnormally high discretionary accruals, a proxy for earnings management. Teoh et al. (1998) and Rangan (1998) both show that firms that issue equity engage in upwards earnings management during the period of and the period following the issue. A key motivation of managers managing earnings around SEOs is to inflate share prices to generate greater proceeds. Sun et al. (2020) investigate analyst forecasts around SEOs and find that analyst optimism bias is positively correlated with SEO investor bid prices. That is, an increase in analyst forecasts, that are already over optimistic, increases SEO bids that investors submit. One noteworthy concern with their study is that they use mean or median analyst forecasts issued up to one year before the SEO date. Plenty of these forecasts will not have incorporated the effect of the SEO as analysts would be unaware of the SEO this early. Before the SEO is formally announced, the market, and therefore analysts, would have no information of potential earnings management by the firm. After the announcement, analysts would be fully aware that the firm is likely to engage in significant upwards earnings manipulation. Therefore, the SEO announcement date provides a neat benchmark to

assess the intention of an analyst to include or exclude the managed component of earnings from his/her revised forecast. Hence, we use individual analyst forecasts *after* the SEO announcement or the last forecast before earnings announcement for our tests.

Analyst forecast revision after the SEO has several interpretations. An upward revision after the SEO announcement indicates either accuracy or opportunism. Analysts looking to curry favor with the management, attract underwriting business for their employers, or generate trading volume to gain commission would revise their forecasts upwards preempting the SEO overpricing. A downward revision, on the other hand, shows that the analyst prefers informativeness. If an analyst does not change his/her forecast, it could mean either accuracy or informativeness depending on how the analyst came up with his/her forecast before the announcement. If the analyst prepared his/her forecast using management's forecasts through recent management guidance then a no-change indicates accuracy as this forecast would already contain the managed component of earnings. If the analyst prepared the forecast on their own, a no-change indicates preference for informativeness. For the tests that use individual analyst forecasts, we exclude all analysts who issue a forecast before the SEO announcement and not after, and vice versa. Subsequently, the results of this study are not applicable to such analysts.

Few studies have engaged in using analyst forecasts while calculating the value relevance of different earnings measures. Fulkerson and Meek (1998) use analyst forecasts as a proxy for the market's expectation of earnings to find the value relevance of reconciliations to US-GAAP of non-US firms listed on US exchanges. They find that analyst forecasts are value relevant for some non-US firms that prepare reconciliations and not for others. Ou and Sepe (2002) use analyst forecasts similarly

as a proxy for future earnings and find that if these forecasts are closer to (farther from) previous reported earnings, then reported earnings have greater (lesser) value relevance compared to book value. The value relevance of analyst long-term growth forecasts has been studied for biotech firms (Tan & Lim, 2007) and of analyst forecast errors for emerging markets (Karamanou, 2012). Karamanou (2012) reports that analyst forecast errors explain stock returns better than a random walk model for a recent sub-period in emerging markets. However, no study has directly tested the value relevance of analyst forecasts and compared it to that of street earnings. This study joins the stream of literature that explores the effect of financial reporting quality on analyst forecasts and forecasting behavior (Bradshaw et al., 2001; Elgers et al., 2003; Louis et al., 2013; Bilinski & Eames, 2019) by specifically testing the value relevance of the forecasts.

3. Hypotheses development and research design

3.1. Hypothesis for the predictive ability of analyst forecasts relative to reported earnings

The implicit assumption that analysts strive for accuracy has softened with recent developments in the literature on financial analysts. Particularly, the idea that analysts would forego accuracy only for their personal interests (Beyer & Guttman, 2011) or due to a cognitive bias (Chen & Jiang, 2006) has been challenged. Louis et al. (2013) have presented evidence of analysts deviating from accuracy to provide valuable information to their clients through informative forecasts. This occurs when firms experience low earnings quality which is usually measured by abnormal accruals in the literature. Bradshaw et al. (2001) also show that high accruals have a negative association with analyst forecast accuracy though they do not imply that low accuracy

is replaced by informativeness in the forecasts. Since firms are documented to have abnormally high accruals in the year they issue an SEO (Rangan, 1998; Iqbal et al., 2009), forecasts of informative analysts are expected to suffer from inaccuracy after the SEO announcement. The underlying assumption is that before the announcement date analysts are unaware of the SEO and forecast revisions issued after that date fully incorporate the news. Thus, forecasts issued after the SEO announcement will have greater forecast errors. However, these errors are of two types: (1) positive forecast errors (forecasts lower than reported earnings) that can be expected to increase for informative analysts who forecast earnings void of the managed component, and (2) negative forecast errors (forecasts higher than reported earnings) that can be expected to increase for opportunistic analysts looking to attract trading volume and such. We conjecture that analysts with positive forecast errors issue forecasts that are more value relevant than reported earnings once the SEO overpricing is reversed. Meanwhile, analysts with negative forecast errors issue forecasts with greater predictive ability only during the SEO overpricing, which is mostly during the year of the issue.

Before evaluating the informativeness of analyst forecasts, the superiority of street earnings must be considered. For analyst forecasts to be most informative, they must have greater predictive ability than reported earnings which may be in the form of GAAP earnings or street earnings. Although US-based studies have conclusively established the phenomenon that non-GAAP earnings predict firm value better than GAAP earnings, especially because of non-GAAP disclosure specific regulation in that market, European studies are lagging. Guillamon-Saorin et al. (2017) show that for the top 500 European industrial firms, non-GAAP measures are informative to capital markets. The fact that our sample relates to earnings of poor quality, because

of SEOs, impacts the relative value relevance of each earnings metric. Research has shown that the GAAP earnings figure is manipulated upwards in the year of and the year following SEO issue (Teoh et al., 1998; Rangan, 1998; Fauver et al., 2017). Since street earnings are derived by FDPs from GAAP earnings issued by managers in press releases, these figures might also include that manipulated component and may hence be of lower quality. Consequently, the value relevance of the inaccurate analyst forecasts issued after the SEO announcement must be gauged with the value relevance of street earnings. However, some transitory items removed from the calculation of street earnings may include earnings management, such as transitory write-downs or impairments. The exclusion of such items may cause street earnings to not capture the entirety of the managed component of earnings. Thus, it is imperative to compare the value relevance of analyst forecasts with both earnings measures. Another consideration before testing the informativeness hypothesis is of the investor mispricing theory for firms issuing equity (Loughran & Ritter, 1995; Loughran & Ritter, 2000; Elgers et al., 2003). Specifically, research on SEOs has shown that investors overvalue issuing firms and are subsequently disappointed with negative returns from the first and up to five years after the issue (Spiess & Affleck-Graves, 1995; Teoh et al., 1998; Rangan, 1998; Iqbal et al., 2009). Iqbal et al. (2009), for example, find that for UK SEOs, investors naively expect inflated earnings at the time of offer to be permanent. Later, they are disappointed by declining earnings and thus revise their expectations about firm value downwards. Therefore, informative analyst forecasts during the SEO issue year would not predict firm value any better than reported earnings. In fact, the forecasts of opportunistic analysts would perhaps be more value relevant around that time as these analysts are known to increase forecasts at that time (Feng & McVay, 2010; Sun et al., 2020). It would only be after the

temporary overvaluation of issuing firms that informative analyst forecasts predict value better than reported earnings, which formulates the first testable hypothesis:

H1: Analyst forecasts following SEO announcements predict share prices and returns better than reported earnings after the reversal of the market's temporary overvaluation of issuing firms

3.2. Hypotheses for analyst characteristics and conditions affecting the predictive ability

A distinctive contribution of this study is that it also uses individual analyst forecasts as opposed to mean or median consensus forecasts used by almost all studies relating to analyst forecasts before it (Bradshaw et al., 2001; Louis et al., 2013; Sun et al., 2020). The individuality and uniqueness of analysts is critical in studies that provide conclusions about analyst forecasts or recommendations. Not all analysts are created equal, in the sense that not all human beings can be expected to behave similarly. Analyst characteristics, for example, play a vital role in analyst forecasts (Clement, 1999), and that is just one aspect. Using the mean or even the median forecasts to infer the forecasting behavior or ability of all analysts is limited due to these measures of central tendency. Thus, some of the generalizations made in these studies remain questionable to the extent of further testing with respect to the characteristics of analysts. We hypothesize that analyst characteristics, forecasting behavior, and market conditions affect the predictive ability of analyst forecasts relative to reported earnings.

How analysts initially react to the SEO announcement and their eventual forecasting behavior around SEOs would also impact the value relevance of their forecasts. Foremost, analysts who revise their forecasts downwards after the SEO

announcement send out a negative signal about the issuing firm. Given the investor mispricing theory (Loughran & Ritter, 2000), once analysts know that a firm is going to issue equity, they would expect share prices to increase. Also given the abnormally high accruals and earnings management around the issue, they would expect earnings to increase. Still, if analysts revise forecasts downwards they seem to be signaling that their revision contains an incremental value. If analysts are informative then this incremental value must be able to predict share prices and returns better than those analysts who revise their forecast upwards. Moreover, analysts who have positive forecast errors – forecasts lower than street earnings – are evidently inaccurate and expectedly informative. These analysts hold minimum bias and their forecasts deny the over-optimism theory (Chen & Jiang, 2006; Beyer & Guttman, 2011). Given that earnings are significantly managed upwards around SEOs, analysts with positive forecast errors would be able to predict share prices and returns better than those analysts who have negative or zero forecast errors. Again, these effects would show only after the reversal of the market overpricing the SEO, formulating two testable hypotheses:

H2a: Analysts who revise their forecasts downwards after the SEO announcement predict share prices and returns better than their counterparts after the reversal

H2b: Analysts who have positive forecast errors in the year of the SEO issue, predict share prices and returns better than their counterparts after the reversal

Perhaps, one of the most discussed characteristic in the literature on financial analysts is conflict of interest. Michaely and Womack (1999) find that analysts facing conflicts of interest have a significant bias when issuing recommendations. They

show, for analysts who are employed by brokerage firms that are also underwriters of the firms the analysts follow, stock recommendations perform poorly compared to recommendations by unaffiliated analysts. Since our sample deals with issuing firms only, affiliated analysts must be separated from unaffiliated analysts for better generalization of the results. Based on Michaely and Womack (1999), we suspect forecasts issued by affiliated analysts, those employed by firms or institutions that help in the underwriting process of the corresponding SEO, to have lesser predictive ability than unaffiliated analysts after the market goes back to equilibrium. Since these analysts would forecast accurately by including the managed component of earnings, their bias would be reflected in the market's overvaluation of the issuing firm. In effect, the predictive ability of these affiliated-forecasts is expected to be better than, or as good as, reported earnings during the market's overvaluation. Reflecting on this conflict of interest issue, we also consider a major regulatory change in the EU: the Market Abuse Directive which addresses issues of market manipulation and insider trading. Specifically, the directive aims to reduce information asymmetry by requiring analysts to disclose any ties with the firms they follow. It is imperative to assess the forecasts of affiliated analysts before and after the adoption of MAD. Therefore, once the SEO overpricing reverses, we expect affiliated analyst forecasts to have greater explanatory power than their counterparts after the adoption of the directive, stating the third and final testable hypothesis:

H3: Affiliated analysts' forecasts following SEO announcements predict share prices and returns better than their counterparts after the reversal, subsequent to the adoption of MAD

3.3. Research design

The first hypothesis is tested using the following two variations based on the Ohlson (1995) model (although the estimation of each regression equation would produce different coefficients, for simplicity, the same letter is used to denote the regression coefficients in all equations):

$$P_{it} = \alpha_1 EARN_{it} + FX + \varepsilon \qquad (1)$$

$$\Delta P_{it} = \alpha_1 EARN_{it} + FX + \varepsilon \qquad (2)$$

The variables are as follows:

P_{it} is the price of firm *i* at the year-end *t*;
$EARN_{it}$ is either the median consensus analyst forecast ($MDAF_t$), GAAP earnings (EX_t) or street earnings (ES_t) of firm *i* for year *t*;
ΔP_{it} is the change in the price of firm *i* ($P_t - P_{t-1}$) for year *t*;
FX are the country, industry, and year fixed effects.

All variables are scaled by beginning share price in order to mitigate the effect of stock splits or share-for-share offers and discrepancies in the currencies and to limit heteroscedasticity. The first model uses median consensus analyst forecasts, reported earnings, and street earnings separately to predict the price level of the firm at the end of the SEO-issuing year and the following year. The second model predicts simple annual returns using each metric for both years. The predictive ability of each metric is tested for the price level and return at the end of year *t* and year *t+1* where the year *t* is during which the SEO is issued.[11] Anticipating the overpricing of SEOs (Loughran & Ritter, 2000), we use prices and returns of the following period in addition to the period of the SEO issue. As the abnormal negative returns are concentrated in the second year, we use two periods around the SEO issue (Rangan, 1998; Denis & Sarin,

[11] We call this year 0 in the rest of the paper.

2001). Regressing the earnings metric on both year-end prices and returns would determine how quickly the market corrects the mispricing making analyst forecasts more value relevant than reported earnings. The coefficients of determination in each model, adjusted-R^2s, are then compared using the Vuong test to determine which variable predicts the model better. The test performs a regression of the difference in the squared residuals of each model on a constant to test which model has lower residuals. The t-statistic of this regression gives the Vuong *Z* score. The Vuong test statistics reported in the entire paper are clustered at the country or year level as the clustering gives the proper standard error (Wooldridge, 2010).

We also test the models using individual analyst forecasts and forecast errors to check whether the errors contain any valuable information that may be missed out by the analyst forecasts. We decompose reported earnings into individual analyst forecasts (AF_t) and forecast errors (FE_t) in models 1 and 2. The modified models are as follows:

$$\text{Model 1: } P_{it} = \alpha_1 AF_{ijt} + \alpha_2 FE_{ijt} + FX + \varepsilon \quad (3)$$

$$\text{Model 2: } \Delta P_{it} = \alpha_1 AF_{ijt} + \alpha_2 FE_{ijt} + FX + \varepsilon \quad (4)$$

The variables are as follows:

P_{it} is the price of firm *i* at the year-end *t*;
AF_{it} is the individual analyst forecast of firm *i* by analyst *j* for year *t*;
FE_{it} is the forecast error of firm *i* by analyst *j* for year *t*;
ΔP_{it} is the change in the price of firm *i* ($P_t - P_{t-1}$) for year *t*;
FX are the country, industry, and year fixed effects.

Each model is tested using analyst forecasts and forecast errors before the SEO filing as well as after the SEO filing, and then compared with each other with respect to the relative explanatory power of each regression. The same tests on a control sample were also performed for comparison.

The second and third hypotheses are tested using individual analyst forecasts as they relate to the individualistic characteristics and forecasting behavior of analysts. For H2, we chose a subsample of SEOs for which at least one analyst revised her/his forecast upwards after the SEO filing and at least one analyst revised her/his forecast downwards. Similarly, a subsample where at least one analyst has a positive forecast error (street minus forecast) in the year of the SEO issue and at least one analyst has a negative or zero forecast error was obtained. The average of each type of forecast, upwards revision, downwards revision, positive error, and negative or zero error, was calculated. Each SEO, therefore, would have one average forecast of all analysts who revise upwards, one of all who revise downwards, one of all with positive errors, and one of all with negative or zero errors. These average forecasts were then compared with each other (upwards with downwards and positive with zero or negative) for year 0 and 1 to determine which characteristic makes forecasts more value relevant. For H3, since affiliated analysts were identified to be shy of 10% of the entire sample, it was impractical to compare their forecasts with unaffiliated analysts directly. Hence, the following modified version of model 1 was used to determine the value relevance of forecasts issued by affiliated analysts:

$$\text{Model 1: } P_{ijt} = \alpha_1 AF_{ijt} + \alpha_2 BRO + \alpha_3 BRO*AF_{ijt} + FX + \varepsilon \quad (5)$$

The indicator variable BRO equals one if the forecast is issued by an affiliated analyst. The coefficient of the interaction term determines whether affiliated analysts predict firm value better than their counterparts during the year of and the year following the issue. Equation (5) is run using two subsamples: one uses forecasts issued before the adoption of the Market Abuse Directive whereas the other uses forecasts issued after.

4. Data and sample statistics

The initial sample of all seasoned equity offerings from 2000-2016 by publicly listed European firms was obtained through Thomson One Banker Deals Analysis database. Financial services firms, real estate firms, and firms with duplicate issues on the same date were excluded following Rangan (1998). Individual analyst forecasts and street earnings were obtained from the I/B/E/S details file. Yearly share prices were obtained from Datastream which extracts them from their respective exchanges. GAAP earnings are the earnings excluding extraordinary items obtained from the Compustat Global Fundamentals Annual file. A final sample of 1,713 offerings from 1,126 firms from 26 countries remains. We use the SEO filing date as the benchmark to define forecasts issued before and after SEO following the literature (Ferreira & Laux, 2016).[12] The SEO filing date hence proxies the SEO announcement date accurately. This assumes that analysts, as well as investors and other market participants, are unaware of the SEO issue before this date. Hence, we use the first analyst forecast issued after the filing date in the analyses. For robustness, we also perform the same analyses using a control sample of firms that did not issue an SEO, in line with literature that tests the impact of information around SEOs (Fauver et al., 2017). The initial control sample of 430 firms with no structural changes in equity or debt or any other transactions that would make them susceptible to earnings management was obtained. Relevant data was extracted and treated similar to the treatment sample.

Insert Table 1 about here

---

[12] Fauver et al. (2017) also use the filing date as a proxy for the announcement date for European SEOs.

Table 1 reports the descriptive statistics of the sample and the variables used in the regressions. Panel A reports the firm-level statistics: prices, returns, and earnings, used in the analyses. The mean market capitalization of the firms is $3.6 billion whereas the median is $427 million showing a bias in the sample towards larger firms. The average SEO generates proceeds equal to 25% of the market cap of the firm. Price levels and returns showcase a declining trend over the two periods considered after the SEO as reported in numerous previous studies (see Rangan, 1998). Statistics also show that street earnings are systematically higher than GAAP earnings in the sample.[13] Panel B of the table reports summary statistics of analyst forecasts issued before and after the SEO filing in column (1), together with those of a control sample in column (2). Analyst forecasts in the treatment sample are much closer to street earnings than to GAAP earnings demonstrating that analysts tend to forecast the street earnings figures. The median forecast error before the SEO filing is closer to zero than the error after it. The reported Mann-Whitney two-sample statistic shows that forecast errors after the SEO are significantly higher than the forecast errors before in the treatment sample. There is no significant difference in these errors in the control sample. Forecast accuracy has therefore declined after the SEO filing in the treatment sample. The change in forecast errors (from before the SEO filing to after) are also reported for each sample. The Mann-Whitney statistic indicates that the change in forecast errors is significantly higher for the treatment sample than for the control sample. This indicates that the decline in forecast accuracy in the treatment sample is significant, showing that majority of analysts attempt to convey substantial information in their forecast revisions.

[13] Street earnings are known to be systematically higher than GAAP earnings. See Black et al. (2018).

5. Results

5.1. The predictive ability of analyst forecasts compared to reported earnings

The results from the equations (1) and (2) using median consensus analyst forecast, GAAP earnings, and street earnings are reported in Table 2. Panel A shows the regression results of the price level on each earnings metric for the year of the SEO issue (t=0) in column (1) and the following year in column (2). Panel B shows the results of regressing return on each earnings metric for both years as well. For both models, the median consensus analyst forecast has a higher response coefficient than GAAP or street earnings. The adjusted-R^2 is also higher using the consensus forecast for year 0. The Vuong *Z* test reported compares the adjusted-R^2s of GAAP or street earnings with that of consensus forecast. A positive statistic shows that the predictive ability using consensus forecast is higher compared to the predictive ability using GAAP or street earnings. The Vuong *Z* test rejects both GAAP and street earnings for year 0 in favor of the consensus forecast in both models. The results indicate that the consensus forecast is driven by opportunistic analysts who in year 0 forecast over-optimistically as documented in the literature (Feng & McVay, 2010; Sun et al., 2020). These over-optimistic forecasts align with investor overpricing of SEOs which produces a relatively higher predictive ability of the consensus forecasts. In year 1, the consensus forecast is only as good as GAAP earnings in predicting both prices and returns. In fact, street earnings become more value relevant than forecasts in year 1 as seen by the relatively lower coefficients and negative and significant Vuong *Z* tests in both models. Again, the results show that the consensus forecast is influenced by opportunistic analysts who in year 1 are unable to forecast the consequent decline in earnings and prices. Therefore, the consensus forecast is unable to predict firm value

any better than GAAP or street earnings. However, if GAAP earnings in year 1 are those that showcase declining earnings due to the reversal of accruals, they should predict firm value better than consensus forecast. We further investigate this issue by dismantling the sample which better represents this reversal.

Insert Table 2 about here

In order to dissect the consensus forecast, we must investigate its value relevance after ensuring that the firm has started experiencing a decline in earnings, prices, and returns. Studies show that issuing firms start experiencing these declining trends 12-24 and even 36 months after the SEO issue (Rangan, 1998; Iqbal et al., 2009; Fauver et al., 2017). In our sample, almost 60% of the SEOs are issued six months before the year-end, with 10% being issued in the last month. It is plausible that the market correction and reversal of accruals has not occurred for most of these issues in year 1. Therefore, we run the same models for two subsamples: (1) SEOs issued within the last six months of the year-end and (2) SEOs issued in the first six months of the year-end. The results are presented in Table 3, with columns (1) and (2) presenting the results from the first subsample and columns (3) and (4) presenting the results from the second subsample in both Panels A and B. The value relevance of consensus forecast is compared with that of GAAP earnings for year 0 in columns (1) and (3) and year 1 in columns (2) and (4). For SEOs issued in the last six months of the year-end the consensus forecast predicts prices and returns better than GAAP earnings owing to opportunistic analysts consistent with the results from Table 2. The noticeable difference is in column (4) of both panels where the consensus forecast predicts prices and returns better than GAAP earnings for SEOs issued in the first six months of the year-end. The Vuong test statistic rejects GAAP earnings in favor of

the consensus forecast for this subsample at year 1. The prices at year 1 are 18-24 months after the SEO issue which is when the reversal effects fully take place. This is consistent with the investor mispricing hypothesis (Loughran & Ritter, 2000) around SEOs. The reversal of this mispricing appears in the first and second year after the SEO as numerous studies point out that returns are significantly negative between 12 to 36 months after the issue (Denis & Sarin, 2001; Iqbal et al., 2009; Fauver et al., 2017) and not before. The null hypothesis is rejected in favor of H1 which confirms that analyst forecasts predict share prices and returns better than reported earnings after the reversal of the investors' overpricing of the issuing firm.

Insert Table 3 about here

We also investigate the value relevance of analyst forecasts around SEOs using individual forecasts and comparing them with that of a control sample consisting of firms not susceptible to manage earnings. Table 4 presents the results of the regression of forecasts on prices and returns in Panels A and B using equations (3) and (4) respectively. We find that analyst forecasts become more value relevant after the SEO filing whereas forecast errors lose their relevance. We notice no significant difference for the control sample. These results corroborate the results from Table 2 that opportunistic analysts predict prices and returns better than reported earnings. Their forecast errors, consequently, contain no significant incremental value. Similarly, untabulated results show that for informative analysts the forecast errors in year 1, after the reversal of the market's overpricing of issuing firms, contain no incremental value.

Insert Table 4 about here

5.2. The impact of forecast characteristics on predictive ability

How the analysts react to the SEO news is reflected in their forecast revisions. Moreover, forecast errors in the year of the SEO also showcase how the analyst perceives reported earnings and how much s/he deviates from it. The two forecast characteristics tested are forecast revisions and forecast errors. We claim that analysts who revise their forecasts downwards after the SEO filing and analysts who have positive forecast errors are informative. Both these characteristics imply a decline in forecast accuracy which is expected to be replaced with informativeness. Table 5 presents the results from the price and return models in Panel A and Panel B respectively. Columns (1) and (2) present the results for the forecast revisions while columns (2) and (3) present the results for forecast errors. Each characteristic is compared with its counter: upwards versus downwards for forecast revisions and positive versus negative (or zero) for forecast errors. At t=0, analysts who revise their forecasts upwards after the SEO filing predict both prices and returns better than analysts who revise downwards as shown by the higher coefficient and adjusted-R^2s. The Vuong test rejects the model using forecasts of analysts who revise downwards in favor of the model using forecasts of analysts who revise upwards. Clearly these are the opportunistic analysts that take advantage of the investor overpricing of SEO firms during the year of the issue. At t=1, the exact opposite results are observed. Analysts with upward revisions predict both prices and returns better than their counterparts. The Vuong test rejects the model using upward revisions in favor of the model using downward revisions for both the price and return model. Even though the downward revisions affect forecast accuracy, these analysts convey valuable information with respect to the long-term prices and returns of the issuing firms. Thus, these analysts are informative. Similar results are obtained when testing the

models based on analyst forecast errors. The analysts with positive forecast errors are significantly less value relevant in year 0, but are significantly more value relevant in year 1 than their counterparts using both models. The Vuong test rejects the model using forecasts of analysts that have negative or zero forecast errors in favor of the model using forecasts of analysts that have positive forecast errors in the year of the SEO issue. The null hypothesis is therefore rejected in favor of H2 confirming that analysts who revise their forecasts downwards and analysts who have positive forecast errors issue forecasts that are more value relevant than their respective counterparts.

Insert Table 5 about here

5.3. The predictive ability of affiliated analysts and the impact of MAD

Analysts facing conflicts of interest are expected to be over-optimistic (Michaely & Womack, 1999). Affiliated analysts would forecast higher than their peers in the year of the SEO issue for the benefit of their employers. Such analysts were identified using their employer information from I/B/E/S and matched with the list of underwriters of the SEO taken from the Thomson One Banker Deals Analysis database. Fauver et al. (2017) test the impact of regulation on SEO-performance. They show that the Market Abuse Directive adopted by countries around 2004-2005 has improved information quality around SEOs. Nineteen out of twenty-six countries in our sample are affected by the MAD. As the MAD requires financial analysts to disclose conflicts of interest, it becomes imperative to test specifically for the underwriter analysts before and after the adoption.

Panel A of Table 6 presents the results from equation (5) using forecasts issued after the MAD adoption in columns (1) and (2) and forecasts issued before the

adoption in columns (3) and (4). The coefficient of the interaction term is of interest here as it shows the incremental (or detrimental) effect of forecasts issued by affiliated analysts. Before the adoption of MAD, affiliated analysts predicted firm value as good as their counterparts in year 0 and 1 indicated by the insignificant interaction term. At t=0, since the majority of analysts behave opportunistically by forecasting earnings aligned with the inflated prices, affiliated analysts tend to do the same. After the adoption of MAD, however, at t=0 affiliated analysts issue forecasts that are significantly less value relevant than unaffiliated analysts. The coefficient of the interaction term is negative and significant at the 5% level inferring an overall lower response coefficient to determine prices for forecasts issued by affiliated analysts. At t=1, we would expect these analysts to predict prices better than their counterparts, though this is not the case. Affiliated analysts predict prices only as good as their counterparts at t=1 just like pre-MAD. Even though affiliated analysts seem to forecast informatively at t=0, their forecasts are not more value relevant than the forecast of unaffiliated analysts at t=1. This pushed us to further test forecasts of affiliated analysts post-MAD, specifically revisiting the timing of the SEO issue. Since we test the forecasts of affiliated analysts using an interaction term, it might convolute the results. At t=1 the reversal of the market's overpricing or abnormal accruals may not have occurred due to SEOs issued towards the end of the year-end. Therefore, we test the value relevance of forecasts issued by affiliated analysts post-MAD for SEOs issued in the first and second half of the year-end.

Insert Table 6 about here

Panel B of Table 6 presents results from equation (5) for forecasts issued after the MAD adoption using a subsample of SEOs issued in the last six months of the year-

end in columns (1) and (2) and a subsample of SEOs issued in the first six months of the year-end in columns (3) and (4). While affiliated analyst forecasts are significantly less value relevant in year 0 for SEOs issued in the second half of the year-end, they are significantly more value relevant in year 1 for SEOs issued in the first half of the year-end. The interaction term is significantly negative and then significantly positive at the 5% level respectively. The results are clearer to be interpreted with Panel A of the table as they show that after the adoption of MAD, affiliated analysts became more informative and issued forecasts that reflect the true, long-term performance of the firm. Since their forecasts explain prices better than their counterparts, analysts facing conflicts of interest seem to be working in the best interest of their clients. The results of Table 6 show that analysts facing conflicts of interest did not have greater predictive ability than their peers before MAD, but do have it afterwards. The MAD has been effective in reducing information asymmetry affecting analysts facing conflicts of interest, confirming H3 that affiliated analysts predict firm value better than their peers after the reversal of the market's overpricing, post-MAD.

5.4. Robustness checks

As tests of robustness, we check whether street earnings have greater predictive ability than GAAP earnings for our sample, and, whether using interactions for characteristics yields similar results. If street earnings do not have greater predictive ability than GAAP earnings then our inferences about the predictive ability of analyst forecasts become weak. Panel A of Table 7 shows the results from the equation using street and GAAP earnings over the two periods with results from model 1 (price level) in columns (1) and (2) and results from model 2 (returns) in columns (3) and (4). The Vuong *Z* test rejects GAAP earnings in favor of street earnings for year 0 in both

models. There is no significant difference between each earnings metric in year 1, indicating that GAAP earnings predict firm value as good as street earnings around this time. This can be explained by over-optimistic analyst forecasts reflect in street earnings in year 0, and the reversal of investors' overpricing of issuing firms and abnormal accruals in year 1. In year 0, opportunistic analysts drive street earnings higher accounting for its greater predictive ability during the market's overpricing of the firm. When firms start facing the decline in earnings and share prices, street earnings which are influenced by the majority of opportunistic analysts predict firm value only as good as GAAP earnings.

To test the impact of forecast characteristics we use an interaction term that compares the value relevance of forecasts with the specific characteristic with that of forecasts without that characteristic using the following equation:

$$\text{Model 1: } P_{ijt} = \alpha_1 AF_{ijt} + \alpha_2 CHAR + \alpha_3 CHAR*AF_{ijt} + FX + \varepsilon \qquad (6)$$

CHAR is an indicator variable that equals one if the characteristics exists and zero otherwise. For forecast revisions, CHAR equals one if the analyst revised forecast upwards and zero otherwise. For forecast revisions, CHAR equals one if the forecast error is positive in year 0 and zero otherwise. Panel B of Table 6 presents the results from equation (6) for forecast revisions in columns (1) and (2) and forecast errors in columns (3) and (4). For forecast revisions, the interaction term is significantly positive at t=0 and significantly negative at t=1 indicating that analysts who revise their forecasts upwards, and are opportunistic, predict firm value better than their peers at t=0 and worse than their peers at t=1. Similarly, for forecast errors, analysts who have positive forecast errors at year 0 predict firm value worse than their peers at t=0 and better than their peers at t=1. The results are consistent with those of Table 5 which differentiate opportunistic analysts from informative analysts and conclude that

while opportunistic analysts predict firm value better in the year of the SEO issue, informative analysts do so thereafter.

Insert Table 7 about here
---

6. Conclusion

Financial analysts play a vital role in capital markets as crucial knowledge producers. Their forecasts are used extensively by managers to meet or beat targets and by investors to make investment decisions. Researchers have also studied analysts and their forecast accuracy for decades and concluded that analysts sacrifice accuracy when facing conflicts of interest or due to over optimism. Recent studies have shown that analysts willingly forego accuracy to forecast earnings that reflect the true performance of the firm, especially when earnings are suspected to have been managed, such as around SEOs. This sacrifice in accuracy has been termed informativeness. If this is the case then analyst earnings forecasts should predict firm value better compared to reported earnings. Therefore, we compare the value relevance of analyst forecasts with that of reported earnings around SEOs, as earnings are reported to have been managed upwards around that time. Using SEOs issued in Europe during 2000-2016 we find that informative analyst forecasts predict firm value better than reported earnings in the year following the issue. This is consistent with the theory that investors initially overprice SEOs and are subsequently disappointed with declining returns 12 to 36 months after the issue. Furthermore, we identify that analysts who revise their forecast downwards after the SEO filing, or have positive forecast errors in the year of the SEO, forecast informatively. These analysts predict firm value better than their peers in the year following the SEO. Finally, we find that the MAD adoption in EU enhances the predictive ability of affiliated analysts who

forecast informatively after the adoption. The results are also robust to controlling for country, industry, and year fixed effects. The findings conform to the little but growing body of literature that establishes analyst preference for informativeness as opposed to accuracy or opportunism. This paradigm shift calls for a reinterpretation of analyst earnings forecasts by managers, investors, and researchers alike. This study confirms the informativeness hypothesis by directly testing the value relevance of analyst forecasts and contributes specifically by identifying informative analysts based on their characteristics and forecasting behavior. It contributes to the literature on how financial reporting quality affects forecast accuracy, as well as on earnings management and the impact of regulation on analyst forecasts around SEOs.

References

Abarbanell, J. S., & Lehavy, R. (2007). Letting the "Tail Wag the Dog": The Debate over GAAP versus Street Earnings Revisited. *Contemporary Accounting Research, 24*(3), 675-723.

Almeida, H. (2019). Is It Time to Get Rid of Earnings-per-Share (EPS)? *The Review of Corporate Finance Studies, 8*(1), 174-206.

Aubert, F. (2010). The relative informativeness of GAAP and pro forma earnings announcements in France. *Journal of Accounting and Taxation, 2*(1), 1-14.

Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research, 6*, 159-178.

Beaver, W. H. (1968). The Information Content of Annual Earnings Announcements. *Journal of Accounting Research, 6*, 67-92.

Beyer, A., & Guttman, I. (2011). The Effect of Trading Volume on Analysts' Forecast Bias. *The Accounting Review, 86*(2), 451-481.

Bilinski, P., & Eames, M. (2019). Analyst revenue forecast reporting and the quality of revenues and expenses. *Journal of Business Finance & Accounting, 46*, 136-158.

Black, D. E., Christensen, T. E., Ciesielski, J. T., & Whipple, B. C. (2018). Non-GAAP reporting: Evidence from academia and current practice. *Journal of Business Finance & Accounting, 45*(3-4), 259-294.

Black, E. L., Christensen, T. E., Joo, T. T., & Schmardebeck, R. (2017). The Relation Between Earnings Management and Non-GAAP Reporting. *Contemporary Accounting Research, 34*(2), 750-782.

Bradshaw, M. T., & Sloan, R. G. (2002). GAAP versus The Street: An Empirical Assessment of Two Alternative Definitions of Earnings. *Journal of Accounting Research, 40*(1), 41-66.

Bradshaw, M. T., Richardson, S. A., & Sloan, R. G. (2001). Do Analysts and Auditors Use Information in Accruals? *Journal of Accounting Research, 39*(1), 45-74.

Brown, L. D., & Sivakumar, K. (2003). Comparing the Value Relevance of Two Operating Income Measures. *Review of Accounting Studies, 8*, 561-572.

Chen, Q., & Jiang, W. (2006). Analysts' Weighting of Private and Public Information. *The Review of Financial Studies, 19*(1), 319-355.

Choi, Y.-S., Lin, S., Walker, M., & Young, S. (2007). Disagreement over the persistence of earnings components: evidence on the properties of management-specific adjustments to GAAP earnings. *Review of Accounting Studies, 12*, 595-622.

Christensen, T. E. (2007). Discussion of "another look at GAAP versus the Street: an empirical assessment of measurement error bias". *Review of Accounting Studies, 12*, 305-321.

Clement, M. B. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics, 27*, 285-303.

Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2-19.

Cohen, D. A., Hann, R. N., & Ogneva, M. (2007). Another look at GAAP versus the Street: an empirical assessment of measurement error bias. *Review of Accounting Studies, 12*(2), 271-303.

Collins, D. W., Maydew, E. L., & Weiss, I. S. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics, 24*, 39-67.

Cowen, A., Groysberg, B., & Healy, P. (2006). Which types of analyst firms are more optimistic? *Journal of Accounting and Economics, 41*(1-2), 119-146.

Denis, D. J., & Sarin, A. (2001). Is the Market Surprised by Poor Earnings Realizations Following Seasoned Equity Offerings? *The Journal of Financial and Quantitative Analysis, 36*(2), 169-193.

Dichev, I. D., & Tang, V. W. (2009). Earnings volatility and earnings predictability. *Journal of Accounting and Economics, 47*, 160-181.

Drake, M. S., & Myers, L. A. (2011). Analysts' accrual-related over-optimism: do analyst characteristics play a role? *Review of Accounting Studies, 16*, 59-88.

Dumontier, P., & Labelle, R. (1998). Accounting earnings and firm valuation: the French case. *European Accounting Review, 7*(2), 163-183.

Elgers, P. T., Lo, M. H., & Pfeiffer Jr., R. J. (2003). Analysts' vs. investors' weightings of accruals in forecasting annual earnings. *Journal of Accounting and Public Policy, 22*(3), 255-280.

Entwistle, G. M., Glenn, F. D., & Mbagwu, C. (2010). The Value Relevance of Alternative Earnings Measures: A Comparison of Pro Forma, GAAP, and I/B/E/S Earnings. *Journal of Accounting Auditing and Finance, 25*(2), 261-288.

Fauver, L., Loureiro, G., & Taboada, A. G. (2017). The impact of regulation on information quality and performance around seasoned equity offerings: International evidence. *Journal of Corporate Finance, 44*, 73-98.

Feng, M., & McVay, S. (2010). Analysts' Incentives to Overweight Management Guidance When Revising Their Short-Term Earnings Forecasts. *The Accounting Review, 85*(5), 1617-1646.

Ferreira, M., & Laux, P. (2016). Corporate Boards and SEOs: The Effect of Certification and Monitoring. *Journal of Financial and Quantitative Analysis, 51*(3), 899-927.

Fulkerson, C. L., & Meek, G. K. (1998). Analysts' Earnings Forecasts and the Value Relevance of 20-F Reconciliations from non-U.S. to U.S. GAAP. *Journal of International Financial Management and Accounting, 9*(1), 1-15.

Gu, Z., & Chen, T. (2004). Analysts' treatment of nonrecurring items in street earnings. *Journal of Accounting and Economics, 38*, 129-170.

Guillamon-Saorin, E., Isidro, H., & Marques, A. (2017). Impression Management and Non-GAAP Disclosure in Earnings Announcements. *Journal of Business Finance & Accounting, 44*(3), 448-479.

Heflin, F., & Hsu, C. (2008). The impact of the SEC's regulation of non-GAAP disclosures. *Journal of Accounting and Economics, 46*(2-3), 349-365.

Hong, H., & Kubik, J. D. (2003). Analyzing the Analysts: Career Concerns and Biased Earnings Forecasts. *The Journal of Finance, 58*(1), 313-351.

Huang, Q., & Skantz, T. R. (2016). The informativeness of pro forma and street earnings: an examination of information asymmetry around earnings announcements. *Review of Accounting Studies, 21*, 198-250.

I/B/E/S International Inc. (2000). The I/B/E/S Glossary. United States of America.

Iqbal, A., Espenlaub, S., & Strong, N. (2009). Earnings management around UK open offers. *The European Journal of Finance, 15*(1), 29-51.

Jackson, A. R. (2005). Trade Generation, Reputation, and Sell-Side Analysts. *The Journal of Finance, 60*(2), 673-717.

Karamanou, I. (2012). Value relevance of analyst earnings forecasts in emerging markets. *Advances in Accounting, incorporating Advances in International Accounting, 28*, 128-137.

Lee, G., & Masulis, R. W. (2009). Seasoned equity offerings: Quality of accounting information and expected flotation costs. *Journal of Financial Economics, 92*(3), 443-469.

Lim, T. (2001). Rationality and Analysts' Forecast Bias. *The Journal of Finance, 56*(1), 369-385.

Loughran, T., & Ritter, J. R. (1995). The New Issues Puzzle. *The Journal of Finance, 50*(1), 23-51.

Loughran, T., & Ritter, J. R. (2000). Uniformly least powerful tests of market efficiency. *Journal of Financial Economics, 55*(3), 361-389.

Louis, H., Sun, A. X., & Urcan, O. (2013). Do Analysts Sacrifice Forecast Accuracy for Informativeness? *Management Science, 59*(7), 1688-1708.

Marques, A. (2017). Non-GAAP earnings: International overview and suggestions for future research. *Meditari Accountancy Research, 25*(3), 318-335.

Michaely, R., & Womack, K. L. (1999). Conflict of Interest and the Credibility of Underwriter Analyst Recommendations. *The Review of Financial Studies, 12*(4), 653-686.

Ohlson, J. A. (1995). Earnings, Book Values, and Dividends in Equity Valuation. *Contemporary Accounting Research, 11*(2), 661-687.

Ou, J. A., & Sepe, J. F. (2002). Analysts Earnings Forecasts and the Roles of Earnings and Book Value in Equity Valuation. *Journal of Business Finance & Accounting, 29*(3), 287-316.

Park, C. W., & Stice, E. K. (2000). Analyst Forecasting Ability and the Stock Price Reaction to Forecast Revisions. *Review of Accounting Studies, 5*, 259-272.

Ramnath, S., Rock, S., & Shane, P. (2008). The financial analyst forecasting literature: A taxonomy with suggestions for further research. *International Journal of Forecasting, 24*(1), 34-75.

Rangan, S. (1998). Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics, 50*, 101-122.

Spiess, D. K., & Affleck-Graves, J. (1995). Underperformance in long-run stock returns following seasoned equity offerings. *Journal of Financial Economics, 38*(3), 243-267.

Sun, Q., Cheng, X., Gao, S., & Yang, M. (2020). Are SEO investors miseld by analyst optmisim bias? Evidence from investor bids in SEO auctions. *International Review of Economics & Finance, 68*, 90-104.

Tan, P. M., & Lim, C. Y. (2007). The value relevance of accounting variables and analysts' forecasts The case of biotechnology firms. *Review of Accounting and Finance, 6*(3), 233-253.

Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics, 50*, 63-99.

Vuong, Q. H. (1989). Likelihood Ratio Tests for Model Selection and Non-Nested Hypotheses. *Econometrica, 57*(2), 307-333.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data.* Cambridge: MIT Press.

Appendix: Tables

Table 1: Descriptive statistics

Panel A: Descriptive statistics of the issuing firms and consensus forecasts

	Mean	St. Dev.	Q1	Median	Q3
Beginning Market Capitalization (in millions of $)	3,604	9,032	108	427	2,129
SEO Value (scaled by Market Cap)	25.0%	0.402	6.0%	12.4%	26.0%
Price at year-end 0 (P_0)	1.173	0.607	0.838	1.084	1.389
Price at year-end 1 (P_1)	1.056	0.440	0.803	1.035	1.281
Return at year-end 0 (ΔP_0)	0.173	0.607	-0.162	0.084	0.388
Return at year-end 1 (ΔP_1)	0.056	0.440	-0.197	0.035	0.281
Median consensus analyst forecast ($MDAF_0$)	0.033	0.113	0.007	0.056	0.087
Median consensus analyst forecast ($MDAF_1$)	0.031	0.113	0.010	0.057	0.083
Street earnings reported by I/B/E/S (ES_0)	0.024	0.150	-0.000	0.058	0.091
Street earnings reported by I/B/E/S (ES_1)	0.026	0.123	0.004	0.057	0.085
GAAP earnings excluding extraordinary items (EX_0)	0.008	0.200	-0.034	0.046	0.086
GAAP earnings excluding extraordinary items (EX_1)	0.006	0.200	-0.024	0.046	0.080

Panel B: Descriptive statistics of individual forecasts

	(1) Treatment Sample			**(2) Control Sample**		
	Q1	Median	Q3	Q1	Median	Q3
Analyst Forecast before SEO (AF_0)	0.0394	0.0672	0.0932	0.0416	0.0611	0.0928
Analyst Forecast after SEO (AF_0)	0.0345	0.0648	0.0912	0.0405	0.0589	0.0969
Forecast error (FE) before SEO ($ES_0 - AF_0$)	-0.0129	-0.0002	0.0090	-0.0060	0.0005	0.0042
Forecast error (FE) after SEO ($ES_0 - AF_0$)	-0.0068	0.0005	0.0081	-0.0043	0.0004	0.0029
• Mann-Whitney test ($FE_{before} = FE_{after}$)	z = -5.490***			z = 0.064		
Change in Forecast errors (after – before)	-0.0041	0.0007	0.0084	-0.0022	0.0001	0.0038
• Mann-Whitney test (Treatment = Control)	z = 1.865*					

Panel A of the table gives descriptive statistics for variables characterizing the 1,692 SEOs issued by 1,111 firms under study. It reports the firm-level statistics: price, returns, and street and GAAP earnings, as well as median consensus analyst forecasts used in the analyses.

Panel B reports statistics of the 7,340 individual forecasts under study, before and after the SEO filing date in column (1), along with similar statistics of forecasts of a control sample in column (2). All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 2: Value relevance using consensus analyst forecasts

Panel A: Model 1 – Regression of price level on forecasts and actual earnings

Price – P_t	**(1) t=0** (n=1,684)			**(2) t=1** (n=1,563)		
	$MDAF_t$	EX_t	ES_t	$MDAF_t$	EX_t	ES_t
Earnings – $EARN_t$	1.402 (10.54)***	0.605 (8.11)***	0.940 (9.51)***	0.928 (9.86)***	0.477 (9.13)***	0.949 (11.24)***
Adj-R^2	0.8074	0.8023	0.8051	0.8825	0.8815	0.8846
Vuong *Z* for difference in adj-R^2 (compared to the model using $MDAF_t$)		3.45***	2.11**		1.05	-3.24***
Country, Industry, and Year FX	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Model 2 – Regression of returns on forecasts and actual earnings

Return – ΔP_t	**(1) t=0** (n=1,684)			**(2) t=1** (n=1,563)		
	$MDAF_t$	EX_t	ES_t	$MDAF_t$	EX_t	ES_t
Earnings – $EARN_t$	1.364 (10.58)***	0.578 (7.09)***	0.925 (9.67)***	0.895 (9.54)***	0.466 (8.97)***	0.926 (11.02)***
Adj-R^2	0.2084	0.1859	0.1999	0.1839	0.1784	0.1990
Vuong *Z* for difference in adj-R^2 (compared to the model using $MDAF_t$)		3.56***	2.00*		0.95	-3.44***
Country, Industry, and Year FX	Yes	Yes	Yes	Yes	Yes	Yes

Panel A of the table presents the regression results from model 1 for year 0 in column (1) and year 1 in column (2) with consensus analyst forecasts, GAAP earnings, or street earnings using the following equation: $P_t = \alpha_1 EARN_t + FX + \varepsilon$.

Panel B of the table presents the regression results from model 2 for year 0 in column (1) and year 1 in column (2) with consensus analyst forecasts, GAAP earnings, or street earnings using the following equation: $\Delta P_t = \alpha_1 EARN_t + FX + \varepsilon$.

P_t is the share price at the end of year *t* where *t* = 0 is the year in which the SEO is issued. $\Delta P_t = P_t - P_{t-1}$. EARN is the last median consensus analyst forecast before the earnings announcement ($MDAF_t$), or GAAP earnings excluding extraordinary items as reported in Compustat (EX_t), or street earnings as reported in I/B/E/S (ES_t), for year *t*. All regressions are run with country, industry, and year fixed effects, and without an intercept. The Vuong *Z* is the cluster-robust statistic that tests whether the adj-R^2 using analyst forecasts is greater than the adj-R^2 using GAAP earnings or street earnings. A positive significant *Z* statistic indicates that the model using GAAP earnings or street earnings is rejected in favor of the model using analyst forecasts. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics are reported in parentheses. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 3: Value relevance for SEOs issued in the first and last six months of fiscal year-end

Panel A: Model 1 – Regression of price level on forecasts and GAAP earnings

	SEOs issued in the last six months of year-end				SEOs issued in the first six months of year-end			
	(1) t=0 (n=1,019)		**(2) t=1** (n=962)		**(3) t=0** (n=686)		**(4) t=1** (n=654)	
Price – P_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t
Earnings – $EARN_t$	1.457 (9.21)***	0.524 (5.64)***	0.627 (5.50)***	0.420 (5.93)***	1.133 (4.52)***	0.794 (6.29)***	1.542 (9.91)***	0.617 (8.50)***
Adj-R^2	0.8013	0.7907	0.8598	0.8605	0.8112	0.8165	0.9141	0.9109
Vuong *Z*	4.72***		-0.66		-1.39		2.44**	

Panel B: Model 2 – Regression of returns on forecasts and GAAP earnings

	SEOs issued in the last six months of year-end				SEOs issued in the first six months of year-end			
	(1) t=0 (n=1,019)		**(2) t=1** (n=962)		**(3) t=0** (n=686)		**(4) t=1** (n=654)	
Return – ΔP_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t	$MDAF_t$	EX_t
Earnings – $EARN_t$	1.424 (9.27)***	0.502 (5.57)***	0.606 (5.35)***	0.415 (5.91)***	1.087 (4.49)***	0.757 (6.19)***	1.468 (9.39)***	0.594 (8.17)***
Adj-R^2	0.2086	0.1651	0.1389	0.1446	0.1812	0.2031	0.2538	0.2301
Vuong *Z*	4.94***		-1.02		-1.29		2.06*	

Panel A presents the regression results using model 1 for a subsample of SEOs issued in the last six months of the fiscal year-end in columns (1) and (2) and a subsample of SEOs issued in the first six months of the fiscal year-end in columns (3) and (4) with consensus analyst forecasts or GAAP earnings using the following equation: $P_t = \alpha_1 EARN_t + FX + \varepsilon$.

Panel B presents the regression results using model 2 for a subsample of SEOs issued in the last six months of the fiscal year-end in columns (1) and (2) and a subsample of SEOs issued in the first six months of the fiscal year-end in columns (3) and (4) with consensus analyst forecasts or GAAP earnings using the following equation: $\Delta P_t = \alpha_1 EARN_t + FX + \varepsilon$.

P_t is the share price at the end of year *t* where *t* = 0 is the year in which the SEO is issued. $\Delta P_t = P_t - P_{t-1}$. EARN is either the last median consensus analyst forecast before earnings announcement ($MDAF_t$) or GAAP earnings excluding extraordinary items as reported in Compustat (EX_t), for year *t*. All regressions are run with country, industry, and year fixed effects, and without an intercept. The Vuong *Z* is the cluster-robust statistic that tests whether the adj-R^2 using analyst forecasts is greater than the adj-R^2 using GAAP earnings. A positive significant *Z* statistic indicates that the model using GAAP earnings is rejected in favor of the model using analyst forecasts. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics are reported in parentheses. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 4: Value relevance using individual analyst forecasts and errors around SEO filing

Panel A: Model 1 – Regression of price level on analyst forecasts and forecast errors

Price – P_t	**(1) Treatment Sample** (n=7,340)		**(2) Control Sample** (n=320)	
	After filing	Before filing	After filing	Before filing
Analyst Forecasts – AF_t	1.396 (5.90)***	1.149 (4.44)***	5.936 (5.66)***	6.143 (5.34)***
Forecast Errors – FE_t	0.163 (0.81)	0.392 (1.90)*	4.072 (1.90)*	4.552 (3.36)***
Adj-R^2	0.8849	0.8824	0.9647	0.9644
Vuong *Z* for difference in adj-R^2	2.36***		1.28	

Panel B: Model 2 – Regression of returns on analyst forecasts and forecast errors

Return – ΔP_t	**(1) Treatment Sample** (n=7,340)		**(2) Control Sample** (n=320)	
	After filing	Before filing	After filing	Before filing
Analyst Forecasts – AF_t	1.402 (6.00)***	1.143 (4.47)***	6.041 (5.68)***	6.066 (5.26)***
Forecast Errors – FE_t	0.131 (0.67)	0.372 (1.85)*	4.494 (2.06)**	4.987 (3.58)***
Adj-R^2	0.3052	0.2878	0.7449	0.7396
Vuong *Z* for difference in adj-R^2	3.78***		1.40	

Panel A of the table presents the regression results using the modified version of model 1 for the treatment sample in column (1) and a control sample in column (2) with individual analyst forecasts issued before and after the SEO filing using the following equation: $P_t = \alpha_1 AF_t + \alpha_2 FE_t + FX + \varepsilon$.

Panel B of the table presents the regression results using the modified version of model 2 for the treatment sample in column (1) and a control sample in column (2) with individual analyst forecasts issued before and after the SEO filing using the following equation: $\Delta P_t = \alpha_1 AF_t + \alpha_2 FE_t + FX + \varepsilon$.

P_t is the share price at the end of year *t* where *t* = 0 is the year in which the SEO is issued. $\Delta P_t = P_t - P_{t-1}$. AF_t is the individual analyst forecast issued either up to 180 days before or up to 180 days after the SEO filing date for year 0. FE_t is the forecast error calculated as $EX_t - AF_t$ where EX_t is the GAAP earnings excluding extraordinary items as reported in Compustat for year 0. All regressions are run with country, industry, and year fixed effects, and without an intercept. The Vuong *Z* is the cluster-robust statistic that tests whether the adj-R^2 using the model after the filing is greater than the adj-R^2 using the model before the filing. . A positive significant *Z* statistic indicates that the model using forecasts issued before the SEO filing is rejected in favor of the model using forecasts issued after the SEO filing. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics reported in parentheses are adjusted for clusters in country, industry, and year. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 5: Impact of forecast characteristics on valuation

Panel A: Model 1 – Impact of forecast revisions and forecast errors on valuation

	Forecast Revisions (n=668)				Forecast Errors (n=560)			
	(1) t=0		**(2) t=1**		**(3) t=0**		**(4) t=1**	
Price – P_t	Down	Up	Down	Up	+ve	-ve	+ve	-ve
Forecasts – AF_t	1.236 (6.46)***	1.680 (8.26)***	0.438 (2.73)***	0.387 (2.22)**	1.498 (7.64)***	2.421 (10.54)***	0.558 (3.33)***	0.597 (2.90)***
Adj-R^2	0.8905	0.8947	0.9168	0.9102	0.8977	0.9064	0.9212	0.9137
Vuong *Z*	-2.34**		1.93*		-4.14***		2.46**	

Panel B: Model 2 – Impact of forecast revisions and forecast errors on valuation

	Forecast Revisions (n=668)				Forecast Errors (n=560)			
	(1) t=0		**(2) t=1**		**(3) t=0**		**(4) t=1**	
Return – ΔP_t	Down	Up	Down	Up	+ve	-ve	+ve	-ve
Forecasts – AF_t	1.252 (6.89)***	1.653 (8.55)***	0.454 (2.83)***	0.360 (2.06)**	1.515 (7.92)***	2.411 (10.75)***	0.575 (3.46)***	0.587 (2.87)***
Adj-R^2	0.2947	0.3207	0.2700	0.2114	0.2869	0.3468	0.2576	0.1854
Vuong *Z*	-2.34**		4.47***		-8.47***		3.52***	

Panel A presents the regression results using model 1 for analysts who revise their forecasts upwards or downwards after the SEO filing in columns (1) and (2) and for analysts who have positive or negative forecast errors in year 0 in columns (3) and (4) using the following equation: $P_t = \alpha_1 AF_t + FX + \varepsilon$.

Panel B presents the regression results using model 2 for analysts who revise their forecasts upwards or downwards after the SEO filing in columns (1) and (2) and for analysts who have positive or negative forecast errors in year 0 in columns (3) and (4) using the following equation: $\Delta P_t = \alpha_1 AF_t + FX + \varepsilon$.

The forecast characteristics tested are defined as follows:

1. **Forecast Revisions**: The average of individual analyst forecasts that revise their forecasts downwards after the SEO filing compared to the average of individual analyst forecasts that revise their forecasts upwards for the same SEO.
2. **Forecast Errors**: The average of individual analyst forecasts that have positive forecast errors, that is, $ES_0 - AF_0 > 0$, compared to the average of individual analyst forecasts that have zero or negative forecast errors, that is, $ES_0 - AF_0 \leq 0$ for the same SEO.

P_t is the share price at the end of year *t* where *t* = 0 is the year in which the SEO is issued. $\Delta P_t = P_t - P_{t-1}$. AF_t is the last individual analyst forecast issued for the year. All regressions are run with country, industry, and year fixed effects, and without an intercept. The Vuong *Z* in columns (1) and (2) is the cluster-robust statistic that tests whether the adj-R^2 using the model with downwards forecast revisions is greater than the adj-R^2 using the model with upwards forecast revisions. A positive significant *Z* statistic indicates that the model using upwards forecast revisions is rejected in favor of the model using downwards forecast revisions. The Vuong *Z* in columns (3) and (4) is the cluster-robust statistic that tests whether the adj-R^2 using the model with positive forecast errors is greater than the adj-R^2 using the model with negative forecast errors. A positive significant *Z* statistic indicates that the model using negative forecast errors is rejected in favor of the model using positive forecast errors. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics are reported in parentheses. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 6: Impact of analyst conflicts of interest on valuation

Panel A: Regression of price level on forecasts of affiliated analysts before and after MAD

Price – P_t	Post-MAD (n=2,882)		Pre-MAD (n=564)	
	(1) t=0	**(2) t=1**	**(3) t=0**	**(4) t=1**
Analyst Forecasts – AF_t	1.404 (14.19)***	0.443 (5.68)***	1.754 (5.83)***	0.578 (2.80)***
Underwriter – BRO	0.137 (4.42)***	-0.067 (-2.76)***	-0.057 (-0.53)	0.081 (1.10)
Interaction – BRO*AF_t	-0.620 (-2.27)**	0.196 (0.91)	-1.435 (-1.01)	-0.278 (-0.28)
Adj-R^2	0.8977	0.9233	0.8438	0.9208

Panel B: Regression of price level on forecasts of affiliated analysts issued post-MAD

Price – P_t	SEOs issued in the last six months of year-end (n=2,049)		SEOs issued in the first six months of year-end (n=833)	
	(1) t=0	**(2) t=1**	**(3) t=0**	**(4) t=1**
Analyst Forecasts – AF_t	1.614 (13.72)***	0.347 (3.73)***	0.507 (2.86)***	0.633 (4.53)***
Underwriter – BRO	0.159 (4.33)***	-0.064 (-2.20)**	0.050 (0.94)	-0.080 (-1.88)*
Interaction – BRO*AF_t	-0.959 (-2.97)***	0.030 (0.12)	0.797 (1.67)*	0.762 (2.02)**
Adj-R^2	0.8977	0.9221	0.9154	0.9375

Panel A presents the regression results using model 1 for forecasts issued by analysts that are employed by one of the underwriters of the SEO, after MAD adoption in columns (1) and (2), and before MAD adoption in columns (3) and (4), using the following equation: $P_t = \alpha_1 AF_t + \alpha_2 BRO + \alpha_3 BRO*AF_t + FX + \varepsilon$.

Panel B presents the regression results using model 1 for forecasts issued by analysts that are employed by one of the underwriters of the SEO, for a subsample of SEOs issued in the last six months of the fiscal year-end in columns (1) and (2), and a subsample of SEOs issued in the first six months of the fiscal year-end in columns (3) and (4), using the following equation: $P_t = \alpha_1 AF_t + \alpha_2 BRO + \alpha_3 BRO*AF_t + FX + \varepsilon$.

P_t is the share price at the end of year t where $t = 0$ is the year in which the SEO is issued. AF_t is the last individual analyst forecast issued for the year. BRO is an indicator variable that equals one if the forecast is issued by an analyst employed by one of the underwriters of the SEO, and zero otherwise. All regressions are run with country, industry, and year fixed effects, and without an intercept. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics are reported in parentheses. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

Table 7: Robustness checks

Panel A: Value relevance of GAAP versus street earnings around SEOs

	Model 1 – Price – P_t				Model 2 – Return – ΔP_t			
	(1) t=0 (n=1,692)		**(2) t=1** (n=1,440)		**(3) t=0** (n=1,692)		**(4) t=1** (n=1,440)	
	ES_t	EX_t	ES_t	EX_t	ES_t	EX_t	ES_t	EX_t
Earnings – $EARN_t$	0.899 (9.19)***	0.577 (7.82)***	0.512 (6.83)***	0.367 (6.94)***	0.883 (9.32)***	0.549 (7.67)***	0.520 (7.01)***	0.386 (7.39)***
Adj-R^2	0.8050	0.8023	0.8893	0.8895	0.1980	0.1849	0.1566	0.1597
Vuong *Z*	3.67***		-0.19		3.97***		-0.78	

Panel B: Model 1 – Impact of forecast characteristics on valuation using interactions

Price – P_t	Forecast Revisions (n=7,340)		Forecast Errors (n=7,340)	
	(1) t=0	**(2) t=1**	**(3) t=0**	**(4) t=1**
Analyst Forecasts – AF_t	0.957 (13.61)***	0.446 (7.86)***	1.624 (20.83)***	0.472 (7.59)***
Forecast Characteristic – CHAR	0.073 (6.21)***	0.081 (8.57)***	0.092 (8.04)***	0.070 (7.69)***
Interaction – CHAR*AF_t	0.917 (8.32)***	-0.198 (-2.23)**	-0.399 (-3.71)***	-0.080 (-0.93)
Adj-R^2	0.8874	0.9137	0.8849	0.9136

Panel A presents the regression results using model 1 in columns (1) and (2) and model 2 in columns (3) and (4) with GAAP earnings or street earnings using the following equations: Model 1 – $P_t = \alpha_1 EARN_t + FX + \varepsilon$; Model 2 – $\Delta P_t = \alpha_1 EARN_t + FX + \varepsilon$. The Vuong *Z* is the cluster-robust statistic that tests whether the adj-R^2 using street earnings is greater than the adj-R^2 using GAAP earnings. A positive significant *Z* statistic indicates that the model using GAAP earnings is rejected in favor of the model using street earnings.

Panel B presents the regression results using model 1 for analysts who revise their forecasts upwards or downwards after the SEO filing in columns (1) and (2) and for analysts who have positive or negative forecast errors in year 0 in columns (3) and (4) using the following equation: $P_t = \alpha_1 AF_t + \alpha_2 CHAR + \alpha_3 CHAR*AF_t + FX + \varepsilon$.

P_t is the share price at the end of year *t* where *t* = 0 is the year in which the SEO is issued. EARN is either GAAP earnings excluding extraordinary items as reported in Compustat (EX_t) or street earnings as reported in I/B/E/S (ES_t), for year *t*. AF_t is the last individual analyst forecast issued for the year. CHAR is one of following two characteristics:

1. **Forecast Revisions**: An indicator variable that equals one if the analyst revised forecast upwards after the SEO filing, and zero otherwise.
2. **Forecast Errors**: An indicator variable that equals one if the forecast error is positive in year 0, that is, $ES_t > AF_t$, and zero otherwise.

All regressions are run with country, industry, and year fixed effects, and without an intercept. All variables are scaled by beginning share price and winsorized at the top and bottom 1% level. T-statistics are reported in parentheses. *=significant at 10%, **=significant at 5%, ***=significant at 1% level.

General Conclusion

This dissertation explores, identifies, and aims to fulfill a gap in the literature constituting of financial analysts' earnings forecasts and earnings management. The first study criticizes the use of circumstances where earnings are not systematically managed making it harder for analysts to recognize it. It also questions the use of consensus analyst forecasts to make generalizations about all analysts whereas some analysts may forecast differently from others. It recommends using individual forecasts and analyst characteristics and other conditions that might affect analyst preference. The second and third studies use SEOs as a setting that ensures systematic upwards earnings management and also test for various conditions and characteristics of the issuing firms and analysts while using individual analyst forecasts. The empirical results indicate that while analysts generally prefer informativeness, some analysts still opt for accuracy. In the short term, owing to the investor overpricing of issuing firms, accurate analyst forecasts (those closest to reported earnings) are more value relevant than reported earnings or than informative analyst forecasts. In the long term, when the overpricing is reversed, it is the informative analyst forecasts that have greater value relevance than reported earnings or their peers. Informative analysts therefore tend to communicate, to the best of their expertise, the true value of the firm to their clients. These results are pronounced especially considering the MAD which aims to improve transparency in capital markets in the EU. Affiliated analysts impacted by the directive forecast more responsibly, that is, forecast earnings that reflect the true performance of the firm around SEOs.

The main contributions of this dissertation include the better understanding of analysts' earnings forecasts when firms engage in earnings management, the identification of conditions and characteristics of the firm and the analyst that drive analysts to forecast one way or the other, and the impact of regulation on analyst

forecasts around SEOs. While some analysts forecast accurately, others may forecast informatively which makes it imperative to establish the conditions that affect this decision. Analysts who forecast lower than actual reported earnings or those who downgrade their forecasts right after the SEO announcement tend to be the informative ones, predicting firm value better in the long term. Similarly, affiliated analysts who have some ties with issuing firms through their brokerage also forecast informatively after the adoption of MAD. These findings call for a better analysis of analysts' earnings forecast in future research and a reinterpretation of forecast accuracy. This dissertation opens up a plethora of avenues for future research including, but not limited to, identifying more firm, analyst, and forecast characteristics that determine analyst preference for accuracy or informativeness; incorporating analysts' stock recommendations and price targets in the analysis to judge analyst preference; studying whether an accurate or informative analyst remains to be accurate or informative throughout his/her career and the factors that determine this choice.

RÉSUMÉ

Cette thèse de doctorat comprend une étude théorique et deux études empiriques sur les prévisions de bénéfices des analystes financiers lorsque les entreprises gèrent leurs chiffres comptables. La première étude montre que cette dimension est généralement ignorée dans la littérature qui ne s'intéresse pas à ce que prévoient les analystes lorsque les chiffres comptables sont gérés. En effet, dans ce cas les analystes peuvent produire des prévisions précises, qui intègrent la composante gérée du résultat, ou des prévisions informatives qui ignorent cette composante. La deuxième étude montre que les analystes ont généralement tendance à être informatifs lors des augmentations de capital qui donnent lieu à une gestion systématique des chiffres comptables, en particulier depuis l'adoption de la directive MAD. La troisième étude montre qu'à long terme les prévisions informatives sont les plus pertinentes pour expliquer les cours de bourse, même si elles génèrent des erreurs de prévision plus élevées. Ces résultats contribuent à la littérature en montrant que les analystes peuvent délibérément renoncer à l'exactitude de leurs prévisions pour mieux informer les investisseurs.

MOTS CLÉS

Analystes Financiers ; l'Exactitude ; l'Informativité ; Gestion des Chiffres Comptables ; Augmentation de Capital

ABSTRACT

This PhD dissertation comprises of a detailed theoretical study and two empirical studies on financial analysts' earnings forecasts when firms manage earnings. The first study explains the gap in the literature – what do analysts forecast when earnings are managed – which the subsequent studies aim to fulfill. The second study finds that analysts generally tend to be informative around seasoned equity offerings (SEO), especially after the adoption of the Market Abuse Directive. The third study confirms that in the long-term informative analyst forecasts are more value relevant than accurate analyst forecasts as well as reported earnings around SEOs. These findings contribute to the literature on analyst forecasts by showing that some analysts may deliberately forego accuracy for informativeness.

KEYWORDS

Financial Analysts; Forecast Accuracy; Informativeness; Earnings Management; Seasoned Equity Offerings; Street Earnings