THE IMPACT OF FAIR VALUE ACCOUNTING ON FIRMS' PERFORMANCE AND PENSION ASSETS

By

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ABSTRACT OF THE DISSERTATION

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By SHAOFENG ZHENG

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My dissertation comprises of two essays: 1) The Effects of Fair Value Measurements (IFRS 13) on Operating Performance and Market Performance, and on Value Relevance of Firms across European Countries; 2) The Disclosure of Fair Value Pension Asset under SFAS No.158, Pension Assumptions, and Earnings Manipulation.

Fair value accounting has been gained a spotlight over years. My first essay focuses on Fair Value Measurements (IFRS13), which provides a single source for all fair value measurements, and clarifies the definition of fair value and enhance the disclosures. I examine the effect of IFRS 13 fair value on operating performance, the market reaction to the key event of the announcement date of IFRS 13 adoption, and the effect on value relevance in the context of IFRS 13 adoption by a large sample of five countries in European Union: France, Germany, Italy, Spain, and United Kingdom from 2010 to 2014. Evidences from the analyses of the models revealed that the operating performance overally decreased after IFRS 13 adoption in France and Germany but increased in Italy, Spain and United Kingdom based on some ratios to evaluate the operating performance. Firms with higher ROA in pre-IFRS 13 reported more consecutive earnings after IFRS 13 adoption than firms with lower ROA in pre-IFRS 13. Market reaction was tested on the key event of IFRS 13 adoption: the announcement date of IFRS 13. The results of the

event study indicated that the cumulative abnormal returns (CAR) were negatively associated with the release date of IFRS 13 adoption, suggesting that European markets' reaction has been somewhat negative to IFRS 13. The adjustment to earnings per share model suggests mixed evidence of a increase in value relevance. In summary, European market may perceive IFRS 13 as an important in financial reporting or a reduction in the formation asymmetry and these results have implications for investors, auditors, and educators.

In September 2006, Statement of Financial Accounting Standard (SFAS) No.158, Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans, required firms to disclose and recognize the full funded status of defined benefit pension plans in the balance sheet instead of only in the footnote. Comparing with recognition, there are limited researches about the effect of the disclosure of fair value pension assets on the expected rate of return (ERR). Therefore, my second essay examines the association between the disclosure of fair value pension plan assets under SFAS No.158 and ERR. Empirical results support that firms with the Level-3 fair value of pension assets are more like to inflate ERR and are more like to meet ERR through the actual rate of return (ARR) of the Level-3 fair value of pension assets. In addition, I explore the relationship between the disclosure of fair value pension plan assets and earnings target through ERR management. The results document that firms with the Level-3 fair value pension asset more like to achieve earnings target when they marginally fall short of earnings expectations. Such disclosures could improve the efficient use of the information by market participants

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The Effects of Fair Value Measurements (IFRS 13) on Operating Performance and Market Performance, and on Value Relevance of Firms across European Countries

1. Introduction

Fair value accounting (FVA) has been undergoing many important reforms in past twenty years. Historically, fair value guidance was spread across various standards and it was incomplete and silent in other situations (John and Goind, 2012). This created the potential for inconsistency and differences in interpretation. With the issue of the new standard IFRS 13 – mandatorily required by International Accounting Standards Board (IASB) on 1st, January 2013 – the board redefines fair value, which is intended as a market-based measurement. IFRS 13 is definitional (EY, 2013), in the sense that the standard sets out a framework on how to measure fair value and what to disclose, instead it does not recommend when to apply fair value measurements.

The considerable debate, however, exists in the literature about the usefulness of fair value in financial reporting. Proponents argue that it provides timely, value-relevant information to financial statement users (e.g., Barth et al., 2001; Hitz, J.M., 2007; Haller et al., 2009; Barth, 2014) as its adoption implies a "transition from 'accounting as history' to 'accounting as economics'" (Barker and Schulte, 2015). By contrast, main opponents argue that FVA contrasts the conservatism principle that requires accounting measures to be reliable (e.g., Watts and Zimmerman, 1986; Holthausen and Watts, 2001; Penman, 2007; Laux and Leuz, 2009; Magnan, 2009; Kothari et al., 2010; Ronen, 2012).

Little is known about how investors perceived the possibility of IFRS 13 adoption in Europe. An investigation of fair value measurement is important because many commentators have suggested that fair value measurement would be more pervasive

under IFRS than under national GAAP (Ball, 2009). Some suggested that IFRS were a 'fair value based accounting framework with some exceptions for historical cost' (FitchRatings,2005) and that financial reporting under IFRS largely involved the measurement of assets and liabilities at each balance sheet date at fair value (Ernst & Young, 2005). These commentators also speculated that the IASB would, in the future, extend the use of fair value measurement at each balance sheet date beyond that required by IFRS in 2005.

With the issue of the new standard, the board aims to increase transparency and financial reporting quality. What IFRS 13, in particular, improves is the introduction of a hierarchy, which defines the most reliable situations to use and measure fair value. The main consequence for investors is that the new standard significantly increases disclosure requirements. It is unclear, however, how investors in European firms would react to its adoption, taking into account the specific financial structure characterizing them. Barker and Schulte (2015), believes that IFRS 13 contains a clear distinction between the valuation perspective of the reporting entity and that of the market participants.

To gain insight into investors' expectations, I believe that comparing the effect of this new standard before and after the transition period is particularly meaningful. It offers an opportunity to understand what main impacts on operating and market performance and whether the required disclosure is value to investors.

Researchers have used this opportunity to explore the same set of economic activities pre- and post- IFRS 13. For instance, David et al. (2011) investigate fair value measurements (FVM) and its impact on accounting policy choice in the United Kingdom (UK) and Australia around the adoption of International Financial Reporting Standards

(IFRS). Vera and Renato (2013) discuss IFRS 13 with regard to private equity valuation, while Palea and Maino (2013) question whether fair value as defined by IFRS 13 is an appropriate measure for private equities and can contribute to enhancing transparency in financial statements. More recently, Barker and Schulte (2015) document that for a predominance of core operating assets, fair value is unknowable because of the absence of the institutional reality on which the FVM idea implicitly depends.

Currently, academic empirical research on FVM (Hassan, M.S., Percy, M. and Stewart, J. (2006)) mostly concentrated on its relevance and whether there was an increase in the transparency of financial statements of firms within and among the individual country. Therefore, the present study differentiates itself from previous ones, aiming at answering to different purposes.

The objective of this research is to examine the effect of implementing IFRS 13 by European publicly traded companies, including the effect of adopting IFRS 13 on the financial ratios, the effect of adopting IFRS 13 on market reaction, and the value relevance of implementing IFRS 13. The topic is timely because the prominence of IFRS 13 is growing. Mandatory reporting under IFRS 13 is expected to increase significantly for companies seeking to raise capital in international markets.

Firstly, the purpose of my research is to strengthen greater understanding of the ratios which explain the firm performance. Second, a model has built up that forecast the effect on operating and market performance following adoption of IFRS 13. Lastly, the research intends to determine whether the value relevance has improved as a consequence of the adoption of IFRS 13.

Firm's performance is extremely important to external users for investing, financing and benchmarking decisions. More importantly, it is a tool to judge firm's sustainability and perennial activities. For instance, Neely (2005) argues that measuring performance, i.e., providing information, is the first step to present the health of the firm with quality. With a performance evaluation process aligned with the interests of users, the firm definitely has the capability of attracting investors. Scholars also argue that economic and financial accounting indicators are one of the main tools to assess firm performance since they incorporate information that is more easily obtained in the evaluation process (e.g. Beaver, 1968; Horrigan 1968; Ohlson, 1980). Financial ratios such as ROA, ROE, and EPS, and retained earnings are particularly important measures of operating performance, while the stock return is the most common measure of market performance.

Firms are bound to change these measures reported in their financial statements, in accordance with the new measurement rules on FVM. The difference between pre- and post-IFRS 13 adoption effect would be revealed in the statement of financial position, especially through its retained earnings, which represents the earnings history of an entity subtract shareholders and reflects the earned capital component of equity (Hilliard, 2013). So the net difference between pre-and post- IFRS 13 is reflected in the change in earnings per share. Francis et al. (2003) state that earnings dominate as a performance measure in identified U.S. industries. Christensen et al. (2009), and Horton et al. (2010) find that retained earnings would demonstrate a firm's choice regarding the application of the new standard for future reporting years. Therefore, there is a need to investigate firm's performance particularly at the time of new mandatory application of IFRS 13, by

building up a model that explain and forecast the effect on firm's performance during pre- and post-IFRS 13.

IFRS 13 is also supposed to lead to better accounting quality and to an improvement in value relevance. Unlike Devalle et al.(2010), many scholars worldwide found that there has been an overall improvement in value relevance as a consequence of the adoption, in general, of IFRS, and in particular of FVA (e.g. Muller and Riedl, 2002; Landsman et al., 2007; Barth et al., 2008; Wang, 2008; Armstrong et al., 2010; Clarkson et al., 2011). Evidence leads to expect that the new standard may allow investors to gain access to new information regarding the decision-making process surrounding FVM and a more in-depth and detailed explanation of how valuations inputs within the measurement process have been conducted. This information may in turn aid investors in their decision-making process by providing increased clarity surrounding FVM. Therefore, there is a need to examine whether the value relevance has been improved at the time of new mandatory application of IFRS 13, during the comparison during pre- and post-IFRS 13.

To this end, two important events are tested: the release date of IFRS 13 issued, the announcement of earnings per share (EPS) after adoption IFRS 13. The cumulative abnormal returns will be tested for value relevance and measuring market performance at the release of the annual earnings per share under IFRS 13.

My research will investigate publicly listed firms belonging to five European countries: France, Germany, Italy, Spain, and the United Kingdom. These European countries provide an interesting platform for the study since they occupy larger percent of

the capital market in EU and are believed to be different in terms of legal systems and size of capital markets (Nobes, 2011).

The sample of adopters for IFRS 13 excludes all financial institutions. The sample size from this research permits an extensive exploratory process in order to reveal specific firm attributes which are statistically significantly associated with the adoption of IFRS 13 and the association between firm attributes and the magnitude adjustment of the cumulative effect on stock returns. The main result reveals that the overall market does not favorably react to the adoption of IFRS 13 and the value relevance of has been improved in certain countries by IFRS 13 adoption.

The research provides a threefold contribution. It complements IFRS 13 academic research by examining, for the first time, financial ratios and market return with a narrower focus on the effect on operating and market performance at the time of adoption IFRS 13 in five European countries. Moreover, the study has implications for standard-setters and regulators to evaluate how the new standard is being implemented. They may be also able to use the models to project the effect of future new IFRS rules. Further, the models could provide a benchmark for value relevance of IFRS 13 transition disclosure information. Lastly, financial analysts and practitioners may be interested in the model to forecast the effect of the IFRS 13 transitions on operating, market performance, and value relevance.

The remainder of the paper is organized as follows. Section 2 provides IFRS 13 background. Section 3 review literature, describes theoretical framework and hypotheses development. Section 4 shows data selection and Section 5 focuses the research design while section 6 reports the results of the study. Finally, section 7 concludes.

2. Background on FVA before and after IFRS 13

Prior to IFRS 13, standard setters have has provided neither a single coherent definition of fair value nor detailed guidance for applying the fair value (John and Goind, 2012).

IAS 16 firstly mentioned the fair value in 1982 where it was defined as “The amount for which an asset could be exchanged between a knowledgeable, willing buyer and a knowledgeable, willing seller in an arm's length transaction”. The IAS extended the definition in 1988 to cover also liabilities. The terms ‘seller’ and ‘buyer’ were replaced by the more generic term ‘parties’. The concept is also incorporated into the other standards (e.g., IAS 22 or IFRS 3 Business Combinations, IAS 36 Impairment of Assets, IAS 37 Provisions, Contingent Liabilities and Contingent Assets, IAS 38 Intangible Assets) and later, among the new issued 15 IFRS, in IFRS 2, the IASB broadened the definition to cover also the grant of equity instruments. Subsequent IFRS 6 clarified that the permission to use fair value, already existing in old standards, covers some assets, while IFRS 9 requires fair value only under some circumstances and allows it in others. IFRS 10 applied to assets of unusual entities, while IFRS 4 and IFRS 14 deal with measurement but do not mention fair value moreover (Nobes, 2015).

Currently, the definition of fair value in IFRS has remained unchanged for almost two decades. Complementary guidance on FVM and disclosure was dispersed across various standards and was not consistent in the whole set of IFRS. This would lead to some uncertainty about its meaning and some confusions about what amounts are and how to determine them.

These reasons damage transparency of information reported in financial statements. Furthermore, the recent financial crisis turned the spotlight on the importance

of improving the guidance and disclosure over the usefulness of FVA. Critics of FVA argue that it has been one of the major factor that triggered financial crisis and failed to provide investors with useful information (e.g. Ball, 2009; Veron, 2008; Pozen, 2009; Wallace, 2009; Magnan, 2009; Barth and Landsman, 2010; Laux and Leuz, 2010; Shaffer, 2010; Badertscher et al., 2012, Ronen, 2012). On the other hand, supporters believe that it has been the victim of the recent financial crisis and argue that the usefulness of FVA depends on whether financial markets are stable and unstable. This lead to an urgent demand for IASB to issue a completely specific standard about FVM.

IFRS 13 Fair value measurements, which was issued in May 2011, sets out a single framework for measuring fair value and provides comprehensive guidance. IFRS 13 is the result of a joint project conducted by the IASB together with FASB, which has led to the same definition of fair value and an alignment of measurement and disclosure requirements to FAS 157 (Palea et al., 2013).

IFRS 13 handles how fair value is measured and does not decide when a firm is supposed to apply FVM. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. This definition reflects an exit price notion that is the market price from the perspective of a market participant (Barker and Schulte, 2015).

Three widely valuation techniques are recommended by IFRS 13 to measure fair value: market, income and cost approaches (Palea et al., 2013; Ronen et al., 2015). The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets and liabilities. The income approach uses valuation techniques to convert future amounts, such as cash flows or earnings, to a

single discounted present amount. Finally, the cost approach is based on the current replacement cost that is the amount that currently would be required to replace the service capacity of an asset.

From the perspective of a market participant (seller), the price that would be received for the asset is determined based on the cost to a market participant (buyer) to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. A single or multiple valuation techniques would be more appropriate based on specific situations allowed by IFRS 13.

The proposed hierarchy can provide timely information on how economic conditions may affect value but also allows managerial discretion in measurement and classification (Fargher and Zhang, 2014). What IFRS 13 improves concerning fair value is the introduction of a hierarchy which defines the most reliable situations to use fair value, and how they are to be measured in the three different levels of this hierarchy. Level 1 inputs are unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 inputs are other directly or indirectly observable inputs, including quoted prices for similar assets or liabilities in active markets. Unobservable Level 3 inputs should be used to measure fair value to the extent that observable inputs are not available and need to be developed on the basis of the best information available about the assumptions that market participants would use when pricing the asset. These last inputs are subject to the highest degree of information asymmetry between preparers and users, and managerial discretion might increase the opportunities to manage earnings which will weaken earnings informativeness. (Dechow et al., 2010; Fargher and Zhang, 2014).

The main consequence for investors concerning IFRS 13 is that it significantly increases the disclosure requirements that should improve consistency and reduce complexity. Investors would gain access to new information regarding the decisions surrounding fair value and a more in-depth explanation of how valuations in the level-3 and level-3 inputs within the measurement process have been conducted. This information may in turn aid investors in their decision-making process by providing increased clarity surrounding FVM.

3. Literature Review and Hypothesis Development

IFRS 13 attempts to correct the imbalances of information asymmetry. Barth (2014) argues that in the context of subsequent measurement of individual asset and liabilities, FVM is more consistent with the objective of financial reporting and the qualitative characteristics than either modified or unmodified historical cost. However, little literature is known about how investors perceived the possibility of IFRS 13 adoption. The present study aims to fill this gap.

3.1 Operating Peformance Hypothesis

Standard Board states that performance measure is needed for setting goals and objectives, planning program activities to accomplish these goals, allocating resources, monitoring and evaluating the results to determine if there are progress in achieving the established goals and modifying program plans to enhance performance (Hatry et al., 1990). External users, such as investor and auditors, consider performance measures to make investing and financing decisions. Internal users, such as managers and executives,

consider performance measures to improve and learn. Financial ratios have been widely regarded as a useful measure of performance in various instances. Beaver (1966) who employed financial ratios in assessing the financial health, followed by Altman (1968) who developed a model based on ratios for bankruptcy prediction of firms., Subsequent studies also predict firms' bankruptcy through financial ratios (e.g. Charitou et al., 2004; Beaver et al., 2005; Dewaelheyns et al., 2006). The use of financial ratios in measuring performance is not limited, of course, to bankruptcy prediction. For instance, they have been adopted in comparing the strengths and weaknesses of firms across countries. Therefore, they are also regarded to be value relevant and transition useful information to investors (e.g. Hagigi and Sponza, 1990; Fuglister, 1997; Lui and Wei, 2008; Liu and O'Farrell, 2009). Some most commonly used operating measures includes revenues, operating income, earnings before interest and tax, or financial ratios such as return on investment (ROI), return on equity (ROE), return on assets (ROA) and return on sales (ROS). Financial ratios would be better to improve the usefulness of performance indicators since absolute measures from amounts in the financial statement may be not sufficient for the meaningful compassion (Aliabadi et al., 2013). In a word, operating measures are simple to use, easy to understand, and based on audited figures.

Empirically, evidence documents the important role played by operating performance in management and investment's decisions. Dutta and Zhang (2002) show that, although beneficial for valuation purposes, mark-to-market (fair value) accounting can have an adverse effect on the stewardship role of accounting earnings. They claim that since mark-to-market accounting is heavily dependent on market-wide public information, the use of accounting performance measures based on mark-to-market

accounting does not provide the right incentives to managers to make decisions using their private information about the firm. They thus argue that accounting conservatism might be useful for evaluating managerial performance. Later, Kothari et al. (2010) also support this argument. Gentry et al (2010) examines the relationship between accounting profitability and market performance to determine whether accounting and market measures are highly correlated so that they can be used as interchangeable indicators of performance. The study documents that they cannot be used interchangeably. Therefore, external investors pay high attention to firm's operating performance.

With the introduction of IFRS 13, the difference in the measurement system of assets and liabilities has been introduced based on FVM, leading to expected effects on operating and market performance. FVM is justified on the grounds of being more relevant for the decisions by users of financial statements (Barth, 2014). It is also argued to improve transparency and the timeliness of accounting information (Schipper, 2005). In line with the benefits of FVM, for instance, many studies on asset revaluations find that fair value possesses superior relevance. Upward revaluations have a positive association with equity returns in the month of the revaluation (Sharpe and Walker 1975; Standish and Ung, 1982), and they have association with long-window stock returns, future cash flows, and the market value of equity (e.g., Amir et al. 1993; Easton et al. 1993; Barth and Clinch 1996, 1998; Aboody et al. 1999; Danbolt and Rees, 2008).

However, there is also a lack of consensus in the literature about whether fair value estimates are sufficiently reliable to be valuation-relevant, especially during times when the markets are in turmoil and market prices or market inputs are used to estimate fair value (Dichev, 2013). Cairns (2006) states that the use of fair values is not as

extensive as many imply and, recently, Nobes (2015) concludes that, in the fifty years, the IASB has not introduced the fair value basis for any major types of assets or liabilities. The introduction of IFRS 13 provides a unique opportunity to identify any incurring difference in the measurement system of assets and liabilities in order to compare operating performance pre and post-IFRS 13. Accordingly, to answer our first question whether the adoption of fair value accounting mandated by IFRS 13 has improved the firm's operating performance, we hypothesize that:

H1: There is no impact of IFRS 13 adoption on firms' operating performance.

3.2 Market Performance Hypothesis

One aspect to apply the test of value relevance can be used to measure the market's performance to accounting events or accounting amounts. It is an important area in financial accounting is to examine whether the data contained in the firm's financial statement provide information to change investors' perceptions about firms' future value and risk. A fair value measurement is for a particular asset or liability. After adoption IFRS 13, changes in the value of equity are driven by either changed expectations of future cash flows or by changes in the cost of equity capital. For the effect of market performance in the post-IFRS 13 period, I examine whether market reaction to accounting information in two perspectives in the post-IFRS 13 period.

One is the event that IFRS 13 was issued on May 12, 2011. I use the same notion of information content as expressed by Kothari (2001): "If the level or variability of prices changes around the event date, then the conclusion is that the accounting event conveys new information about the amount, timing, and/or uncertainty of future cash

flows that revised the market's previous expectations." Lev (1989) argues that accounting information is value relevant if changes in stock price or volume resulting from investor actions can be attributed to this specific information.

Another one is that accounting amounts provide relevant information to the market. Market measures can ensure a timely and comprehensive set of information, of which financial statement data is only a subset (Merton, 1974). The most commonly market measures contain share price, stock return, price to book ratio, price to earnings ratio, Tobin Q, and price earnings growth. The advantage of using market-based performance measures is that they reflect timely value given by share prices (Aliabadi et al., 2013). The stock price may reflect market expectation and true performance. Eritmur et al. (2003) and Jegadeesh and Livnat (2006) find that stock prices respond to earnings information contained in announcements, signifying that there is a relationship between operating and market measures. However, there are two popular different lines of research results. There is a positive relationship between operating measures and market measures, as pointed out by Foster, Olsen, and Shevlin (1984) and Chan, Jegadeesh, and Lakonishok (1996). If, however, the increase (decrease) in earnings is viewed as temporary or abnormal, it could result in a wave of contrarian stock sales (purchases), leading to a short-term decline (increase) in stock prices and returns after the earnings announcement. This results in a negative relationship between operating and market measures, as pointed out by Chan (1988) and Zarowin (1989). It is also reasonable that harmonization of financial statement standards across countries in accordance with IFRS 13 will lead to greater transparency in the financial markets and facilitates cross-border investment. We expect that the information provided by firms' financial statements helps

investors providing relevant information to determine firms' value and to evaluate the risk associated with their investments, meaning that market reaction around the earnings announcement dates (stock prices changes and volume traded), is driven by the earnings surprises. To answer my question whether the adoption of fair value accounting mandated by IFRS 13 has improved the firm's market performance, we hypothesize that:

H2: There is no market reaction to the adoption of fair value regulation by IFRS 13 in the five European countries.

3.3 Value Relevance hypothesis

IFRS 13 represents a profound change for accounting reporting standards and it is expected to have an impact on the relationship between accounting data and stock prices. In particular, FVM aims to contribute towards the transparency of financial statements by bringing information closer to current market conditions. Accounting figures thus become more volatile and dependent on market movements. FVM supporters claim that fair value measures add extra value-relevant information to financial statements, thus making them more useful for firm valuation purposes (Barth, Beaver, & Landsman, 2001; Barth, 2014).

According to Barth (2001), accounting information is considered to be value relevant if there is an association with share value. Empirically, several studies have examined the effect of the whole of IFRS on value relevance. For example, Devalle et al. (2010) examine whether the relationship between accounting measures and value relevance has strengthened as a result of the adoption of IFRS in Europe. Armstrong et al (2010) find an incrementally negative reaction for firms domiciled in code law countries.

In a multi-country study, Ali and Hwang (2000) find value relevance is lower in the Continental European cluster than it is in the Anglo-Saxon cluster. Evidence in single countries documents that changes in national accounting regulation have improved value relevance in the Czech Republic (Hellstrom, 2006), Tunisia (Naceur and Nachi, 2007), Poland (Dobija and Klimczak, 2007), and Norway (Gjerde et al., 2008). Instead, the impact of IFRS on value relevance has mixed results for the United Kingdom (Horton and Serafeim, 2010), Spain (Callao et al., 2007), and Germany (Jermakowicz et al., 2007). Other studies have examined the reaction of investors before and after the introduction of a single IFRS (Goncharov, 2013). However, it is still unclear how investors would react to the movement toward newly IFRS 13 adoption.

Theoretically, the finance literature provides two competing views on how a firm's share price is determined (Fama and French, 1992; 1995). One view assumes that stock markets are efficient, and any new information will be instantaneously reflected in stock price. Following this view, any important change in a company affects stock price instantaneously. An alternative view does not consider the stock market to be efficient and argues that stock price is determined by both financial factors, such as transaction costs and taxes and non-financial factors, such as analysts' and investors' expectations. Under this view, the market forces of supply and demand for particular stocks determine stock price, and supply and demand are driven by the expectations and behavior of investors.

In this framework, my study aims to investigate whether value relevance has strengthened as a consequence of the adoption of IFRS 13 in the European market. An important feature of IFRS 13 is that it should limit managers' discretion in choosing fair

value accounting measurements (but not level 3 inputs). Limiting managers' discretion, coupled with more rigorous disclosure standards, should lead to higher value relevance. Based on these arguments, IFRS 13 is expected to lead to increased value relevance because it should enhance the cross-border comparability of financial statements and the allocative efficiency of stock markets. Also, I expect to observe a significant association between operating performance and market performance for firms following IFRS 13. To answer whether the value has been improved as a consequence of the adoption of IFRS 13, my third hypothesis is:

H3: There is no change in market value of firms between the pre- and post- IFRS 13 adoption.

4. Sample selection and Data Collection

4.1 Sample Selection

Differences among local accounting standards have been widely studied in the past and the possible source of these differences has been investigated to achieve many findings (e.g. Ball, 2009; Orens et al., 2011; Nobes and Stadler, 2012; Tarca et al., 2013).

My research focuses on five European countries – France, Germany, Italy, Spain and United Kingdom– for several reasons: they have the largest financial markets in the European Union (EU). These countries are believed to differ in terms of legal system and size of the capital market (Nobes et al., 2013). La Porte et al., (1997) indicated that although the UK has a shareholder-driven type of accounting framework, accounting systems in Continental European countries are assumed to put less emphasis on the protection of outsides against expropriation from insiders. Moreover, historically, they

are at the opposite ends of the spectrum in terms of applying FVM. Devalle et al. (2010), argue that most of the extant literature examines the effects of IFRS FVM either on a single country or on several countries as a whole, neglecting the potential impact of different cultural and legal background on the effectiveness of the new regulatory framework.

IFRS 13 was mandated effectively on January 1, 2013. The sample analyzed consists of firms which sought adoption of IFRS 13 listed on the five Stock Exchange. There is no formal list of adopter firms which is available to the public. Amadeus database (Bureau van Dijk) was searched for firms listed in the selected five stock exchange markets which prepare financial statements under IFRS 13. A keyword search was performed using IFRS 13 in fair value measurements to check financial statements. I drop financial firms from the initial sample to focus on non- financial firms for which financial data are available in the database above. The analyses cover the period from 2010 to 2014. The adopter firms in five countries contain 1408 firms which sought IFRS 13 adoption. However, some firms in the United Kingdom have delayed to adopt IFRS 13 in 2014 and were hand-collected in 2015. The number of firms at different countries is provided in the Panel A of Table 1.1. We provide the number of firms by year-IFRS 13 adoptions in Panel B and the number of firms by two-digit SIC category in Panel C of the Table.

[Insert Table 1.1 about here]

4.2 Data Collection:

As previously mentioned, a new standard of IFRS 13 disclosure is of particular interest. Investors are definitely interested in the date of IFRS 13 issued, which cause the variation of stock price. If a firm adopts IFRS 13 in the financial report, there is a significant date for data collection: the announcement date of earnings per share. For this study, the key financial data of annual financial statements was extracted from Amadeus in WRDS. Additional data regarding firm attributes such as SIC code was obtained from Thomson Router DataStream.

For the tests of market performance, one key date is the IFRS 13 was announced to the public from IFRS board. The other critical date was obtained in Thomson Router Database for each firm: the announcement date of earning per share. Market index data and market price data for each firm were obtained from Compustat and Thomson Router datastream together. Descriptive statistics on the total sample are provided in Table 1.2.

[Insert Table 1.2 about here]

5. Research Design

5.1 Univariate Analyses

It provides a detailed description of the variables of interest for the univariate analyses, an overview of event study methodology and the event hypotheses being tested. Descriptive statistics and normality tests were conducted on all variables of interest. Paired T-test is employed throughout for ROA, ROE, and EPS based on the whole five countries, each individual country and two groups based on the median value of ROA in year 2012.

5.2 Multivariate Analyses

5.2.1 Operating Performance Models

To test the first hypothesis, I use a number of specification tests and model design. In conducting the analysis, I begin by considering the first model:

$$R_i = \alpha_0 + \beta_1\, IFRS13 + \beta_t\, other\ independent\ control\ variables_t + \epsilon_t \qquad (1)$$

Where R_i is an independent variable that stands for ROA and ROE, respectively, IFRS 13 is a dummy variable which has been added to differentiate between pre- and post-IFRS 13 and takes the value of 1 for a giving firm after mandatory adoption of IFRS 13, and 0 otherwise. I predict that post-IFRS 13 will be associated with ROA and ROE. Therefore, we expected that there is a statistically significant association between R_i and IFRS 13, suggesting that β_1 is statistically significant in the model. I also include a number of additional control variables to guard against the possibility that ROA and ROE are driven by changes in other factors, correlated with introductions of IFRS 13. Independent control variable which demonstrates the strongest association to the dependent variable without high correlation to one another will be selected for the multivariate model.

Growth, the price-to-book ratio is determined by the expected rate of return on the book value so, if components of book value command different price premiums, they must imply different expected rates of return on book value. Doron Nissim (2003) states that as price-to-book ratios are based on expected profitability and this analysis explains how price-to-book ratios are affected by the two types of leverage. The empirical analysis

in his paper demonstrates that operating and financing liabilities imply different profitability and are priced differently in the stock market.

Leverage, the debt-to-equity ratio is a measurement of a company's ability to meet financial obligations. The higher the degree of leverage, the more vulnerable a company is volatile earnings reports and downs in the economy due to the obligations to service the debt and incur interest expense. The debt-to-equity ratio after adoption IFRS 13 may be a contribution factor the effect on ROA and ROE. Studies have demonstrated a specific association in leverage ratios subsequent to the adoption of IFRS. Lantto (2009) identified an increase in the gearing ratio which is another measurement of leverage. They attributed the increase the ratio specifically to the adoption of new IAS standards. These results can be referred to examine leverage ratios ex-post which prompts the question of the effect of ex-ante examination of ratios and any related effect on IFRS 13 adoption.

The standard deviation of net come for a 5-year period represents the standard deviation of earnings (loss) over a 5-year period of time for each firm. Earnings history and retained earnings are highly related. Periodic swings in earnings accumulate permanently in retained earnings. It could be supported that these same fluctuations in earnings could be associated with adjustment to retained earnings after adoption a new standard. Earnings (loss) patterns over a period of time have provided evidence of earnings management or smoothing (Jeanjean and Stolowy, 2008.) For example, managers can reduce or exacerbate earnings by deferring discretionary expenses (such as research and development.) This brings into question the overall quality of earnings being reported (Barth et al., 2008; Schipper and Vincent, 2003; Christensen et al., 2008). If

IFRS improves earnings quality as demonstrated in previous studies (Barth et al., 2008; Daske et al., 2006) then the cumulative effect on retained earnings may represent an upgrade adjustment to the earnings history of an entity. Studies have examined volatility in earnings post-IFRS adoption (Capkun et al., 2011; Iatridis and Rouvolis, 2010; Haller et al., 2009; Lantto and Sahlstrom, 2009), but have neglected to study earnings history ex-ante to the retrospective application of IFRS. Variability in periodic earnings leading up to the adoption of IFRS 13 might be an explanatory attribute of the magnitude of the effect on ROA and ROE.

There are still other control variables included in the model: Country, Industry, size by total assets. Industry is measured by the North American industry classification system six digit code. FIRMSIZE is measured by the total assets and is log transformed to avoid the size effects. After analyses above, I then consider the second model:

$$EPS_{t+1} = \alpha_0 + \beta_1 EPS_t + \beta_2 EPS_{t-1} + \beta_3 EPS_t * IFRS13 + \beta_4 IFRS13 + \beta_5 DE_t + \beta_6 PB_t + \beta_6 FIRMSIZE_t + \beta_7 STDEVNI5_t + \beta_8 \sum Industry + e \qquad (2)$$

In time-series forecast model, predictions are practically obtained by forecasting a value at the next time period based on a specific prediction algorithm. An AR model is a good model that includes one or more past values of the dependent variable among its explanatory variables. I assume that earnings per share follows an autoregressive model of order 2 and allow the AR (2) coefficient to depend on two previous earnings per share and IFRS 13 adoption. IFRS 13 is a dummy variable that takes the value of 1 for a firm after mandatory adoption of IFRS 13, and 0 otherwise. I predict that β_3 is statistically

significant, meaning that earnings per share is significant relationship with IFRS 13. The model is also tested for overall significance for other control variables which has the same definitions above.

5.2.2 The Event Study for Market Performance

To test my second hypotheses about the impacts of the market after adoption IFRS 13, the event-study research was designed for H2. The key event was investigated for market performance.

The key event is the announcement date issued on adoption IFRS 13. Commencing with Ball and Brown (1968), event studies have been used to measure market reaction to a specific event. If the market is efficient, it should reflect the influence of the event in the compounding stock prices (abnormal returns). The abnormal return is the unexpected risk-adjusted return. For my study, market reaction will be measured by computing the cumulative abnormal returns. The abnormal returns represent the difference between actual stock performance and the expected stock performance on a daily basis. The cumulative abnormal returns represent the cumulative or the sum of abnormal returns over a window of time. Similar to Horton and Serafeim (2010), the research design for this event study will use an eleven-day window that is 5 days before and 5 days after the announcement. An eleven-day window is used to capture any event leaks or contamination (Cuthbertson et al., 2010.) I will extend the window period to three different number of days. A window of twenty-one days, eleven days, and the event day will be conducted to reveal and may provide plausible explanations of market reaction to the announcement date of IFRS 13.

For the event, Day 0 represents the day that IFRS 13 was announced to the public and impacted on firm value. In this study, the risk-adjusted returns are computed for every firm rather than using a market adjusted model as in Horton and Serafeim (2010.) The expected risk-adjusted returns equation is derived from the Sharpe-Linter capital asset pricing model (Sharpe, 1964; Linter, 1965): $E_{RIT} = \propto + \beta E_{RMT}$ The expected risk-adjusted return for every firm in period t, is the Rm, expected market return for every firm in period t. The alpha and beta of each firm are prepared using a time series regression which collects historical data over a trading year which represents the current firm structure to project future performance. I predict that market statistically significantly reacts to the announcement date of adoption IFRS 13 for three windows periods.

5.3.3 Value Relevance Models

Tests of value relevance examine the association between accounting amounts and the relationship with equity market values (Barth et al., 2001.) Valuation models which are the basis for these tests are developed either in terms of the level of firm value (Miller and Modigliani, 1966; Ohlson, 1995) or examining changes in share prices or returns (Scott, 2012; Ohlson, 1995.). Previous studies focus on the market's reaction to periodic earnings under IFRS (Horton et al., 2010; Christensen et al., 2009; Iatridis et al., 2010; Callao et al., 2007; Capkun et al., 2011; Barth et al., 2008), evidence from LaPointe-Antunes et al. (2009) indicates mandatory changes in accounting principles accounted for using retrospective application can be value relevant. Results of value relevant tests on equity adjustments are limited and conflicted in the current body of literature. Results range from statistically significant market reaction to book value

adjustments (Hung et al., 2007) to marginal market reaction to equity adjustments (Gjerde et al., 2008) to impairing value relevance when comparing IFRS 1 earnings reconciliations to IFRS equity reconciliations at the adoption date (Schadewitz and Vieru, 2007.) The differing results may be due to the lack of a proper benchmark (Gjerde et al., 2008) to measure the market's reaction to the unexpected cumulative effect on retained earnings. Barth et al. (2008) show that the voluntary adoption of IFRS is associated with less earnings management (i.e., less earnings smoothing), timelier loss recognition, and higher value relevance of accounting earnings.

To test the value relevance hypothesis (H3), a modified Ohlson (Ohlson, 1995), which consists of one major indicators from financial reports (income statement), is used to test the value relevance of financial reporting in my study, meaning that the models explore relations between the cumulative annual stock return and the main financial reporting variable, namely the changes of earnings per share (represents income statement). Earning is a fundamental and prominent accounting variable when it comes to the investigation of the market reactions to accounting information. This is due to its superiority over cash flow in this regard. However, the market will look out for both cash flow and net book value if the earnings numbers are perceived to be inadequate (Abiodun, 2012). The earnings per share which is a parameter that can be used to measure the earnings ability of firms is required to be disclosed by companies quoted or about to be quoted in the public security market (Valix &Peralta, 2009). The non-public enterprises to the extent that it would enhance their financial report comparability, are encouraged to present their EPS on the face of their income statements (Menaje, 2012). Contrary to the past practices of presenting information on the earnings per share in the

form of primary and fully diluted EPS, the Financial Accounting Standard Board (FASB) now requires the discloses of both the basic and fully diluted EPS (FASB, 1997). This new practice of EPS disclosure is being motivated by the need to conform the calculation of EPS to the international standard and to assist the investors to better access the effect of potential dilution than that achieved under the primary EPS (Livant and Segal, 2000). The extent of the different EPS, to explain the variability in the security pricing, which encapsulates the information content of EPS is not devoid of debates. These debates are the 46 offshoots of the inclusive findings in this area. Rice (1978) computes the cumulative abnormal returns for two portfolios. One of the portfolios consist companies which disclose fully diluted EPS and the other is made up of companies which did not report fully diluted EPS. Based on his finding, he concluded that the content of the fully diluted EPS is more value relevant to investors. Millar, Nunthirapakorn & Courtenay (1987) find that the basic EPS exhibit stronger correlation with the stock return than either fully diluted EPS and primary EPS. The study of Jenings, Mac & Thompson (1997) corroborates the finding of Rice (1978). Jenings et al. (1997) posit that among the fully diluted EPS, primary EPS, and basic EPS; the basic EPS is the least to explain variability in the stock price. Viewing the EPS in the general perspective, O'hara et al. (2000) opine that the consistent increase in the EPS has positive strong correlation with the share price. The model tests the value revlevance to the adjustment to earnings per share after adoption IFRS 13. So the adjustment to earnings per share model was used below:

$$CAR_t = \alpha_0 + \beta_1 \Delta EPS_{\ t} + \beta_2 IFRS13 + \beta_3 \Delta EPS_t * IFRS13 + \beta_4 DE_t + \beta_5 PB_t + \beta_6 Firmsize_t + \beta_7 STDEVNI5_t + \beta_8 Beta_t + \beta_9 \sum Industry + e \quad (3)$$

Where CAR_t represents the cumulative abnormal return over 365 days of window of the date of earnings per share announcement after adoption IFRS 13. ΔEPS represents the change of earnings per share in t year compared with t-1 year for each firm. $Beta$ represents a measure of a stock's volatility in relation to the market. Consistent with prior research, I control for FIRMSIZE by adding the natural log of the total asset and debt-to-equity ratio to control for solvency. Other control variables are price-to-book ratio and the standard deviation of net come for a 5-year period. Industry variables are for specific industries used in this study. A dummy variable IFRS 13 to differentiate between pre-IFRS 13 and post-IFRS 13 takes the value of 1 for a giving firm after mandatory adoption of IFRS 13 and 0 otherwise. If this is the case, we expect β_3 is positive and statistically significant in the model (3).

6. Empirical Results

6.1 Effects of adoption IFRS 13 on operating performance in five countries

Table 1.2 Panel A presents descriptive statistics for the all variables used in the equation. I estimate equation using observations for which data are available for all years (N=7040 firm observations for 1408 firms). All data are cleaned and outliers are winsorized. The total asset is normalized in the log to avoid the size effect bias. The standard deviation of net income over a 5-year period represents fluctuations in net income. It suggests that there are large differences in reported net income for the firms

represented. The positive mean value of ROA%, ROE%, and EPS respectively suggests that firms on average have consistently incurred financial growth and may be a good indicator of good firms. The mean value of debt-to-equity ratio indicates substantial financing to support firm growth. This leverage measurement could explain the volatility in earnings and the annual history of financial losses which may be symptomatic of additional interest expense. The total assets variable exhibits the range of company size within the sample firms.

Table 1.2 panel B show the Pearson correlation matrix for all variables used in this study. All of these variables are normalized and are eliminated the possibility of size effect bias. There is no high correlation that can create any multicollinearity problem. The convention in accounting research is to check for the possible existence of multicollinearity when the correlation between independent variables exceeds 0.7. The significant correlations are all far below this 0.7 threshold and suggest that the independent variables are not highly correlated to each other.

Table1.3 Panel A reveals the Paired T-tests for ROA%, ROE%, and EPS, respectively, in pre-and post-adoption IFRS 13 in all five countries taken as a whole. I create another two ratios, meaning that the mean value of three ratios in pre-IFRS 13 two years (2011 and 2012) and the mean value of three ratios in post-IFRS 13 two years (2013 and 2014). After conducting Paired T-tests, the results show that overall there are positive means of the change of ROA%, ROE% and EPS in pre- and post- IFRS 13. The p-value shows that the difference of these ratios is statistically significant in pre- and post- IFRS 13, which means that IFRS 13 adoption impacted the operating performance of firms where three ratios decreased after adoption IFRS 13. Table 1.3 Panel B presents

the Paired T-tests for ROA%, ROE%, and EPS, respectively, in pre- and post- IFRS 13 separately for each country. In France and Germany, the results show that between pre-IFRS 13 2011-2012 and post-IFRS 13 2013-2014**,** the results of Paired t-test indicate that the changes in mean levels of ROA%, ROE%, and EPS, respectively, are significant. However, in Italy, Spain and United Kingdom, the results show that the change in mean levels for three ratios, respectively, are not statistically significant, suggesting that IFRS 13 does not affect the operating performance.

[Insert Table 1.3 about here]

6.1.1 Effects of Adoption IFRS 13 on Operating Performance in Two Groups

Table1.4 presents the Paired T-test for three ratios ROA%, ROE% and EPS in pre- and post- IFRS 13 for all firms in five countries divided into two groups based on the median value of ROA% in 2012.The change of mean levels of three ratios between Pre-IFRS 13 2010-2012 and Post-IFRS 2013-2014 are positive and statistically significant in group 1, suggesting that IFRS 13 impacted these ratios, while in group 2, the change of the mean levels of three ratios is not statistically significant. The results support that in pre-IFRS 13, firms with higher ROA in 2012 (Group 1) might be more earnings smoothing in post-IFRS 13 compare with firms with lower ROA in 2012 whose earnings are subject to wild fluctuations. However, the results of firms with lower ROA in 2012 (group 2) indicate that the change of mean of three variables are not statistically significant and show nothing about changes in the explanatory power of three ratios; nor do they provide information as to whether measure of operating performance has changed as a result of IFRS 13 adoption. These preliminary results suggest that in post-IFRS 13

there has been a significant change in the average value of three ratios of firms with higher ROA in 2012 in pre-IFRS 13 period. Finally, we conclude that there is negative impact on firms' good operating performance in pre-IFRS 13 compared with post-IFRS 13.

[Insert Table 1.4 about here]

6.1.2 Results for the Operating Regression Model

Table 1.5 displays the results of the regression model used to test H1. The dependent variables in all regression models are two profit ratios: ROA% and ROE%. I used a fixed –effects estimation (to control for industry-specific effects). Panel A shows the effects of IFRS 13 adoption on ROA% and ROE%, respectively. As predicted, the coefficient of IFRS 13 is negative (coefficient= -1.207) and statistically significant at the 1 percent level on ROA%, while the coefficient of IFRS 13 is negative (coefficient= -7.915) and statistically significant at the 1 percent level on ROE%, suggesting that ROA% and ROA% decreased after IFRS 13 adoption. Panel B shows the results of the regression model for the five individual countries about the effects of IFRS 13 on ROA% and ROE%, respectively. All of the results are consistent with the conclusions from panel A, meaning that operating performance of firms after IFRS 13 adoption went down. The coefficients of IFRS 13 in France and Germany are negative and statistically significant while in Italy, Spain and the United Kingdom are also negative but not statistically.

[Insert Table 1.5 about here]

Table 1.6 shows the results of tests for the two groups of firms in five countries are divided based on the median value of ROA% in 2012. The coefficient between ROA% or ROE%, respectively, and the coefficient of IFRS 13 is negative and statistically significant in group 1, suggesting that there is a negative association between the operating performance of firms and IFRS 13 adoption. This is line with our conclusions from the tests above that there is a negative impact of IFRS 13 adoption on firms' operating performance.

[Insert Table 1.6 about here]

Table 1.7 presents the results of the model 2 that EPS_{t+1} is negatively associated with the IFRS 13*EPS_t and the coefficient is statistically significant (-0.077) at the 1 percent level, meaning that earnings per share (EPS_{t+1}) increased substantially in the years prior to the IFRS 13 adoption only to decrease steadily thereafter. The results reject our hypothesis H1 that IFRS 13 has no effect on the operating performance of firms, suggesting that IFRS 13 adoption reported in the financial reports has negative impact on the operating performance of firms.

[Insert Table 1.7 about here]

In summary, Paired T-test is used to test the whole five countries, five individual countries, and the two groups of all sample for the change of mean of three ratios in pre-

and post-IFRS 13. Two regression models are conducted to examine the association between firm's operating performance and IFRS 13 adoption. These results show that the analysis be carried out on a per-country basis rather than for the whole five countries.

6.2 Effects of IFRS 13 Adoption on Market Performance

I investigate the market reaction to accounting events or financial information. This part focus on the results of the effect of IFRS 13 on market performance. The market reaction was examined for the key event in the announcement date of adoption and implementation of IFRS 13.

Table 1.8 presents the result of the cumulative abnormal returns for portfolios formed on the basis of IFRS 13 issued employed by the event study. Market performance is measured by computing the daily abnormal returns and the cumulative abnormal returns for the event day (Day 0), the eleven-day window, and the twenty-one-day window. Risk-adjusted returns were computed for every firm. Overall, on the announcement data of IFRS 13 standard, the mean cumulative abnormal returns are negative for all sample in three windows separately (-0.79%,-0.59%,-0.05%) and are statistically significant at 1 percent level. The evidence rejects our H2 hypotheses and support that firm announcements of the date of IFRS 13 issued are negatively associated with abnormal stock returns, suggesting that investors negatively reacted to the adoption of IFRS 13 and they might believe that IFRS 13 would not improve financial reporting quality. Further, table 1.8 also shows that the number of the positive cumulative abnormal returns from firms is less than the number of the negative cumulative abnormal returns for firms, suggesting that the whole market might went down after adopting IFRS13.

[Insert Table 1.8 about here]

6.3 The Value Relevance of IFRS 13

I predict that the financial statement under IFRS 13 adoption will reduce asymmetry, improve financial quality, and report the change of earnings per share and increase the value relevance, if investors, correctly or incorrectly, interpret such a change in earnings per share as an indication of the change of future cash flows and then stock prices will change, by examining cumulative abnormal stock returns in a twelve-month window surrounding the announcement date of earnings per share after IFRS 13 adoption.

One-year cumulative abnormal returns (CAR) is used as the dependent variable, which represents the average cumulative abnormal stock return over the annual window for the earnings per share announcement date after IFRS 13 adoption for every firm controlled for other independent variables. The independent variable, the adjustment to earnings per share (ΔEPS) is introduced. The ΔEPS represents the residual from the adjustment to earnings per share which is the difference between pre- and post- EPS.

Table 1.9 shows that result of the regression model *(3)* for five countries, and separately for each country. From the results, it can be seen that the coefficient of $\Delta EPS_t * IFRS13\text{EPS}$ (β_3) is positive in the pooled data, suggesting that the improvement has been observed in the value relevance of earnings per share for the overall market. Collectively, the findings from the model suggests that market do favorably reacts to the announcement of IFRS 13 adoption. It is believable that European market still could

perceive IFRS 13 as an upgrade in the fair value accounting in financial reporting, and positively react to the results of the transition such as the unexpected adjustment to earnings per share.

For individual country, the coefficient of $\Delta EPS_t * IFRS13$ (β_3) are negative in France and United Kingdom while it is positive in Germany, Italy and Spain. It is consistent with the results of Panel A in Table 1.9 that the value relevance of earnings per share increase after adoption of IFRS 13. The estimations of the model *(3)* suggest that the introduction of IFRS 13 produced a structural break in the relationship between market data and accounting measures for Germany, Spain and United kingdom, but not for France and Italy, for which changes in value relevance measured by the (β_3) in the model might have might have occurred for other reasons. The model *(3)* does not account for the effect of the book value of equity per share on stock returns, but it does account for earnings per share.

To summarize, the effects of the explanatory power of a regression of earnings per share vary between countries. There might be some other possible causes of inconsistency in the regression model *(3).* The model (3) does not include the effect of book value of equity per share on stock returns and other non-accounting variables which might affect stock returns.

[Insert Table 1.9 about here]

7. Conclusion

7.1 Discussion on Research Findings

Accounting standards are paramount to any financial reporting system. Accounting standards provide rules for financial reporting which management adheres to and with which auditors confirm compliance. The value of accounting standards can be measured by the ability of the standard to reliably reduce information asymmetry between management and external users of the financial statements. If a new accounting rule for financial reporting demonstrates the ability to narrow the information gap between internal and external users of the financial statements thereby reducing agency costs, the new regulation may be deemed more transparent. A new regulation in accounting standards from the external users' perspective can be measured by examining the effects of the financial statements on both operating and marketing performance.

My study investigated the effects of IFRS 13 on firm's operating and market performance, and value relevance through firm attributes and the cumulative effect on earnings per share as a result of adoption IFRS 13. My study also examined market reaction to the event of IFRS 13 standard issued as well as market reaction to the initial accounting information delivered by adoption IFRS 13. Research for my study was conducted in a staged analysis. The descriptive statistics from the univariate analyses demonstrated variability in the data. Prior to my study, there is not specific research for the individual country about the effects of IFRS 13 adoption.

The change level of earnings per share permitted an opportunity to not only examine the IFRS 13 effect on operating performance as a whole, but also the nuances of the IFRS 13 within the components of operating performance through the descriptive statistics and the time series model. For example, three ratios of ROA, ROE, and EPS for Paired T-test in pre- and post-IFRS 13 in the sample, respectively. The mean value of the

difference in Paired T-test is all positive and significant, suggesting that, at best, there are incremental differences between pre and post- IFRS 13 and that on average the operating performance decreased after IFRS 13 adoption. Further, the effect of IFRS 13 on the adjustment to earnings per share was examined to test market reaction and value relevance. Examination of the descriptive statistics of the independent variables provides additional evidence as to the financial health of these firms. For example, the mean of return on assets suggests that on average these firms have consistently reduced financial gains for adoption IFRS 13. The mean value of debt-to-equity ratio demonstrates highly financially leveraged firms after adoption IFRS 13.

In the bivariate stage of analysis, independent variables were tested against the dependent variable for statistical significance. Using Pearson Correlation, the standard deviation of net income for a 5-year period, the total assets, and industry demonstrated the strongest association to the dependent variable. Selected independent variables were then tested among one another for covariance.

Further, the regression model was used to test that three ratios (operating performance) to the event of IFRS 13 adoption. The findings for this event were statistically significant in France and Germany. Statistical significance could be interpreted as the operating performance of firms after IFRS 13 adoption decreased and improved as a result of IFRS 13 adoption when firms was divided into two group.

The second effect examined in the model based stage of analysis was the market's reaction to the event of IFRS 13 issued and the event of IFRS 13 adoption. The findings for the events were statistically significant. statistical significance could be interpreted as the market reaction negatively to the announcement of adoption IFRS 13, which

demonstrated investors react negatively to the event and support that investors do not believe that this standard can improve financial reporting quality or investors does not believe that the application of these standards, where applicable, will have a positive impact on the financial statements, except for the requirement of additional disclosures.

Evidence from this study suggests, in the sample, the market reacted negatively to the announcement date of IFRS 13 adoption while the negative mean CAR cannot be attributed solely to the adoption of IFRS 13, the IFRS 13 adoption may provide some possible explanations for these results. For example, the purpose of IFRS 13 adopting was motivated by the desire to access global capital markets and enhances the financial reporting system. Upon reviewing the annual financial reports released adoption of IFRS 13, the negative mean CAR could indicate that global investors do not view this standard as an improvement over IFRS. It may be that investors do not perceive the adoption of IFRS 13 as an improvement in financial reporting or regard an inferior set of standards. As previous studies have demonstrated in other country contexts, it is possible that the negative market reaction is attributed to the belief that the new standard of IFRS does not increase the quality of financial reporting. Second, investors still regard IFRS 13 as an improvement to the fair value accounting. However, the market's reaction could be to the unanticipated negative results conveyed by this new IFRS 13. Lastly, the operating performance of the firm decreased after IFRS 13 and delivery this poor financial results on the markets. In a word, examining firm attributes which are associated with the cumulative effect of EPS at the time of adoption may provide additional insight into the market's reaction to IFRS 13 adoption which was the next model tested.

The application of IFRS 13 provides a unique opportunity to explore the effects of firms on operating and market performance. The details of IFRS 13 implementation and market valuations are only available in the transition period. The study explored three ratios of firm attributes as potential indicators of the operating performance. Results from this study provide evidence that operating performance is negatively associated with IFRS 13 adoption. The test of value relevance did demonstrate the market's reaction to IFRS 13 accounting information, specifically the actual adjustment to earnings per share, meaning that market performance is also negatively associated with IFRS 13 adoption.

7.2 Contributions

This study complements the current body of IFRS research on the operating and market effect of IFRS 13 adoption and value relevance by constructing a model to explain explanatory factors.

Few previous studies examined the effects of IFRS 13 adoption. So this study provides insight as to operating performance and market performance that may be associated with IFRS 13 adoption. Examining the earnings announcement date or period contrasts with numerous studies which examine financial reports before and after adoption. Further, this data can only be obtained in the annual report and requires expertise in data extraction and constructs a comprehensive database. This study also extends event study research on IFRS 13. Evidence from this study suggests that the overall market in the five countries context exhibits a negative reaction to the adoption of IFRS 13. This finding support to previous studies which demonstrate a negative market reaction to the new IFRS regulation. International standard setters may be particularly

interested in this finding as a preliminary measurement of investor reaction to the adoption of IFRS 13 changeover and the objective of enhancing financial reporting by reducing information asymmetry.

7.3 Limitations

Results from this study must be interpreted with caution as there are a number of limitations to the research. First, the study is limited due to only five countries in European. Although the sample size permits a more extensive study of IFRS 13 implementation, it limits generalizability and the power of empirical tests. Second, the analysis is restricted to firms of these five countries and as such results from this study may not be applicable to other country contexts. Third, use of firms which opted for IFRS 13 adoption may create a self-selection bias and may not reflect the effects of later adoption of firms or compulsory complaints. Also, using bivariate analysis to select independent variables for the main multivariate model creates a bias for the magnitude adjustment to EPS. Lastly, all studies of IFRS share a limitation regarding the ongoing development of IFRS. This study is not unique in this regard and is limited to examining the implementation of IFRS standards mandated during a specific time period.

7.4 Future Research:

The depth of this study has led to a breadth of future research opportunities. First, to augment the event study in the five countries in Europe, the market performance of adoption IFRS 13 may be beneficial to examine if the market reaction phenomena are limited to five countries of adoption IFRS 13 tested in this study or extends to all European countries adopters of IFRS 13. Second, I divide good and bad groups based on

ROA median value in pre-IFRS 13 to be tested in a sample of firms in five countries in Europe. I might have other ways to classify groups based on the different standards. It may reveal additional firm attributes which are associated with the adoption of IFRS 13. The population of adopters of IFRS 13 is a unique set of companies. Further, future studies could reveal the industry-specific impact of IFRS 13 adoption. Lastly and most importantly, there is very limited research as to the extent to which a firm adopts IFRS 13 and why some financial statement discloses that there is no difference after IFRS 13 adoption. This data is not readily available and must be hand-collected from annual reports. Future research is necessary to develop a monetary measurement of the adoption of IFRS 13 to distinguish between "earlier" IFRS 13 adoption and "later" to IFRS. Now since IFRS 13 is intended to be an important set of standards, our ability to measure the extent to which the standards are being adopted is a valuable tool in assessing the universal application of IFRS as intended by the standard setters. The directors do not anticipate that the adoption of these standards and interpretations in future financial years will have a material impact on the Financial Statements. Finally, I expect to further investigate the difference between European market and U.S market after applying FVM.

Part 2: The Disclosure of Fair Value Pension Asset under SFAS No.158, Pension Assumptions, and Earnings Manipulation

1. Introduction

Statement of Financial Accounting Standards (SFAS) No.158, *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans*, moves disclosures related to defined benefit pension plans and other postretirement benefit (OPEB) plans from the footnote to the balance sheet. The measurement of pension and OPEB obligation remains unchanged. However, firms require recognizing the funded status of these postretirement benefit plans on the balance sheet. (Note 1).

Most previous literature document that the consequences of the changes in accounting recognition standard rather than that of the disclosure due to that the recognition bears more powerful incentives to encourage researcher to explore. Mitra and Hossain (2009) examine that the value-relevance of pension transition adjustments and other comprehensive income (OCI) components in the initial adoption year of Statement of Financial Accounting Standard (SFAS) No.158 and the overall results suggest the stock market negatively reacts to the adverse impact of SFAS.No.158 pension transition adjustments on net worth and future cash flows when the impact is substantial in its magnitude in dollar terms and further provides useful insight into the information processing by documenting that the market evaluates accounting information more effectively when such information is recognized in the financial statements rather than disclosed only in the financial footnotes. Chang (2014) investigated the economic consequences of the transition from disclosure to recognition of pension funded status following SFAS 158 through three aspects: 1) market reactions to relevant rulemaking

events; 2) managers' changes in making estimates for pension accounting and managing plan assets; and 3) firms' lobbying behavior against the regulatory change in anticipation of the consequences. However, the goal of our study is different from those of previous articles and focuses on the effect of the disclosure of new accounting standard (SFAS No.158) on ERR and earning management.

I study concentrates on this grey area using SFAS No.158 as a background based on that the standard provides a unique setting to explore the disclosure of fair value of pension assets. Specifically, I examine how firm's ERR response to the disclosure of fair value of pension assets under SFAS No.158. This standard requires the disclosure of the fair value of defined pension plan assets among various assets categories through a fair value hierarchy. The hierarchy categories pension plan assets used in valuation techniques into three levels. This requirement is an extremely important determinant of ERR because it involves an assumption affecting other comprehensive income, finally leading to changes in reported earnings. The ERR assumption determines the expected return on pension assets and all else equal, a higher fair value of pension assets plan assumes a higher assumed ERR, leading to higher reported earnings. So the disclosure of fair value pension plan assets is a key determinant to estimate ERR. Accordingly, I predict that the disclosure of fair value of pension asset is related to ERR under SFAS No.158. Further, I also conjecture that disclosure of fair value of pension assets is related to meeting or beating ERR. Finally, I exploit that the disclosure of fair value of pension assets under SFAS No.158 is related to earnings manipulation through ERR management.

Modern studies argue that ERR has always been subject to scrutiny due to that its long-term nature: Reconciliation between ERR and ARR happens over time with long

amortization periods. For instance, during the early 2000s, some financial analysts and regulators speculated that firm's ERR assumption was unrealistically high. In 2002, the SEC publicly warned companies that it might challenge ERRs above 9 percent. Therefore, it is difficult for users of financial statements or investors to identify some errors in ERR. Secondly, investors and analysts have not fully estimated ERR assumption due to that the regulated disclosure of fair value of pension plan assets in the balance sheet. Firms are required disaggregate and disclose categories of pension assets with the fair value hierarchy information including all of the categories of assets such as equity, debt, real estate and other. A major concern was that firms could discretionally estimate the fair value of the Level-3 pension assets. Level-1 pension assets are quoted prices in active markets for identical assets or liabilities and Level-2 pension assets are quoted prices for similar assets or liabilities in an active market. Only Level-3 pension assets are used to measure fair value to the extent that relevant information is not available and finally use firms' data and the models to estimate. So Level-3 pension assets can capture biased fair value and also leave an opportunity for managements to adjust biased ERR based on the needs of different purposes.

To test my conjectures, I hand-collected three-level fair value of pension plan assets data for large publicly trade US firms over the period from 2009 to 2014. The final sample consists of 4997 firms-year observations. I examine that the associate of the disclosure of fair value pension assets with ERR, ARR and earnings target.

In the first test, I begin to conduct whether higher ERR is driven by the firms with the Level-3 fair value pension assets. I classify firms into two groups. One group has Level-3 fair value of pension assets and the other group without Level-3 fair value of

pension assets. I use the Chi-square test, and later regress ERR on the proportions of the three-level fair value of pension assets. I assume that Level-3 fair value of pension assets increase the opportunities for firms to report higher ERR that are not justified by their fair value of pension assets. In the second test, I investigate whether ERR is more likely to be met or beaten by firms with the Level-3 fair value of pension asset. I construct the difference between ERR and ARR to capture the relationship with ERR. I assume that Level-3 fair value of pension assets plays an important key in meeting or beating ERR by boosting ARR. In the third test, we explore that reported earnings targets are more likely to be met or beaten by firms with the Level-3 fair value of pension assets through ERR assumption when firms marginally fall short of earning expectations. I create the Pseudo EPS and apply the Chi-square test to examine whether the difference between the reported EPS and the Pseudo EPS is associated with the Level-3 fair value of pension assets through ERR management.

Consistent with my predictions, I find that the Level-3 fair value of penson assets is significantly related with ERR, implying that firms with the Level-3 fair value of pension assets is more likely to boost ERR. The result supports that ERR adjustment is highly related to the Level-3 fair value pension assets. Next, I conclude that the difference between ERR and ARR is significantly associated with the Level-3 fair value pension assets, suggesting that firms are more likely to meet or beat ERR using the ARR of the Level-3 fair value of pension assets. Finally, I exploit that the disclosure of fair value of pension assets under SFAS No.158 is related to earnings manipulation through ERR management.

These results make an important contribution to the literature: Firstly, I directly examine that the effect of the fair value of pension assets under SFAS No.158 on ERR management. The standard of SFAS No.158 issued in 2007 requires firms to disclosure fair value of pension assets in the balance sheet. Obviously, few previous studies directly probe the effects of this standard on ERR and most literature still focus on the allocation of pension assets. Secondly, my study emphasizes that the importance of the disclosure of fair value of pension asset in restricting manager's earnings management. Finally, the results are more helpful for standard setters assess the source of ERR and how to evaluate the role of ERR in earning managements.

The rest of the paper is organized as follows. Section 2 provides background and literature review. Section 3 presents hypotheses development. Section 4 describe data and Section 5 designs the research. Section 6 discusses the results of the test of the hypotheses and perform robustness tests. Finally, I conclude in section 7.

2. Background and Literature Review

2.1 FASB Statements No. 158

Prior to SFAS No.158, SFAS No.87, 106 and 132R regulate accounting and disclosures of pension plans. These standards allow firms to smooth pension plans related costs caused by 1) changes in actuarial assumptions 2) plan amendments and 3) "abnormal" asset returns. These items were reported in the footnotes but were amortized to income and the balance sheet over time. However, these existing standards did not require firms to report the current economic status (the overfunded or underfunded status)

of a defined benefit postretirement plan in its statement of financial position (balance sheet).

After approved in September of 2006, FASB No. 158, *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans, an amendment of FASB Statements No. 87, 88, 106 and 132(R)* (SFAS 158) is intend to address the concern that existing standards on employers' accounting for defined benefit postretirement plans fail to produce fair and understandable financial statements. The standard improves existing reporting for defined benefit postretirement plans by requiring a firm to recognize certain financial activity occurring in the plan in its financial statements. This activity would include the overfunded or underfunded status of a defined benefit postretirement plan in the balance sheet. The actuarial gains and losses, prior service costs, transition obligations, and credits that arise during the period will continue to be recognized through the income statement with several variations. The standard also improves financial reporting by requiring a firm to measure the funded status of a plan as of the date of its year-end statement of financial position.

The Standard contained two key accounting changes compared with prior statements. Firstly, firms should recognize a pension asset or liability in an amount equal to the difference in the fair value plan assets and the projected benefit obligation. This distinguish from prior standards that required only a minimum liability equal to the excess of the accumulated benefit obligation over the fair value of plan assets. Secondly, SFAS No.158 requires that all overfunded plans be combined and all underfunded plans be combined and recognized as an asset and liability respectively on the balance sheet. Past standards merely allowed for the option for this aggregation. The other major

accounting change was evaluating plan assets and benefit obligation at the balance sheet date. This differs from past rules that let firm use any day within three months prior to that date. Therefore, the FASB expects that financial reporting is more understandable by eliminating the need for a reconciliation in the notes to financial statements and reflecting the fair value of assets allocations in the balance sheet. (Statement No. 158).

2.2 Literature Review

Academic studies have spot light on the usefulness of pension reporting and disclosure for many years. For instance, Amir and Gordon (1996) suggested that investors use pension or postretirement benefit information in valuing the equity or share prices of firms. Coronado and Sharpe (2003) found that market will value the components of pension instead of the funded status of a pension plan if there is doubt or ambiguity in regard to the economic status of the pension obligation. Picconi (2006) explored whether investors and analysts fully impound information contained in pension footnotes and concluded that pension accounting was not fully used by investors and analysts. Amir et al. (2010) investigated whether new pension disclosures and subsequent full pension recognition under *FRS* 17 and *IAS* 19 had any impact on pension asset allocation of UK companies. Soroosh and Espahbodi (2007) reported that the application of SFAS No.158 to the financial statements of Merck in 2004 would increase the net liability status of the pension fund and cause a decrease in owners' equity of $1.8 billion and further state that Merck's results would be typical of all firms with similar pension plans. Schneider (2011) demonstrate the changes in reporting the funded status of pension impact on debt-asset and debt equity ratios. Most of these studies focused on the

economic consequences of the pension standards on firms including market performance and operating performance.

There is another stream of research about exploring the determinant of ERR and how firms use those two items to achieve different purposes on pension accounting. Previous empirical studies on pension accounting have provided evidence that managers opportunistically estimate biased ERR, which is effectively used to offset the service cost and interest cost of pension expense. Alster (1993) argue that firms increase pension credits by choosing a high ERR. Eaton and Nofsinger (2001) examine the usefulness of expected rates of return (ERR) for public pension plans and the predictive power of ERR on the actual returns of the pension assets. They find that the correlation between expected return and the percentage of assets that are equity securities is relatively weak, and further that the percentage of assets that are equity securities is a much better predictor of actual returns than the disclosed expected return in public pension plans. Comprix and Muller (2006) examined whether managers behave opportunistically in their selection of reported ERRs in the context of CEO cash compensation calculations. They presented evidence that US managers select the aggressive expected rate of return estimates to inflated reported income, which subsequently influences their cash and stock-stock based compensation. Chuk (2012) examine whether firms alter their behavior in response to changes in accounting standards that mandate new financial statement disclosure and concluded that firms tend to justify their biased ERR by increasing risker securities in the pension asset allocation or tend to adjust their biased ERR downward in the post period of FAS132R.

After SFAS No.158, The second part of Exhibit 1 below presents that how changes in fair value plan assets affect pension expense, other comprehensive income, and earnings. The expected return on pension assets offsets the service cost and interest cost when computing pension expense. In effect, the expected return plan assets are estimated based on the ERR by firm's management and ERR is expected to be sensitive to changes in the expected rates of return on the various types of fair value pension assets included in the fund's status, changes in the portfolio composition and managerial discretion (See Appendix A1and A2).

Therefore, fair value pension assets offer managers more space to select biased ERR and can enjoy the discretionary effects on earnings with less concern about the detection risk of their biased ERR choices. Particularly, since the reconciliation between ERR and ARR happens over time with long amortization periods, users of financial statements have difficulties in identifying errors in ERR choices. Prior researchers suggested that under special conditions to achieve their earnings targets and market expectation, managers would find ERR a safe and handy tool to manage earnings. Winklevoss (1993) found that ERR has a significant influence on net periodic pension costs and earnings, especially for firms with large amounts of pension assets. Franzoni and Marin (2006) examined the use of pension assumptions to manage earnings and using the ERR to manage earnings appears to be effective because the market does not fully impound pension information. Asthana (2008) examined the earnings management through pension assumptions to meet earnings targets and its impact on resource allocation decisions. Bergstresser et al. (2006) state a contracting cost explanation that firms select biased ERR assumptions to inflated earnings when they prepare to acquire

other firms, when they are near critical earnings thresholds and when they exercise stock options. Pocconi (2006) and Asthana (2008) report that ERR is likely to be manipulated by managers for meeting their earnings targets. Lee et al. (2014) examined samples covering this more recent time period and provide evidence consistent with firms reporting higher ERRs under conditions when management has the incentive to inflate earnings. Li and Klumpes (2013) examined whether UK managers behaved opportunistically when determining ERRs during an extended period of major changes in pension accounting rules and supported that UK firms with tightening debt covenants inflated their reported ERRs over this period. In a word, ERR has been explored for a long period and widely accepted as a tool for earnings purpose.

However, few research involves the association between ERR and the disclosure of fair value pension assets. Different from those studies, my research will be the first one to investigate this topic and its application.

3. Hypothesis and Development

Pre-SFAS No.158, under the old accounting standards, firms disaggregated pension assets with broad categories, such as equities, debt securities, real estate, and other assets in the footnote of financial statements. Amir (1998) examined the correlation between ERR and composition of the pension portfolio. Chun (2013) investigated that under pension accounting rules that the composition of pension assets is a key determinant of ERR on pension assets, the economic consequences of the mandated disclosure of pension asset composition required under SFAS 132.

After SFAS No.158, the primary focus of this standard is a measurement of the funded status of defined benefit pension plans on the corporate balance sheet. To some extent, this standard is "merely" moving the reporting of pension items from the footnotes to the balance sheet. However, this standard requires firms to disclose the present value of their defined benefit pension obligations and the market value plan assets, as well as actuarial assumptions and details on asset allocation.

So three-level fair value of pension assets is presented on the balance sheet and required to recognize the fund status under SFAS No.158. The Level-1 fair value of pension asset use quoted price in the market and Level-2 fair value of pension assets are estimated on the price of similar assets. The Level-3 fair value of assets bear special attributions and are very long term, then their estimate rests on several financial and demographic assumptions. Furthermore, the Level-3 fair asset category can include not only residual assets but also risky assets, such as alternative investments, the expected returns of pension funds tend to differ in the degree of detailed underlying assets included in "Level 3". Investors are not capable of precisely evaluating the assumed ERR when the Level-3 is included in pension asset fair value using firms own date and model. Because of their long-term nature and attribution, small changes in assumptions can cause large changes in the estimates of the fair value of pension assets. The assumptions underlying pension asset are to a large degree based on firm-specific managerial estimations.

I reasonably conclude that Level-3 fair value of pension assets has impounded the information content of these items into ERR, firm's stock and thus, the effect on firm's

reported earnings. Thus, Firms can use this Level-3 fair value of pension assets to adjust ERR according to their purposes. My first hypothesis follows:

H1: Ceteris paribus, firms with the Level-3 fair value of pensions assets have the same ERR as firms without Level-3 fair value of pension assets.

SFAS No.158 requires firms to provide the fair value of pension assets based on the nature and risks of assets. Level-1 and Level-2 fair value of pension assets usually include cash and same equivalents. They can be traded on the active market and translate into cash flow immediately. Firms are expected to precisely estimate higher rates of return from these Level-1 and Level-2 pension assets and select the reasonable ERR for their investment decisions. Level-3 fair value assets include much more undisclosed information and bear special firm characteristic, and does not necessarily attract more attentions from auditors and outside investors when firms boost higher the actual rate of return of Level-3 fair value of pension assets compared with those of Level-1 and of Level-2 separately. Managers are ultimately concerned about the punishment for the higher return of the Level-1 or the Level-2 fair value of pension assets when the biased ERR is easily detected. Auditors also rigorously test whether ERR is supported by combining the fair value of pension assets and market return together because of the higher litigation risk for the incorrectly detailed disclosure of ERR from Level-1 and Level-2 fair value of pension assets.

As mentioned, Level-3 fair value of pension assets is affected by the uncertainty pertaining to their estimation and by possible managerial opportunism and the valuation

of the Level-3 fair value pension asset actual rate of return depends on firm's specific factors. Once higher ERR is estimated, which causes higher report earnings, and later could not met as firms expect, the Level-3 fair value of pension assets is also an option to adjust the actual rate of return (ARR). Because ERR and ARR are both estimated based on the firm's data and models, which include too much asymmetric information.

However, though manager's motivation of boosting ERR can be curtailed by the improved transparency and managers are required to adjust biased ERR under the greater disclosure environment, firms have opportunistically met or beat assumed higher ERR using the ARR of return of Level-3 fair value of pension assets.

I posit that the effects of greater disclosure under FAS. No.158 would be more pronounced when firms are mandated to disclose the fair value of pension assets. Hence, the next hypothesis states:

H2: Ceteris paribus, the Level-3 fair value of pension asset do not affect the likelihood of meeting or beating ERR.

The Fair-value model has its share of detractors who worry primarily about increased income volatility and susceptibility to manipulation. Literature has revealed that managers have strong incentives to manipulate ERR for boosting earnings and provides evidence that ERRs of pension funds are biased, by measuring cross–sectional difference of ERR with managers' motivations. Adams et al. (2011) investigated the opportunity that exists for firms to inflated earnings though the expected rate of return (ERR) assumption associated with defined benefit plans using a sample of firms over the

period of 1991 through 2005. Although they cannot observe pervasive inflating of reported income through the ERR during the sample period, they do find that some firms, small increases in ERR can have a material impact on reported earnings. The earnings inflation is directly related to the amount by which earnings will miss the target and to earnings sensitivity to expected return on pension asset assumption. The characteristics of pension assumptions, such as complexity and long-term nature and the disclosure of balance sheet, make it difficult for users of financial statements to identify biased ERR assumption and allow managers to manage earnings with an opportunistic choice of ERR assumption. Collectively, the difficulty in detecting such manipulation may facilitate upward biased ERR assumption. The asymmetry information of the Level-3 fair value of pension asset offers the gray area to ERR assumption and to use ERR to inflated earnings per share when firms fail to meet the earnings expectation. So my third hypothesis is:

H3: Ceteris paribus, firms with the Level-3 fair value of pension assets do not inflate ERR to beat or achieve earnings target when earnings are marginally fall short of expectations.

4. Sample Selection

My data comes primarily from three resources and focus on firms in North America. Firstly, the financial statement data about DB pension plan and frim attributes are collected from COMPUSTAT from 2009 to 2014. More specifically, firms continually report ERR (the long-term rate of return on pension assets), actual returns to pension assets, pension assets, and other pension asset variables used in the model.

Secondly, after SFAS No.158 was effective, firms disclose the historical fair value of pension plan assets in addition to the current-year fair value of pension assets. I hand-collected all the historical fair value hierarchy levels of pension assets from firm's 10-K. Most of firms disclose the historical hierarchy levels of fair value of pension assets after 2009. Our sample finally mainly covers from 2009 to 2014 which includes 5,115 firm-year observations, with the average of 1,023 firms in each year. Thirdly, analyst earing forecasts data is from the I/B/E/S adjusted summary statistics file. Analysts issue multiple forecasts for a firm and we use the most recent forecast data issued on the date before the annual earnings report date because prior studies have found that the recent forecasts are more accurate (O'Brien, 1988). The median forecasts are used as analysts' consensus forecasts because medians are less sensitive to outliers. Although unadjusted I/B/E/S summary forecasts data is better to avoid losing the precision of measurement due to the I/B/E/S adjustments of prior forecasts for subsequent stock splits (Baber and Kang, 2002; Payne and Thomas, 2003), I use adjusted I/B/E/S summary forecasts data to keep the good quality of data, keep away from stock split issue, and avoid some calculation problems for earnings per share. Furthermore, firms followed by fewer than two analysts are deleted (Mendenhall, 2003) to use biased forecast numbers. After combining pension data with analyst earnings forecast data, our final sample is reduced to 4,997 firm-years.

5. Research Design:

I prefer use Chi-square tests and design several regression models to investigate the association between the Level-3 fair values of pension assets and the assumed ERR for three different purposes.

Does the Level-3 fair value of pension assets have the effect on the assumed ERR?

To test H1, before using the regression model, I determine if there is a significant difference in the frequency of higher ERR based on two different groups of firms. I assume the reasonable annual investment return for the whole North America market is 7.5%. Firms in the sample are divided into two groups based on the median value of ERR (7.5%). %ERR is an indicator variables and takes value 1 if %ERR > 7.5, and 0 otherwise. Firms are also divided into the other two groups based on if firms have Level-3 fair value of pension assets. Level-3 is also an indicator variable and equal to 1 if firms have Level-3 fair value of pension assets, and 0 otherwise. I expect that the results of the Chi-square test are statistically significant differences, suggesting that firms with Level-3 fair value pension assets are more likely to disclose higher ERR, which is more than 7.5%.

The next step, to support the results of Chi-square test, I design the following regression model with and without the industry fixed effect to perform the robust test:

$$\begin{aligned}\%ERR_t = \ & \alpha_0 + \alpha_1 \%LEVEL1_t + \alpha_2 \%LEVEL2_t + \alpha_3 LEVEL3_t + \alpha_4 ARR_{t-1} \\ & + \alpha_5 FIRMSIZE_t + \alpha_6 PLANSIZE_t + \alpha_7 FUNDING_t \\ & + \alpha_8 DURATION_t + \alpha_9 LEVERAGE_t + \alpha_{10} ROA_t + \alpha_{11} CFO_t \\ & + \alpha_{12} \sum Indutry + \varepsilon \qquad (1a)\end{aligned}$$

The model ***1a*** uses %ERR as the dependent variable. Since ERR should be an unbiased estimation of the future return based on the three levels of the fair value of pension asset allocation, I include the levels of disclosed fair value pension asset

categories in the model 1a: %LEVEL1 (the percentage of Level-1 fair value of pension assets occupies the total fair value of pension assets), %LEVEL2 (the percentage of Level-2 fair value of pension assets occupies the total fair value of pension assets), LEVEL3 is a dummy variable and takes value 1 if firms have Level-3 fair value of pension assets, and 0 otherwise. I expect that firms with the Level-3 fair value of pension assets tend to assume higher ERR when firms disclose the three levels of fair value of pension under SFAS No.158. Therefore, I predict that α_3 is positive and statistically significant.

I control for the effect of the actual rate of return (ARR) to pension assets, measured by the actual investment return scaled by the beginning balance of pension assets, which also influence the choice of ERR. Because the choice of ERR is likely affected by multiple prior years' actual returns, we include one year lagged actual rate of return (ARR_{t-1}). I also control for the size of firm and the defined benefit pension plan with *FIRMSIZE* (the natural logarithm of total assets of firm) and *PLANSIZE* (the natural logarithm of pension projected obligation), respectively, because of economic scales .I still add other pension plan and firm attributes that are associated with ERR choices: *FUNDING* (measure by fair value of plan assets divided by projected benefit obligation), *DURATION* (Service cost divided by the same of interest cost and service cost), *LEVERAGE* (total liability divided by total assets), *ROA* (income before extraordinary items and pensions expense divided by total assets), and *CFO* (cash flow from operations before pension contributions divided by total assets). I follow the industry classification based on the global industry classification standard (GICS) sectors (Gleason et al. (2008).

Finally, I further understand how firms use Level-3 fair value of pension assets to boost ERR compared with ones without the Level-3 fair value of pension assets.

$$\%\boldsymbol{ERR_t} = \boldsymbol{\alpha_1}\%\boldsymbol{LEVEL1_t} + \boldsymbol{\alpha_2}\%\boldsymbol{LEVEL2_t} + \boldsymbol{\alpha_3}\%\boldsymbol{LEVEL3_t} + \boldsymbol{\alpha_4 ARR_{t-1}}$$
$$+\boldsymbol{\alpha_5 FIRMSIZE_t} + \boldsymbol{\alpha_6 PLANSIZE_t} + \boldsymbol{\alpha_7 FUNDING_t}$$
$$+\boldsymbol{\alpha_8 DURATION_t} + \boldsymbol{\alpha_9 LEVERAGE_t} + \boldsymbol{\alpha_{10} ROA_t} + \boldsymbol{\alpha_{11} CFO_t}$$
$$+\boldsymbol{\alpha_{12}\sum Indutry} + \boldsymbol{\varepsilon} \qquad (\mathbf{1b})$$

Since I expect that if the Level-3 fair value of pension assets provides the main relevant information for boosting ERR and assume that ERR is fully determined by three-levels fair value of pension assets, the regression model is designed without the intercept, which is different from the model ***1a***. In the model ***1b,*** we use *%LEVEL3* (the percentage of Level-3 fair value of pension assets occupied the total fair value pension assets) instead of *LEVEL3* (the dummy variable). The coefficient $\boldsymbol{\alpha_1, \alpha_2, and\ \alpha_3}$ mean how much each level fair value of pension assets contributes to boost ERR. I examine whether the Level-3 fair value of pension assets facilitate ERR manipulation by comparing the coefficient on $\boldsymbol{\alpha_1}$ on *%LEVEL1*, $\boldsymbol{\alpha_2}$ on *%LEVEL2*, and $\boldsymbol{\alpha_3}$ on *%LEVEL3* in the model ***1b***. There two possible outcomes for comparing the coefficients:

1) If the Level-3 fair value of pension assets directly provides strong information about ERR management, the value of the coefficient α_3 should be the highest among $\alpha_1, \alpha_2, and\ \alpha_3$ in model ***1b***.

2) If the Level-3 fair value of pension assets indirectly provides weak information about ERR management, the value of the coefficient α_3 should be at least more than either of $\alpha_1, or\ \alpha_2$ in model ***1b***.

I expect that the coefficients $\alpha_1, \alpha_2, and\ \alpha_3$ are all positive and statistically significant in the model ***1b*** and the differences of any two coefficients among $\alpha_1, \alpha_2, and\ \alpha_3$ are also statistically significant when comparing three categories of three levels pension assets. Meanwhile, either of the two results above could be met. I still use the same control variables as the model ***1a*** does and the control variables are defined in Appendix A.

Does the Level-3 fair value of pension assets impact the likelihood of beating or meeting ERR?

To test H2, I firstly use Chi-square test to examine the association between ΔME_t and Level-3 fair value of pension assets. ΔME_t is measured by the difference between ARR and ERR and is used to indicate whether ARR misses or beats ERR. ΔME_t is also a dummy variable.

ΔME_t =1 if ARR - ERR > 0 (the actual rate of return on pension assets (ARR) is more than the expected rate of return (ERR), ARR-ERR=0 is excluded from the sample)

ΔME_t =0 if ARR - ERR $<$ 0 (the actual rate of return on pension assets (ARR) is less than the expected rate of return (ERR))

The Level-3 fair value of pension assets is a dummy variable and defined as shows in the first Chi-square test. I expect that the results of Chi-square test are positive and statistically significant.

Secondly, I design the following industry fixed effect logistic model:

$$\Delta ME_t = \beta_0 + \beta_1 \%LEVEL1_t + \beta_2 \%LEVEL2_t + \beta_3 LEVEL3_t + \alpha_4 FIRMSIZE_t + \alpha_5 ARR_{t-1} + \alpha_6 PLANSIZE_t + \alpha_7 FUNDING_t + \alpha_8 DURATION_t + \alpha_9 LEVERAGE_t + \alpha_{10} ROA_t + \alpha_{11} CFO_t + \sum Indutry + \varepsilon \quad (2)$$

ΔME_t and *LEVEL3* have the same definitions as the Chi-square test indicates above. I also control for other determinants of ΔME_t by including the following variables: ARR, FIRMSIZE, PLANSIZE, FUNDING, DURATION, LEVEAGE, ROA and CFO. The definitions of control variables have been detailed in the Appendix A. Because the effect of Level-3 fair value of pension assets on beating or meeting ERR is likely affected by the current year's actual rate of return, I add the current actual rate of return (ARR_t). Because SFAS No.158 requires firms to disclose the long-term expected rate of return on pension assets (ERR) and three-levels of fair value of pension assets, the ARR of Level-3 fair value of pension assets is calculated by combining ERR and other factors. If firms risk auditing and overstate ERR, higher ERR means more yields and increases earnings. Otherwise, lower ERR means less return and reduces reported earnings. Once the expectation of ERR cannot be met, bringing directly potential risk of lower income and missing earnings target, the adjustment of ARR of the Level-3 fair value of pension assets is considered as an opportunity to beat or meet ERR. Therefore, I predicts that β_3 is positive and statistically significant in the model ***2***, suggesting that firms with the

Level-3 fair value of pension assets are more likely to beat or meet ERR through the adjusted ARR of Level-3 fair value of pension assets.

Is the Level-3 fair value of pension assets helpful to beat or meet earnings target through ERR management?

Lee et al. (2014) investigate how firms manipulate ERRs to make their reported earnings meet or beat analyst forecasts - a direct test of earnings management. In addition, when earnings target is met or beat, it is still an open area to explore whether the Level-3 fair value of pension assets is more likely to play an important role in inflating ERR to beat earnings target. Then we extend our study to examine whether the Level-3 fair value of pension assets increase the propensity to change ERRs to beat earnings targets.

Following Lee et al (2014), I construct a new variable: Pseudo_EPS, which is calculated by eliminating the effect of changes in the ERR from the I/B/E/S actual annual reported EPS. Specially,

$$\boldsymbol{Pseudo\_EPS} = \boldsymbol{Reported\_EPS} - \frac{\boldsymbol{\Delta ERR * FVPA * (1 - MTR)}}{\textbf{Common Shares Used to Calculate EPS}}$$

Where FVPA refers to the fair value of pension assets and MTR is a firm's marginal tax rate. I assume that the effective tax rate is from John Grahama.

Then I construct another variable: ΔEPS, which is measured as the difference between the reported EPS and a firm's Pseudo_ EPS.

ΔEPS = Reported_ EPS – Pseudo_EPS

ΔEPS is thus the change in earnings due to the potential manipulation of the ERR. As pointed out by Lee et al (2014), a large number of firms are expected to increase their ERR, because management are motivated to report an EPS that meet or beat analyst median forecasts. Further, while earnings target has been achieved by increasing ERR, to examine the impact of Level-3 fair value of pension assets on the change ERR to beat earnings target, I prefer to use the Chi-square test. Then I need one more variable to explain our new sample data range:

ΔEPS _Beat= Reported_ EPS – Forecast_EPS

ΔEPS _Beat is measured by the difference between the reported EPS and analyst's median forecast EPS and if ΔEPS _Beat ≥ 0, firms would have potential motivations to do earnings manipulations to beat or meet analysts forecast earnings. Bergstresser et al (2006) stated that management has significant discretion in setting the ERR and their earning management incentive would become stronger when the operating income is sensitive to the changes in the ERR, suggesting that a small increase in the ERR resulting in a big increase in operating income. This conclusion directly provides the source of idea for our third hypothesis. Management earnings manipulation incentive is more likely to be stronger when earnings would have marginally missed analyst earnings forecast, compared with a large earnings missing amount. For my test, the value of the difference between the reported EPS (Reported_EPS) and the analysts median forecast EPS (Forecast_EPS) has limited to be in the reasonable range between 0 and 0.05 ($0 \leq \Delta EPS\_Beat \leq 0.05$), supporting that managers rather than beat or meet analysts

forecast earnings target with less riskiness through ERR management. Otherwise, managers have to use other earnings manipulations options more than ERR management to boost firm's income, and beat or meet earning targets. Therefore, my sample would reduce to contain 932 firm-year observations and firstly divided into two groups based on if ΔEPS is equal to 0.

If ΔEPS =0, 1) firms would have used other earnings manipulations options to beat or meet earnings targets excluding ERR management, or 2) firms already would have beat or met earnings targets without any earnings manipulations;

If ΔEPS > 0, firms would have missed the reported earnings targets after eliminating the effect of changes in ERR increase on the reported EPS.

I do not include those firms if ΔEPS <0 because management tends to have less incentive to increase the ERR to report higher EPS, given that Pseudo_EPS already meets or beats the actual EPS without changing ERR.

I am particularly interested in these firms with ΔEPS > 0 because management tends to have different incentives to boost the earnings through the increase in ERR based on the levels of earnings close to the forecast amount. If Reported_EPS is significantly over analyst earnings forecasts, a mere increase in the ERR would not facilitate earnings target. In contrast, if the Reported_EPS is marginally over Forecast_EPS, the ERR increase would be able to boost firms to beat or meet analysts' expectations.

Level-3 is an indicator variable and has the same definition as the A3 indicates. If management increases ERR to make Reported_EPS meet Pseudo_EPS, management tends use the Level-3 fair value of pension assets to beat earnings target. Therefore, I expect the results of Chi-square test are positive and statistically significant to reject H3.

6. Emprical Results

6.1 Descriptive Statistics

Table 2.1 displays the descriptive statistics of dependent and independent variables. The mean and median of ERR in all the sample are 7.3015% and 7.5%, respectively. The results show that on average, the median value of ERR is consistent with the annual whole market return in North America (7.5%). The size effect is eliminated in the FIRMSIZE and PLANSIZE for the analysis. Level-1 and Level-2 fair value of pension assets are almost occupied the same percentage of the total fair value pension assets.

[Insert Table 2.1 about here]

Panel 2.2 presents the Pearson correlations for the main variables used in this study. It shows that the correlations between ERR and Level-3 is almost 0.14, indicating that Level-3 fair value of pension assets is more likely to impact the ERR choice. ERR is also directly related to %Level 1 and %level 2. These results are generally consistent with our expectations. In addition, the correlations among independent variables are less than 0.5, indicating that independent variable collinearity is not a serious issue.

[Insert Table 2.2 about here]

6.2 Univariate Analysis of the ERR Change

I partition our sample into two groups based on if firms have Level-3 fair value of pension assets:

Group 1: the ERRs of firms without Level-3 fair value of pension assets.

Group 2: the ERRs of firms with Level-3 fair value of pension assets.

Table 2.3 shows that the Paired-T test for two groups. The mean value of ERR (7.45%) under firms with Level-3 fair value of pension assets is more than the mean value of ERR (7.156%) under firms without Level-3. The p-value of test is statistically significant at 1 percent Level, suggesting that the variance of ERR of two groups, with Level-3 fair value of pension assets and without Level-3 fair value of pension assets, are significant different. I can conclude that firms with Level-3 fair value of pension assets along with higher ERR.

[Insert Table 2.3 about here]

6.3 Regression Analysis

Does Level-3 fair value of pension assets have the effect on the assumed ERR?

Panel A of Table 2.4 reports the results of the Chi-square to investigate whether firms with Level-3 fair value of pension assets are more like to assume higher ERR. Firms are firstly divided into two groups based on if ERR is more than 7.5%. ERR takes value of 1 when ERR is more than 7.5%, and 0 otherwise. Meanwhile, firms are divided into another two groups based on if firms have Level-3 fair value of pension assets. Level-3 take value of 1 if firms have Level-3 fair value of pension assets, and 0 otherwise. The p-value of Chi-Square test is 0.0001, suggesting that there is a positive association between Level-3 fair value of pension assets and ERR. It supports our expectation that firms with Level-3 fair value of pension assets have higher ERR.

Panel B of Table 2.4 shows the regression results on higher ERR along with Level-3 fair value of pension assets, after controlling for the industry effect and without the industry effect. In the first three columns, I estimate ERR by using all sample of the

data with the industry effect, and in the next three columns, I estimate ERR for the sample of the data without the industry effect.

In model 1, I find that the coefficient estimate of Level 3 is 0.074 and statistically significant at the 5% level. In the model 2, the results present that Level 3 is 0.09 and significantly related with the assumed ERR at less than 5% level in the presence of firms without the industry fixed effects.

Consistent with my first hypothesis, Panel B show that the coefficients on Level-3 are positive in both model 1 and 2. These results suggest that Level 3 is positively associated with the assumed ERR, implying that firms are more likely to boost ERR when they have Level-3 fair value of pension assets in the pension asset allocation.

Amir and Benartzi (1998) stated that the allocations to riskier pension assets, such as equities and alternative investments, are positively and significantly associated with assumed ERR in the pooled model and fixed effect model, implying that these coefficients represent a part of risk premium of each pension assets. Panel C of Table 2.4 represents the coefficients of three levels and how much these levels contribute to the assumed ERR. Referring to the coefficients of Level 1, Level 2 and Level 3 in the model 3 and model 4 under two situations, α_3 is more than α_2. Most of risker pension assets are allocated into the Level-3 fair value of pension assets. Further, under the model 3 and model 4, the results of test for comparing the coefficients of %Level3 and %Level2 are statistically significant, supporting that the coefficient of %Level3 is more than the coefficient of %Level2. All of results of tests support that Level-3 fair value of pension assets are more likely to assume higher ERR compared with Level-2 fair value of pension assets, consistent with the fact that firms have Level-3 fair value of pension assets have

superior resources and better opportunities to expect more retunes of pension funds to boost ERR.

The coefficients of FIRMSIZE and DURATION remain negative and are statistically significant at the Level 1%. I posit that management in the smaller firms are more likely have strong motivation to boost ERR for beating or meet earnings target if the change of ERR can impact firms' earnings. Also I assume that pension expense has effect on firms' earnings thought ERR, consistent with the conclusion that higher ERR along with less pension costs. In according with all of results, I can conclude that firms with Level-3 fair value of pension assets have opportunities to boost ERR and reject our hypothesis.

[Insert Table 2.4 about here]

Does Level-3 fair value of pension assets impact the likelihood of beating or meeting ERR?

Panel A of Table 2.5 reports the results of Chi-square test to investigate whether firms with Level-3 fair value of pension assets are more likely to beat or meet ERR. If the results show that the p-value is small enough ($p < 0.05$), then I will reject the null hypothesis that the two variables are independent and conclude that there is an association between two variables. The p-value of Chi-Square test is 0.0364, suggesting that there is a positive association between ERR and ΔME_t. This is in line with my expectations that firms with Level-3 fair value of pension assets are more likely to meet or beat ERR.

To further robust test H2, Panel B of Table 2.5 shows the regression results of model (2) with the pool data, and without the industry fixed effect. The regression model

focus on examining how to use Level-3 fair value of pension assets to beat EER. The coefficients of Level 3 are positive and statistically significant (p=0.08 and 0.09 separately) in the models, supporting that firms with the Level-3 fair value of pension assets are more likely to beat the assumed ERR. I assume that firms with the Level-3 fair value of pension assets can beat the assumed ERR by adjust the ARR of Level-3 fair value of pension assets. If firms overstate ERR at the beginning of period and fall short of ERR target expectation at the end of period, the Level-3 fair value of pension assets would be regards as a best tool to adjust ARR to meet or beat ERR. The coefficients of Level-1 and Level-2 are negative and statistically significant. I posit that the returns of Level-1 and Level-2 are based on the return of the whole market and firms have restrictions to adjust higher ARR.

Collectively, the results of Chi-Square test and the regression models provide the consistent evidence that firms with Level -3 fair value of pension assets are more likely to meet or beat ERR through ARR.

[Insert Table 2.5 about here]

Is Level 3 fair value pension assets helpful to beat earnings target?

Table 2.6 reports the results of the Chi-square to investigate whether firms with the Level-3 fair value of pension assets are more likely to meet or beat earning target through ERR management. The p-value of Chi-Square test is 0.06 and reject my hypothesis, suggesting that there is a positive association between Level-3 and ΔEPS. It supports my expectation that Level-3 fair value of pension assets are used to meet or beat

earnings expectations through ERR manipulations. The small adjustment to ERR has more economical meanings in financial reporting.

[Insert Table 2.6 about here]

7. Conclusion

Statement of Financial Accounting Standard (SFAS) No.158, *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans*, required firms to disclose and recognize the full funded status of defined benefit pension plans in the balance sheet instead of only in the footnote. Earnings can be managed because the computation of earnings requires managers' subjective estimates that are difficulty to verify. Motivated by prior anecdotal evidence that managers may take advantage of the defined pension to adjust ERR, beating ERR, and do earnings manipulations through ERR management. Therefore, the Level-3 fair value of pension assets provides an opportunity to explore under SFAS No.158. The primary incremental contribution of my study is to test the disclosure of fair value of pension assets on ERR assumption. I examine my research question in the context of defined benefit pensions which offers an interesting setting with large economically meaningful effects to study the consequences of FASB accounting standards. In particular, I empirically test if firms with Level-3 fair value of pension assets opportunistically boost the expected rate of return (ERR) on pension plan assets, and also examine whether firms with Level-3 fair value of pension assets are more likely meet or beat the expected rate of return (ERR) on pension plan assets through the actual rate of return (ARR), and finally investigate the effects of Level-3 fair value of pension assets on earnings management through ERR management.

Firstly, my study provides evidences that the Level-3 fair value of pension assets is positive associated with higher ERR under SFAS.No.158, suggesting that firms with the Level-3 fair value of pension assets are more likely to boost the assume ERR. Secondly, I conclude that firms with the Level-3 fair value of pension assets can affect the likelihood of meeting or beating ERR. The results support that, for firms with Level-3 fair value of pension assets, Level-3 fair value of pension assets plays a vital role to meet or beat ERR through ARR. Finally, Level-3 fair value of pension assets would be a better choice to beat earning target through ERR manipulations when earnings marginally fall short of expectations.

The paper includes several limitations. First, the variables in the model may roughly reflect the relation between ERR and the Level-3 fair value of pension assets. Especially, the indicator variables are used to map a continuous variable onto a dichotomous measurement space, the mapping process can be critical (Hay et al.2006). Therefore, the dependent variable in my model can be sensitive to these critical points of the mapping process. Secondly, firms have many options to manipulate ERR, the Level-3 fair value of pension assets is one of them. Our conclusion can be affected by some other factors. Lastly, the Level-3 fair value of pension assets data are hand- collected only from 2009 to 2014. I expect to have the more ranger data to analysis and get more accurate results to apply other countries.

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Table 1.1: Descriptive Statistics Relating to adoption of IFRS 13

Panel A Sample Composition by Country

Country	Number of Firms	Total Obs.
France	297	1485
Germany	171	855
Italy	162	810
Spain	64	320
United Kingdom	714	3570
Total	1408	7040

Panel B Sample Composition by Year IFRS13 adoption

Country	Firm with IFRS13 Adoption in 2013	Firm with IFRS13 Adoption in 2014
France	297	-
Germany	171	-
Italy	162	-
Spain	64	-
United Kingdom	372	342
Total	1066	342

Panel C: Sample Composition by Two-Digit SIC Category

Country	Mining	Construction	Manufacturing	Transportation, Communications, Electric, Gas and sanitary Services	Wholesale trade	Retail trade	Finance, Insurance and Real Estate	Services	Public Administration	Total
France	-	5	47	12	13	5	162	53	-	297
Germany	1	1	45	6	9	2	68	39	-	171
Italy	1	7	63	17	8	4	42	20	-	162
Spain	-	7	16	9	3	-	18	11	-	64
United Kingdom	96	47	156	59	23	51	90	185	7	714
Total	98	67	327	103	56	62	380	308	7	1408

The table presents the sample composition by country, Year-IFRS 13 Adoption and SIC Industry Category, respectively. The sample includes all five European firms with available data in 2011-2014 listed in Table 1.

Table 1.2: Sample Descriptive Statistics

Panel A: Distributions

Variable	Mean	Std. Dev	Minimum	Median	Maximum
TABLE 1.3:ROA%, ROE% and EPS of Paired T test analysis in Pre-/Post-IFRS13					
LNasset	19.45	2.37	0.46	19.29	26.95
DE	3.79	131.86	-717.39	1.11	10920.00
ROE%	4.55	240.05	-11849.00	9.82	10267.00
ROA%	1.04	22.26	-646.14	4.01	138.68
EPS	2.44	48.04	-380.40	0.14	1954.00
PB	2.52	27.57	-646.13	1.31	1623.00
NETINCOME5YEARSD(Millions)	109.00	477.10	0.11	7.94	8452.72

Panel B: Pearson Correlations

	LNasset	DE	ROE%	ROA%	EPS	PB	NETINCOME5YEARSD	IFRS
LNasset	1							
DE	-0.003	1						
ROE%	0.048***	0.526***	1					
ROA%	0.284***	-0.003	0.134***	1				
EPS	0.049***	-0.002	0.014	0.023**	1			
PB	-0.020	0.65***	0.343***	-0.015	-0.003	1		
NETINCOME5YEARSD	0.421	-0.002	0.005**	0.044***	0.015	-0.007	1	
IFRS13	0.015	0.012	-0.010	-0.022	-0.002	0.020	0.006	1

This table presents descriptive statistics for all variables used in the cross-sectional analyses. Panel A presents distributions, and Panel B presents Pearson correlations. In both panels, N=7,040. Firmsize is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. ROA% is the firm's return on assets in percentage. ROE% is the firm's return on equity in percentage. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price to book ratio. DE is the firm's debt to equity ratio. EPS is the firm's earnings per share. In Panel B, bolded values indicate significance at the 1% level for two-tailed tests. Significance Level: *=10%;**=5%;***=1%, for two-tailed tests.

Panel A Paired T-test in pre-/post-IFRS13 in five countries

Pair	N	Mean	t-statistics
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013)			
EPS	1408	0.183	(2.89)***
ROA%	1408	0.338	(0.94)*
ROE%	1403	2.646	(3.36)***
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013,2014)			
EPS	1408	0.107	(1.69)*
ROA%	1408	0.260	(0.78)*
ROE%	1405	2.537	(3.6)***
Difference:Pre-IFRS13(2011,2012) - Post-IFRS13(2013,2014)			
EPS	1408	0.169	(3.30)***
ROA%	1408	0.835	(2.75)***
ROE%	1405	3.560	(5.42)***

Panel B: Paired T-test in pre-/post-IFRS13 in the individual country

	France			Germany			Italy			Spain			United Kingdom		
Pair	N	Mean	t-statistics	N	Mean	t-statistics	N	Mean	t-statistics	N	Mean	t-statistics	N	Mean	t-statistics
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013)															
EPS	297	0.489	(2.11)**	171	0.435	(1.75)*	162	0.005	0.05	64	0.270	0.82	714	0.041	0.83
ROA%	297	1.174	(2.08)**	171	1.837	(2.04)**	162	-0.594	-0.64	64	0.368	(0.32)*	714	-0.136	-0.24
ROE%	297	3.697	(2.22)**	171	4.943	(2.33)**	162	-0.594	(3.09)***	64	4.341	(0.95)*	709	1.021	0.9
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013,2014)															
EPS	297	0.241	(1.00)**	171	0.362	1.64	162	-0.068	-0.57	64	0.098	0.35	714	0.034	0.68
ROA%	297	1.073	(2.15)**	171	1.744	(2.31)**	162	-0.708	-0.82	64	-0.825	-0.92	714	-0.112	-0.21
ROE%	297	3.186	(2.5)**	171	4.649	(2.23)**	162	4.357	(2.21)**	64	1.343	0.44	711	1.556	1.5
Difference:Pre-IFRS13(2011,2012) - Post-IFRS13(2013,2014)															
EPS	297	0.440	(2.37)**	171	0.481	(2.22)**	162	-0.024	-0.28	64	0.230	0.85	714	0.031	0.89
ROA%	297	1.746	(3.67)***	171	1.842	(3.06)***	162	0.442	0.65	64	0.005	0.01	714	0.407	0.81
ROE%	297	4.884	(3.96)***	171	4.309	(2.25)**	162	6.016	(3.16)***	64	3.482	1.24	711	2.433	(2.53)**

The table describes the results of paired T-test for ROA%, ROE% and EPS in pre-/post-IFRS 13. Panel A presents the results of paired T-test of three ratios in five countries. Panel B presents the results of paired T-test of three ratios in each country. Pre-IFRS 13 (2011, 2012) indicates the mean value of EPS, ROA% and ROE%, respectively, both year 2011 and year 2012. Post-IFRS 13 (2013, 2014) indicates the mean value of EPS, ROA% and ROE%, respectively, both year 2013 and year 2014. Significance Level: *=10%;**=5%;***=1%, for two tailed tests.

TABLE1.4:ROA%, ROE% and EPS of Paired T test analysis in pre-/post-IFRS13

	Group 1			Group 2		
Pair	N	Mean	t-statistics	N	Mean	t-statistics
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013)						
EPS	704	0.3553	(4.22)***	704	-0.1229	-1.3
ROA%	704	1.8901	(6.54)***	704	-1.6631	(-2.95)*
ROE%	699	4.8432	(5.01)***	704	4.1268	(1.74)*
Difference:Pre-IFRS13(2012) - Post-IFRS13(2013,2014))						
EPS	704	0.2906	(4.05)***	704	-0.2116	(-2.13)*
ROA%	704	2.3167	(8.43)***	704	-2.1401	(-4.18)*
ROE%	701	6.3134	(6.35)***	704	1.3863	0.68
Difference:Pre-IFRS13(2011,2012) - Post-IFRS13(2013,2014))						
EPS	704	0.2456	(3.48)***	704	-0.0691	-0.92
ROA%	704	1.8348	(6.72)***	704	-1.5662	-1.24
ROE%	701	5.527	(5.62)***	704	4.0456	(2.18)*

The table presents the statistics for paired T-test in two groups. Firms in five countries are divided into two groups based on the median of ROA% in 2012. (The median value of ROA% in 2012 is 3.805). Panel A shows the results of Group 1 (firms with the median value of ROA% in 2012 above 3.805). Panel B shows the results of Group 2 (Firms with the median value of ROA% 2012 below 3.805).Pre-IFRS13 (2011, 2012) indicates the mean value of EPS, ROA%, and ROE%, Respectively, both year 2011 and year 2012. Post-IFRS13 indicates the mean value of EPS, ROA%, and ROE%, respectively, both year 2013 and year 2014. Significance Level: *=10%;**=5%;***=1%, for two-tailed tests.

Table1.5:Cross-Sectional Analysis

Panel A: Multivariate analysis for Five countries (Dependent Variables are ROA% and ROE %)

Variable	ROA%			ROE%		
	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic
Intercept	?	-55.516	(-12.78)***	?	-76.428	(-1.83)*
IFRS13	+	-1.207	(-2.35)**	+	-7.915	(-1.60)*
DE	+	0.003	1.02	+	1.166	(40.58)***
PB	+	-0.019	-1.34	+	-1.357	(-9.39)***
LNasset	+	2.837	(22.51)***	+	4.651	(3.84)***
NETINCOME5YEARSD	-	-0.003	(-5.35)***	-	-0.007	-1.33
Industry Fixed Effect		X			X	
Obs.		7032			6995	
Adj.R-square		0.1023			0.2887	

Panel B: Multivariate analysis for each country (Dependent Variables are ROA% and ROE %)

	France						Germany					
Variable		ROA%			ROE%			ROA%			ROE%	
	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic
Intercept	?	-16.255	(-4.57)***	?	-77.428	(-3.75)***	?	-14.246	(-4.14)***	?	-102.733	(-6.31)***
IFRS13	+	-1.698	(-2.44)**	+	-11.398	(-2.83)***	+	-1.098	(-1.66)*	+	-7.647	(-2.45)**
DE	+	-0.456	(-5.47)***	+	-7.073	(-14.08)***	+	-0.204	(-4.66)***	+	-2.528	(-12.20)***
PB	+	0.016	1.29	+	-2.559	(-34.40)***	+	1.052	(6.25)***	+	10.560	(13.23)***
LNasset	+	1.020	(-5.60)***	+	4.992	(-4.72)***	+	0.884	(4.95)***	+	4.744	(5.60)***
NETINCOME5YEARSD	-	-0.003	(-2.79)***	-	-0.012	(-2.12)**	-	-0.001	-0.45	-	-0.002	-0.6
Industry Fixed Effect		X			X			X			X	
Obs.		1484			1477			853			853	
Adj.R-square		0.046			0.703			0.089			0.277	

	Italy						Spain					
Variable		ROA%			ROE%			ROA%			ROE%	
	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic
Intercept	?	-56.672	(-10.50)***	?	-13.650	-0.11	?	-16.180	(-3.96)***	?	-86.889	(-4.55)***
IFRS13	+	-1.184	-1.39	+	-11.945	-0.61	+	-1.226	-1.77	+	-8.297	(-2.56)*
DE	+	-0.048	(-2.19)**	+	-16.900	(-31.91)***	+	-0.190	(-5.34)***	+	-0.275	(-1.65)*
PB	+	0.361	(-2.92)***	+	24.265	(-7.05)***	+	2.584	(-15.33)***	+	8.052	(-10.2)***
LNasset	+	2.787	(10.01)***	+	0.945	0.15	+	0.653	(-3.24)***	+	4.075	(-4.32)***
NETINCOME5YEARSD	-	-0.006	(-3.85)***	-	-0.005	-0.14	-	-0.001	(-1.83)*	-	-0.016	(-4.52)***
Industry Fixed Effect		X			X			X			X	
Obs.		809			804			319			318	
Adj.R-square		0.139			0.626			0.4765			0.3179	

United Kingdom						
Variable		ROA%			ROE%	
	Pred.Sign	Coefficient	t-statistic	Pred.Sign	Coefficient	t-statistic
Intercept	?	-89.383	(-14.16)***	?	-186.439	(-6.05)***
IFRS13	+	-1.431	-1.57	+	-16.853	-3.77
DE	+	0.005	0.80	+	-0.661	(-15.25)***
PB	+	-0.028	-0.80	+	11.064	(-40.38)***
LNasset	+	4.553	(-20.28)***	+	8.782	(-8.00)***
NETINCOME5YEARSD	-	-0.004	(-3.92)***	-	-0.010	(-1.99)**
Industry Fixed Effect		X			X	
Obs.		3564			3541	
Adj.R-square		0.142			0.722	

The table presents analyses of the accounting consequences of firms with IFRS 13 adoption. Panel A presents the results of the whole five countries. Panel B presents the results of each country. We control for 2-digit SIC industry fixed effects and present coefficient estimates, with t-statistics indicated in parentheses. *, **, *** indicate significance at the less than 10%, 5%, and 1% levels, respectively. Firmsize is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. ROA% is the firm's return on assets in percentage. ROE% is the firm's return on equity in percentage. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price-to-book ratio. DE is the firm's debt to equity ratio. EPS is the firm's earnings per share.

Table 1.6:Cross-Sectional Analysis for two groups

Panel A: Multivariate analysis for Group 1(Dependent Variables are ROA% and ROE %)

Variable	ROA%			ROE%		
	Pred.Sign	coefficient	t Value	Pred. Sign	coefficient	t Value
Intercept	?	4.176	(-1.69)*	?	-7.242	-1.18
IFRS13	+	-1.728	(-5.43)***	+	-7.120	(-9.01)***
DE	+	-0.103	(-8.51)***	+	3.285	(-77.02)***
PB	+	0.195	(-9.48)***	+	8.008	(-79.68)***
LNasset	+	0.046	0.56	+	-0.022	-0.11
NETINCOME5YEARSD	-	0.003	1.1	-	0.001	(-1.85)*
Industry Fixed Effect		X			X	
Obs.		3519			3499	
Adj. R-square		0.043			0.978	

Panel B: Multivariate analysis for Group 2(Dependent Variables are ROA% and ROE %)

Variable	ROA%			ROE%		
	Pred. Sign	coefficient	t Value	Pred. Sign	coefficient	t Value
Intercept	?	-85.084	(-9.16)***	?	-58.941	-0.68
IFRS13	+	-0.311	-0.34	+	-3.935	-0.47
DE	+	0.007	(-1.88)*	+	1.343	(-38.34)***
PB	+	-0.041	(-2.11)**	+	-3.143	(-17.33)***
LNasset	+	3.931	(-17.40)***	+	2.635	1.26
NETINCOME5YEARSD	-	-0.007	(-5.29)***	-	-0.006	-0.48
Industry Fixed Effect		x			X	
Obs.		3512			3495	
Adj. R-square		0.128			0.346	

The table presents analyses of the accounting consequences of firms with IFRS 13 adoption based on the median value of ROA% in 2012. Panel A presents the results of group 1 for firms with the median value of ROA above 3.805. Panel B presents the results of group 2 for firms with the median value of ROA% below 3. 805. We control for 2-digit SIC industry fixed effects and present coefficient estimates, with t-statistics indicated in parentheses. *, **, *** indicate significance at the less than 10%, 5%, and 1% levels, respectively. Firmsize is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. ROA% is the firm's return on assets in percentage. ROE% is the firm's return on equity in percentage. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price to book ratio.DE is the firm's debt to equity ratio. EPS is the firm's earnings per share.

Table1.7 Regression Model for analysis of the effect of IFRS13 on EPS (Dependent Variable:EPSt+1)

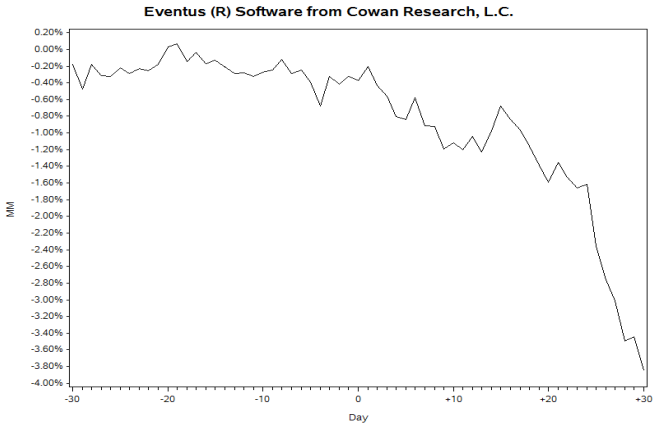
Variable	Pred. Sign	Coefficient	t-Statistics
Intercept	?	1.659	0.42
EPSt	+	0.561	(39.91)***
IFRS13*EPSt	+	-0.077	(-7.57)***
EPSt-1	+	0.419	(33.05)***
IFRS13	+	-0.393	-0.80
DE	+	0.000	0.15
PB	+	-0.001	-0.07
LNasset	+	-0.098	-0.85
NETINCOME5YEARSD	-	-0.002	-0.54
Industry Fixed Effect		x	
Obs.		4224	
Adj. R-square		0.900	
F		2372.13***	

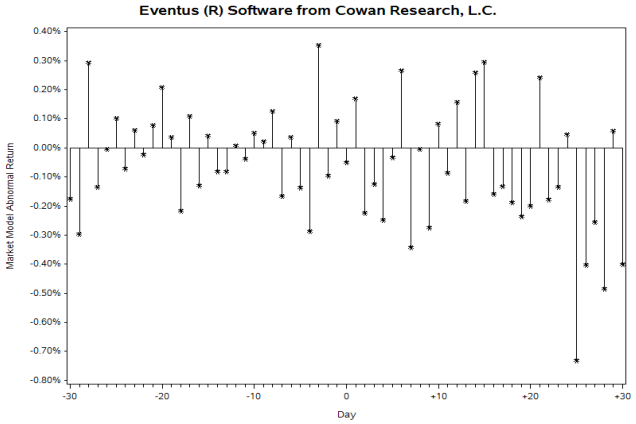
The table presents analyses of the effect of IFRS 13 on EPS. We control for 2-digit SIC industry fixed effects and present coefficient estimates, with t-statistics indicated in parentheses. *, **, *** indicate significance at the less than 10%, 5%, and 1% levels, respectively. EPSt+1 is the firm's earnings per share in year t+1.EPSt is the firm's earnings per share in year t. EPSt-1 is the firm's earnings per share in year t-1. Firmsize is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price to book ratio.DE is the firm's debt to equity ratio. EPS is the firm's earnings per share.

Table 1.8: The overall market reaction to accounting events regarding the date of IFRS 13 issued

Days	N	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Median Cumulative Abnormal Return	Positive: Negative	Std. Csect Z	Generalized Sign Z
(-10, +10)	1486	-0.79%	0.29%	-0.03%	739:747>>>	0.503	3.982***
(-5, +5)	1486	-0.59%	0.41%	-0.27%	703:783>	0.681	2.103*
(-0, +0)	1486	-0.05%	-0.16%	-0.01%	729:757>>>	-0.897	3.460***

The Event is that IFRS 13 was issued on May 12, 2011.The symbols $, *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.001 levels, respectively, using a generic one-tail test. The symbols (, < or),> etc. correspond to $, * and show the direction and significance of a generic one-tail generalized sign test.





The Pictures taken from running data with Eventus Software

Table 1.9: Panel A Test of value Relevance Model Summary for Five Countries (Dependent Variable is CAR)

Variable	Pred. Sign	Coefficients	t Statistics
Intercept	?	0.139	0.90
ΔEPS	+	0.003	(3.84)***
IFRS13	+	0.199	(11.54)***
ΔEPS*IFRS13	+	0.008	(3.39)***
PB	+	0.002	(2.32)**
LNasset	+	-0.005	-1.03
NETINCOME5YEARSD	+	0.003	0.02
DE	+	-0.0003	(-2.17)**
Beta	?	-0.087	(-3.52)***
Alpha	?	-275.1034	(-72.67)***
Country and Industry Fixed Effects		x	
Obs.		3903	
Adj.R-square		0.601	
F		281.18***	

The table presents results from cross-sectional analyses examining the market reaction to the actual adjustment to EPS after IFRS 13 adoption in five countries. The estimation is an OLS regression. We control for 2-digit SIC industry fixed effects and country fixed effects, and present coefficient estimates, with t-statistics indicated in parentheses. *, **, *** indicate significance at the less than 10%, 5%, and 1% levels, respectively. CAR is the firm's cumulative abnormal return over the 365-day window of the release of the annual earnings announcement date. ΔEPS is the firm's percentage change in earnings per share, measure as the absolute value of the change of EPS between EPSt and EPSt-1 divided by EPSt-1. Firm size is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price to book ratio.DE is the firm's debt to equity ratio used to measure a firm's financial leverage. EPS is the firm's earnings per share.

Panel B: Test of value Relevance Model Summary for Each Countries (Dependent Variable is CAR)

		France			Germany	
Variable	Pred. Sign	Coefficients	t Statistics	Pred. Sign	Coefficients	t Statistics
Intercept	?	-0.025	-0.13	?	0.457	(2.05)**
ΔEPS	+	0.024	(3.97)***	+	0.002	1.63
IFRS13	+	0.285	(7.3)***	+	0.193	(4.50)***
ΔEPS*IFRS13	+	-0.003	-0.30	+	0.008	(2.71)***
PB	+	0.048	(4.92)***	+	0.009	0.90
LNasset	+	0.001	0.12	+	-0.011	-0.94
NETINCOME5YEARSD	+	0.002	0.48	+	0.003	0.77
DE	+	0.0007	0.18	+	0.0030	1.12
Beta	?	-0.127	(-2.41)**	?	-0.141	(-2.46)**
Alpha	?	-218.901	(-41.16)***	?	-381.270	(-23.82)***
Country and Industry Fixed Effects		x			x	
Obs.		862			497	
Adj.R-square		0.702			0.587	
F		136.19***			45.2***	

		Italy			Spain			United Kingdom	
Variable	Pred. Sign	Coefficients	t Statistics	Pred. Sign	Coefficients	t Statistics	Pred. Sign	Coefficients	t Statistics
Intercept	?	-0.525	(-2.05)**	?	-0.294	-0.77	?	-0.052	-0.28
ΔEPS	+	0.003	(1.75)*	+	0.001	0.84	+	0.031	(6.13)***
IFRS13	+	0.400	(9.9)***	+	0.360	(6.16)***	+	0.086	(3.49)***
ΔEPS*IFRS13	+	0.007	0.81	+	0.025	(2.26)**	+	-0.014	(-2.09)**
PB	+	0.019	(2.95)***	+	0.024	(1.76)*	+	0.001	(1.7)*
LNasset	+	0.029	(2.11)**	+	0.006	0.30	+	0.001	0.14
NETINCOME5YEARSD	+	-0.008	-1.37	+	-0.001	(-2.53)**	+	-0.001	-0.43
DE	+	-0.003	(-3.27)***	+	-0.002	-0.11	+	-0.002	-1.60
Beta	?	-0.188	(-2.49)**	?	0.106	0.91	?	-0.103	(-2.88)***
Alpha	?	-367.301	(-24.77)***	?	-363.509	(-14.88)***	?	-370.807	(-55.08)***
Country and Industry Fixed Effects		x			x			x	
Obs.		459			174			1911	
Adj.R-square		0.656			0.659			0.620	
F		55.73***			24.90***			191.78***	

The table presents results from cross-sectional analyses examining the market reaction to the actual adjustment to EPS after IFRS 13 adoption in five countries. The estimation is an OLS regression. We control for 2-digit SIC industry fixed effects and country fixed effects, and present coefficient estimates, with t-statistics indicated in parentheses. *, **, *** indicate significance at the less than 10%, 5%, and 1% levels, respectively. CAR is the firm's cumulative abnormal return over the 365-day window of the release of the annual earnings announcement date. ΔEPS is the firm's percentage change in earnings per share, measure as the absolute value of the change of EPS between EPSt and EPSt-1 divided by EPSt-1. Firm size is the log of the firm's total asset. IFRS 13 is an indicator variable equal to one if the firm adopted IFRS 13, and zero otherwise. Netincome5yearSD is the standard deviation of the earnings history of the firm. PB is the firm's price to book ratio.DE is the firm's debt to equity ratio used to measure a firm's financial leverage. EPS is the firm's earnings per share.

Table 2.1: Descriptive Statistics for Dependent and Independent Variables

Variable	N	Mean	SD	Min.	Q1	Median	Q3	Max
%ERR	4997	7.30	1.11	0.00	7.00	7.50	8.00	11.25
%Level1	4997	46.01	34.61	-0.14	13.84	42.43	75.63	1.00
%Level2	4997	47.42	34.22	-3.52	16.00	46.39	77.34	1.00
%Level3	4997	6.57	13.76	0.00	0.00	0.00	8.10	1.00
ARRt-1	4997	0.11	0.52	-0.49	0.06	0.12	0.15	34.95
FIRMSIZE	4997	3.61	0.79	0.66	3.09	3.58	4.10	6.41
PLANSIZE	4997	2.51	0.89	0.25	1.88	2.54	3.13	5.13
FUNDING	4997	0.79	0.20	0.02	0.68	0.78	0.88	2.50
DURATION	4997	0.26	0.19	0.00	0.09	0.26	0.38	0.91
LEV	4997	0.26	0.20	0.00	0.11	0.24	0.35	1.56
ROA	4997	0.04	0.09	-2.27	0.01	0.04	0.07	1.22
CFO	4997	0.08	0.08	-0.33	0.04	0.08	0.12	1.38

The table reports summary statistics, including mean, median, Q1, Q3, standard deviation for dependent and independent variables. ERR is the expected rate of return on pension plan assets. %Level1, %level2, and %level3 are the percentage of three levels of fair value pension assets occupied in the total fair value pension assets. ARRt-1 is the actual investment return on pension assets in t-1 year.

Table 2.2: Correlation Matrix for Variable used in Tests of Level-3 fair value of pension assets response to ERR

	ERR	%Level1	%Levle2	Level3	ARRt-1	FIRMSIZE	PLANSIZE	FUNDING	DURATION	LEV	ROA	CFO
ERR	1											
%Level1	0.115***	1										
%Level2	0.112***	(-0.920)***	1									
Level3	0.133***	(-0.255)***	0.063***	1								
ARRt-1	0.037***	(-0.011)***	0.014	0.012	1							
FIRMSIZE	0.104***	(-0.215)***	0.177***	0.374***	0.014	1						
PLANSIZE	0.242***	(-0.293)***	0.228***	0.536***	0.021	0.754***	1					
FUNDING	0.099***	0.027**	-0.009	0.031**	0.031*	0.153***	0.069***	1				
DURATION	(-0.093)***	-0.010	-0.022	0.028**	-0.008	0.128***	0.038***	0.018	1			
LEV	0.040***	(-0.108)***	0.109***	0.084***	0.008	0.062***	0.162***	(-0.090)***	-0.008	1		
ROA	-0.020	-0.006	-0.001	0.044***	-0.006	(-0.036)***	0.080***	0.042***	0.100***	(-0.137)***	1	
CFO	(-0.044)***	(-0.029)**	0.024***	0.053***	-0.007	(-0.012)***	0.100***	-0.016	0.123***	0.033**	0.654***	1

The symbols *, **, and *** denote statistical significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 2.3: Paired T-test for %ERR in two groups

%ERR	Method	Mean	SD	Std. Err	Min.	Max.	95% CL Mean		95% CL SD	
Group 1		7.156	1.204	0.024	0.000	11.250	7.109	7.203	1.171	1.238
Group 2		7.450	0.984	0.020	1.800	10.000	7.411	7.489	0.957	1.012
Diff (Group1 - Group2)	Pooled	-0.294	1.100	0.031			-0.356	-0.233	1.079	1.122
Diff (Group1 - Group2)	Satterthwaite	-0.294	-0.356	-0.233						

Method	Variances	DF	t Value	Pr. > |t|
Pooled	Equal	4923.00	-9.39	<.01
Satterthwaite	Unequal	4771.80	-9.41	<.01

	Equality of Variances			
Method	Num. DF	Den DF	F Value	Pr. > F
Folded F	2488	2435.00	1.50	<.01

The tables show the results of the Paired T test for two groups on % ERR. %ERR is the expected rate of the return assumption on pension assets The definition of the group is specified as follow: Group 1: %ERR of firms with the Level-3 fair value of pension assets; Group 2: %ERR of firms without Level-3 fair value of pension assets

Table 2.4: The results of The Chi-square test

Panel A: The Chi-Square Test of ERR by Level 3 fair value pension assets			
ERR	Level 3		
	0	1	Total
0	1466	1181	2647
1	1023	1255	2278
Total	2489	2436	4925

Statistic	DF	Value	Prob.
Chi-Square	1	53.75	<.01

The tables show the results of the Chi-Square test whether Level 3 fair value pension assets along with Higher ERR. ERR is an indicator variable and take value 1 if ERR is more than 7.5, and 0 otherwise. Level 3 is also indicator variable and take value 1 if firms have Level 3 fair value pension assets, and 0 otherwise.

Panel B: The Regression Analyses of %ERR through Level-3 fair value pension assets

	Model 1 Dependent Variable is 0 and 1 Industry fixed effect			Model 2 Dependent Variable is 0 and 1 No industry fixed effect		
Variable	Coefficient Estimate	t Value	Pr. > |t|	Coefficient Estimate	t Value	Pr. > |t|
Intercept	6.912	45.64	<.01	6.267	43.67	<.01
%Level1	0.007	6.03	<.01	0.009	7.23	<.01
%Level2	0.002	1.67	0.09	0.003	2.14	0.03
Level3	0.074	2.02	0.04	0.090	2.39	0.02
ARRt-1	1.484	9.12	<.01	1.625	9.71	<.01
FIRMSIZE	-0.445	-12.47	<.01	-0.314	-10.51	<.01
PLANSIZE	0.634	19.42	<.01	0.552	19.24	<.01
FUNDING	0.112	1.42	0.15	0.302	3.76	0.02
DURATION	-0.273	-3.52	<.01	-0.311	-3.96	<.01
LEV	0.035	0.42	0.67	0.082	1.04	0.30
ROA	0.202	0.62	0.54	0.320	0.96	0.34
CFO	-0.659	-2.00	0.05	-1.694	-5.27	<.01
No.Obs		4925			4925	
Industry Effect	Yes			No		
Adj.R-Sq	0.203			0.149		
F Value	63.63		<.01	79.36		<.01

The table reports logistic regression results of %ERR through Level 3 fair value pension assets. Variable definition are specified in the Appendix A3.

Panel C: The Regression Analyses of %ERR through Level-3 fair value pension assets

	Model 3 Dependent Variable is 0 and 1 Industry fixed effect			Model 4 Dependent Variable is 0 and 1 No industry fixed effect		
Variable	Coefficient Estimate	t Value	Pr. > |t|	Coefficient Estimate	t Value	Pr. > |t|
%Level 1	0.076	71.83	<.01	0.071	76.13	<.01
%Level 2	0.071	63.76	<.01	0.065	65.97	<.01
%Level 3	0.075	49.35	<.01	0.068	47.29	<.01
ARRt-1	1.480	9.11	<.01	1.621	9.69	<.01
FIRMSIZE	-0.443	-12.47	<.01	-0.314	-10.54	<.01
PLANSIZE	0.631	20.41	<.01	0.556	20.87	<.01
FUNDING	0.116	1.47	0.14	0.306	3.82	<.01
DURATION	-0.255	-3.30	0.00	-0.298	-3.80	<.01
LEV	0.012	0.15	0.88	0.062	0.78	0.44
ROA	0.132	0.41	0.68	0.267	0.80	0.42
CFO	-0.643	-1.96	0.05	-1.692	-5.28	<.01
No.Obs	4925			4925		
Industry Effect	Yes			No		
Adj.R-Sq	0.984			0.982		
F Value	14750.20		<.01	25059.70		<.01
Comparison of the coefficients of %Level2 and %Level3	Mean Square	F Value	Pr > |t|	Mean Square	F Value	Pr > |t|
	10.44	11.66	<.01	6.46	6.74	<.01

The table reports logistic regression results of %ERR through Level 3 fair value pension assets. Variable definition are specified in the Appendix A3.

Table 2.5: The results of Chi-Square Test for H2

Panel A: The Chi-Square Test of ΔME by Level 3 fair value pension assets			
ΔME	Level 3		
	0	1	Total
0	1756	1792	3548
1	751	672	1423
Total	2507	2464	4971

Statistic	DF	Value	Prob.
Chi-Square	1	4.38	0.04

The tables show the results of the Chi-Square test whether the ERR of firms with Level 3 fair value pension assets along with meeting ERR. Level 3 is an indicator variable and takes value 1 if firms have level 3 fair value pension asset, and 0 otherwise. ΔME is indicator variable and takes value of 1 if ARR is more than ERR, and 0 if ARR is less than ERR.

Panel B: Regression Analysis of ΔME by Level 3 fair value pension assets

	Dependent Variable is 0 and 1 Industry fixed effect			Dependent Variable is 0 and 1 No Industry fixed effect		
Variable	Coefficient Estimate	SD. Error	P-value	Coefficient Estimate	SD. Error	P-value
Intercept	-10.138	0.93	<.01	-8.175	0.79	<.01
%Level 1	-1.002	0.68	0.07	-1.145	0.65	0.08
%Level 2	-0.702	0.67	0.03	-0.620	0.64	0.03
Level 3	0.373	0.23	0.08	0.374	0.22	0.09
ARR	143.500	6.22	<.01	136.700	5.75	<.01
FIRMSIZE	0.779	0.21	<.01	0.422	0.17	0.01
PLANSIZE	-0.898	0.19	<.01	-0.678	0.16	<.01
FUNDING	-0.484	0.51	0.34	-0.860	0.48	0.08
DURATION	0.643	0.48	0.18	0.804	0.46	0.08
LEV	0.176	0.48	0.71	0.132	0.44	0.76
ROA	2.148	1.86	0.25	1.488	1.74	0.39
CFO	-0.091	2.01	0.96	2.428	1.83	0.18
No.Obs.	4968			4968		
Industry fixed effect	Yes			No		
Likelihood Ratio	4937.51		<.01	4879.14		<.01
Wald	544.15		<.01	573.56		<.01

The table shows the results of Chi-Square test and the logistic regression model with industry fixed effect, without the industry fixed effect.
In both tests, the ΔME takes the value of 1 and 0; 1: if ARR is more than ERR; 0 if ARR is less than ERR.
Level 3 is an indicator variable and take the value of 1 if firms have Level 3 fair value pension assets, and 0 otherwise.
ARR is the actual investment return on pension assets in the current year. Other variables are defined in the Appendix A3.

Table 2.6: The Chi-Square Test of ERR by Level 3 fair value pension assets

Level 3	EPSchange (Actual_EPS -Pseudo_EPS)		
	0	1	Total
0	431	62	493
1	365	74	439
Total	796	136	932

Statistic	DF	Value	Prob.
Chi-Square	1	3.41	0.06

The tables show the results of the Chi-Square test whether the ΔEPS of firms with the Level-3 fair value pension assets along with meeting earnings target. Level 3 is an indicator variable and takes value 1 if firms have level 3 fair value pension asset, and 0 otherwise. ΔEPS is an indicator variable and takes value of 1 if the actual EPS is more the Pseudo_EPS, and 0 if actual_EPS is equal to Pseudo_EPS.

APPENDIX

A1. The Relationship between the Change in PBO and FV Plan Assets

		ΔNet Assets	=	ΔAccumulated other Comprehensive Income	+ ΔRetained Earnings	+ ΔContributed Capital
				Effect on Comprehensive Income		
				Other Comprehensive Income/Loss	Pension Expense Debit(Credit)	
	PBO					
	PBO, Beginning					
+	Service Cost			→	Service Cost	
+	Interest Cost			→	Interest Cost	
±	Prior service cost (benefit)			→Prior service cost (benefit)	→Amortization Prior Service Cost (Benefit)	
±	Actuarial loss (gain)			→Actuarial loss (gain)		
-	Benefit payments					
=	PBO, Ending					
	FV PLAN ASSETS					
	FV, Beginning					
+	Employer contributions					
±	Actual return on plan assets					
±	Unexpected Return			→ Unexpected return plan assets: negative (positive)		
+	Expected return				**→(Expected Return Plan assets)**	
-	Benefit payments					
=	FV, Ending					

Exhibit 1 presents how the change in PBO and FV plan assets affects the net pension asset under SFAS No.158 pension plan accounting. (Hassell and Philipich, 2008)

A2. The illustration of Exhibit 1: The effect of change in Level 3 pension assets on ERR and Earnings

The calculation of pension expenses

Service cost

+ Interest cost

+ Other costs (i.e., actuarial gain and pension amendment)

– Expected returns on plan assets (=ERR x FVPA)

= Net periodic pension cost (NPPC)

The expected returns on plan assets (ERR) and the market value of plan assets (FVPA) are both affected by the Level 3 pension assets. Managements have opportunities and motivations to boost ERR or FVPA and reduce NPPC, finally increase earnings.

The impact of changes in the Level 3 fair value pension assets on ERR and Earnings.

	the logic deductive effect of Level-3 pension assets on			
	ERR	FVEPA	NPPC	Earnings
Level-3 Increase	Increase	Increase	Decrease	Increase
Level-3 Decrease	Decrease	Decrease	Increase	Decrease

The expected return, rather than the realized return is used, according to the SFAS 87. ERR is determined by three Levels of fair value pension assets, especially, the Level 3 pension assets, whose fair value cannot be determined by using observable measures, such as market prices or models and can only be calculated using estimates or risk-adjusted value ranges. Managements have rooms to manipulate the return from the Level 3 pension assets. The higher the ERR, the higher the expected returns on plan assets. Ceteris Paribus, firms with Level 3 pension asset to increase NPPC, and report more income, which leads to higher earnings. Therefore, managers are able to inflate earnings in the short-term through manipulate Level 3 pension assets.

Exhibit 1 presents how the change in PBO and FV plan assets affects the net pension asset under SFAS No.158 pension plan accounting. (Hassell and Philipich, 2008)

A3. Variable Definitions

Variable	Definition and Source
ERR	The expected rate of return (ERR) assumption on pension assets: Compustat Pension item PPROR
∆MR	ERR minus ARR, where ARR is actual rate of return on pension assets
ARR	The actual investment return on pension assets (PBARAT)/Beginning balance of pension assets (PPLAO)
FUNDING	Fair value of plan assets (PPLAO)/ Projected benefit obligation (PBPRO)
PLANSIZE	Natural logarithm of [1+fair value of plan assets(PPLAO)] at the end of the year
DURATION	Service cost (PPSC)[interest cost (PPIC)+Service cost (PPSC)]
LEV	Long-term debt(DLTT)+DEBT in current liabilities(DLC)/Total assets
ROA	Income before extraordinary items and pension expense (IB+PPC)/Total assets(AT)
FIRMSIZE	Natural logarithm of [1+total assets(AT)] of the plan sponsor at the end of the year
CFO	Cash flow from operations before pension contributions (OANCF+PBEC)/Total assets
Level 3	An indicator variable: 1 if firms have Level 3 fair value pension assets; 0 if firms do not Level 3 fair value pension assets