
# The Impact of Earnings Quality on Aspects of Capital Markets: Evidence from UK Listed Firms

**Yasser Ahmed Mohamed Eliwa**

***Submitted for the degree of Doctor of Philosophy***

***Heriot-Watt University***

***School of Management and Languages***

***June 2015***

**ABSTRACT**

This thesis investigates the association between four accounting-based earnings quality proxies and three capital market aspects of UK listed firms after applying the International Financial Reporting Standards (IFRS). The three capital market aspects are: the cost of equity capital; information symmetry; and analysts' information environment (number of analysts following, the dispersion of analysts' forecasts and the accuracy of analysts' forecasts). It finds evidences that firms with low earnings quality have a higher cost of equity capital, higher information asymmetry, lower number of analysts following, a higher dispersion of analysts' forecasts and less accurate analysts' forecasts than firms with high earnings quality. Also, the results show that the innate component of each earnings quality proxy, driven by economic fundamentals, has a larger impact on the three aspects of capital market than the discretionary component, driven by management choices. This is consistent with the theoretical framework of IFRS which the UK adopted in 2005 for listed firms. These findings shed light on the important role of earnings quality in helping analysts and investors to make better financial investment decisions. Theory suggests that this role is achieved by increasing the informativeness of firms' information environment, improving the precision of financial information, reducing estimation risk and information asymmetry; these are expected to lead to a lower cost of equity capital.

# ACKNOWLEDGMENTS

I am indebted to many people for their invaluable support, assistance, and contributions over the course of undertaking this thesis. Especially, I wish to express my sincere thanks to a number of very special individuals.

First and foremost my very deepest gratitude must go to Professor Jim Haslam, Dr Santhosh Abraham and Professor Clare Roberts, my supervisors, for being there when needed, for their advices, guidance and ongoing support throughout all stages of this research. Thank you very much.

I am particularly grateful to Heriot-Watt University for the generous financial support in the last two years of this research; this enabled me to carry out my studies. Also, I gratefully acknowledge the Applied Quantitative Methods Network, AQMEN, for their free econometrics courses and their support in my empirical work.

A special thanks to my family. Words cannot express how grateful I am to my mother, father, my mother-in law and father-in-law, for all of their love and support throughout my life. It has taken me far too long to appreciate how vital they have been to all my success. It is my sincere belief that the PhD process could not have been possible without the prayers, continuous encouragement and loving support of my family.

I would like to say a big “thanks” to my beloved wife, Sally, for her unconditional faith and patience throughout the PhD journey. There have been hundreds of nights and weekends that I have spent collecting data, conducting research or writing, time that I otherwise could have spent with her and our lovely son, Hamza, yet she never protested. Without her, it would have been impossible for me to complete this thesis.

I would like to express my sincerest gratitude to my internal examiner, Professor Chris Pong, and my external examiner, Professor Khaled Hussainey (Plymouth University), for their time and invaluable comments on my thesis.

Finally, most important of all, I must acknowledge Almighty God. He has been with me throughout this most challenging time and heard me when I called upon him. Without God’s wisdom, protection, guidance, encouragement and support through some very critical times, this thesis could not have been accomplished.

ACADEMIC REGISTRY

# Research Thesis Submission

| | | | |
|---|---|---|---|
| Name*:* | **Yasser Ahmed Mohamed Eliwa** | | |
| School/PGI: | School of Management and Languages | | |
| Version: *(i.e. First, Resubmission, Final)* | Final | Degree Sought (Award and Subject area) | PhD in Accounting |

## Declaration

In accordance with the appropriate regulations I hereby submit my thesis and I declare that:

1) the thesis embodies the results of my own work and has been composed by myself
2) where appropriate, I have made acknowledgement of the work of others and have made reference to work carried out in collaboration with other persons
3) the thesis is the correct version of the thesis for submission and is the same version as any electronic versions submitted*.
4) my thesis for the award referred to, deposited in the Heriot-Watt University Library, should be made available for loan or photocopying and be available via the Institutional Repository, subject to such conditions as the Librarian may require
5) I understand that as a student of the University I am required to abide by the Regulations of the University and to conform to its discipline.

* *Please note that it is the responsibility of the candidate to ensure that the correct version of the thesis is submitted.*

| | | | |
|---|---|---|---|
| Signature of Candidate*:* | | Date: | 15-06-2015 |

## Submission

| | |
|---|---|
| Submitted By *(name in capitals):* | |
| Signature of Individual Submitting: | |
| Date Submitted: | |

## For Completion in the Student Service Centre (SSC)

| | | | |
|---|---|---|---|
| Received in the SSC by *(name in capitals):* | | | |
| 1.1 Method of Submission *(Handed in to SSC; posted through internal/external mail):* | | | |
| **1.2** E-thesis Submitted (**mandatory for final theses)** | | | |
| Signature: | | Date: | |

# TABLE OF CONTENTS

## LISTS OF TABLES AND FIGURES

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AA | Abnormal Accruals |
| Accuracy | Analysts Forecasts Accuracy |
| adj. | Adjusted |
| AIMR | Association for Investment Management and Research |
| AQ | Accruals Quality |
| AR | Accounts Receivables |
| ASB | Accounting Standards Board |
| ASC | Accounting Standards Committee |
| BLUE | Best Linear Unbiased Estimator |
| bp | Basis Points |
| BTM | Book-to-Market Ratio |
| CA | Current Assets |
| CFO | Cash Flow from operation |
| CL | Current Liabilities |
| CoC | The Cost of Capital |
| CoEC | The Cost of Equity Capital |
| Crisis | Financial Crisis in 2008-2009 |
| DAS | Domestic Accounting standards |
| DepnMethod | Depreciation Method |
| Disc. | The Discretionary Component of Earnings Quality |
| Dispersion | Analysts' Forecasts Dispersion |
| DV | Dependent Variable |
| EARN | Earnings |
| EP | Earnings-Price Ratio |
| EPS | Earnings Per Share |
| EQ | Earnings Quality |
| EQProxy | Earnings quality Proxy |
| EU | European Union |
| FASB | Financial Accounting Standards Board |
| Following | Analysts following |
| FRC | Financial Reporting Council |
| FRS | Financial Reporting Standard |
| FTSE | Financial Times Stock Exchange |
| GAAP | Generally Accepted Accounting Principles |
| GDP | Gross Domestic Product |
| Hi | Hypothesis i |
| HML | High-Minus-Low Book-to-Market Factor |
| I/B/E/S | The Institutional Brokers Estimate System |
| IAS | International Accounting Standard |
| IASB | International Accounting Standards Board |
| IASC | International Accounting Standards Committee |
| ICB | Industry Classification Benchmark |
| ICC | The Implied Cost of Equity Capital |
| IFRS | International Financial Reporting Standard |
| IndEP | Industry Adjusted Earnings-Price Ratios |
| Info Asymmetry | Information Asymmetry |

| | |
|---|---|
| InnateEQ | The Innate component of Earnings Quality |
| IOSCO | the International Organization of Securities Commission |
| IRR | Internal Rate of Return |
| IV | Independent Variable |
| IVs | Independent Variables |
| j | Firm j |
| Ln | Natural Logarithm |
| Log | Natural Logarithm |
| LSE | London Stock Exchange |
| MLE | Maximum Likelihood Estimation |
| NA | Non-Discretionary Accruals |
| NegEarn | Negative Earnings |
| NYSE | New York Stock Exchange |
| OLS | Ordinary least Squares |
| OperCycle | Operating Cycle |
| PPE | Property, Plant and Equipment |
| Pred | Earnings Predictability |
| Price | Stock Price |
| PWC | PricewaterhouseCoopers |
| Q | Quintile |
| $r_i$ | The Expected Cost of Equity Capital Proxy |
| RET | Stock Return |
| Rev | Revenue |
| ROA | Return on Assets |
| ROE | Return on Equity |
| SEC | Securities And Exchange Commission in the US |
| SEE | Standard Error of Estimate |
| SMB | Small-Minus-Big Size factor |
| Smooth | Earnings Smoothness |
| ST Debt | Short-Term Debt |
| SURP | Earnings Surprise |
| t | Period t |
| TA | Total Accruals |
| TCA | Total Current Accruals |
| TotalEQ | Total Earnings Quality |
| UK | United Kingdom |
| US | United States |
| USA | United States of America |
| VIF | Variance Inflation Factor |
| WC | Working Capital |
| $\sigma$ | Standard Deviation |

# Chapter 1: Introduction

## 1.1 Background

The primary purpose of financial reporting information in the capital market is understood often to be to support participants in making judgements and decisions (Francis et al., 2006). Therefore, high quality financial information is expected in this context to help users (i.e. investors, creditors and analysts) to make useful decisions and judgments and, thus, developing the efficiency of the capital market (Ewert and Wagenhofer, 2012b). This view derives from the notion that use of accounting information in the capital market is fundamental. Therefore, the question of whether, how and to what extent earnings quality affects key aspects of capital market - the cost of equity capital, information asymmetry and analysts' information environment - is fundamental to understanding why and how accounting information matters to the participants in the capital market (Francis et al., 2006).

Whilst previous studies consider earnings quality as an important element for financial reporting system of firms, astonishingly, the concept of earnings quality remains quite vague and there is no consensus on it. This is regardless of numerous attempts to make it more precise and to deliver a theoretical foundation (Francis et al., 2006; Dechow et al., 2010; Chen et al., 2010; Dichev et al., 2013; Nelson and Skinner, 2013; Walker, 2013; Perotti and Wagenhofer, 2014). Consequently, the choice of any earnings quality proxy depends on determinants such as research question, data availability and the estimation model (Francis et al., 2006; Dechow et al., 2010). For example, some questions of previous studies test the association between earnings and returns such as value relevance research. Other research questions focus only on direct measures of earnings quality depending on accounting data (i.e., without reference to stock prices or returns). More narrowly, they test the association between earnings and cash flow. Finally, the research questions may test the differences between innate and discretionary components of earnings quality (Francis et al., 2006).

From earnings quality perspective, this thesis follows partially Francis et al. (2004) who review and examine the most universally used proxies for earnings quality in the previous literature, and summarise their findings in terms of seven proxies. These proxies could be categorized as either accounting-based or market-based proxies. The accounting-based

proxies consist of four proxies: accruals quality; earnings persistence; earnings predictability; and earnings smoothness. However, the market-based proxies consist of three proxies: value relevance; timeliness; and conservatism. Their findings indicate that accounting-based earnings quality proxies explain more of the variation in the cost of equity capital than do the market-based earnings quality proxies, with the exception of predictability and conservatism. Based on this result, this study focuses only on the accounting-based earnings quality proxies for the UK listed firms in the period of 2005 to 2011, because it has a stronger significant association with the cost of equity capital compared to the market-based earnings quality proxies. Also, this study extends Francis et al.'s (2004) study by examining the impact of earnings quality on other aspects of capital market such as information asymmetry and analysts' information environment. The researcher intends to determine whether each earnings quality proxy matters to investors and analysts, and which proxies matter most, as evidenced by the strength of the association between the proxy and the aspects of capital market.

Moving to the aspects of capital market, there are three particular aspects of capital markets are affected by earnings quality which have been investigated widely by previous studies. These aspects are: firstly, the cost of equity capital, which is considered to be a summary indicator of investors' resource allocation decisions; secondly, information asymmetry and; thirdly, analysts' information environment (number of analysts following, dispersion of analysts' forecasts and accuracy of analysts' forecasts) (e.g., Francis et al., 2004; Francis et al., 2005; Verdi, 2006; Core et al., 2008; Gray et al., 2009; McInnis, 2010; Kim and Qi, 2010; Bhattacharya et al., 2011; Lobo et al., 2012; Ogneva, 2012; Barth et al., 2013).

Based on reviewing previous studies, there is a clear debate regarding whether earnings quality proxies have a significant impact on the three aspects of capital market: the cost of equity capital; information asymmetry; and analysts' information environment. This debate is discussed in the following three subsections.

### *1.1.1 Earnings quality and the cost of equity capital*

A growing body of empirical work in the accounting literature has investigated the association between earnings quality and the cost of equity capital (e.g., Francis et al., 2004; Francis et al., 2005; Verdi, 2006; Core et al., 2008; Gray et al., 2009; Wong, 2009; McInnis, 2010; Kim and Qi, 2010; García Lara et al., 2011; Bhattacharya et al., 2011;

Ogneva, 2012; Barth et al., 2013; Mouselli et al., 2012; Mouselli et al., 2013). The main hypothesis is that higher earnings quality is associated with a lower cost of equity capital. This hypothesis is based on the theory that high quality accounting information reduces information risk by reducing information asymmetry between informed and uninformed traders. This is expected to lower the cost of equity capital (e.g., Easley and O'hara, 2004; Lambert et al., 2007; Lambert et al., 2012).

Empirically, many studies investigate the association between the cost of equity capital and earnings quality. Some of those studies use different proxies to measure earnings quality (e.g., Francis et al., 2004), whilst some use one proxy to measure earnings quality; most of them use accruals quality as a unique measure for earnings quality (e.g., Francis et al., 2005; Core et al., 2008; Gray et al., 2009; Kim and Qi, 2010; Ogneva, 2012). A few studies use another unique proxy to measure earnings quality, e.g., McInnis (2010) and Bhattacharya et al. (2003) use smoothness; Barth et al. (2013) use timeliness; Li (2010b) and García Lara et al. (2011) use conservatism.

Francis et al. (2004) investigate, for US firms, the association between the cost of equity capital and seven proxies of earnings quality: accruals quality; earnings persistence; earnings predictability; earnings smoothness; value relevance; timeliness; and conservatism. Considered separately these proxies, they find a statistically significant negative association between the cost of equity capital and each earnings quality proxy; the exceptions (or least consistent associations) are found for predictability and conservatism. They find, also, that the accounting-based earnings proxies, and particularly accruals quality, explain more of the variation in the cost of equity capital estimates compared to the market-based proxies. Further, Francis et al. (2005) examine the association between both costs of equity and debt capital and one proxy only for earnings quality, namely accruals quality for US firms. In this regard, they find that lower accruals quality is associated with both higher costs of debt and equity capital.

Using the Australian market rather than the US market, Gray et al. (2009) re-examine the association between accruals quality and the cost of equity capital. They find a significantly negative association between accruals quality and the cost of equity capital. Using the UK data, Mouselli et al. (2013) examine whether accruals quality is a priced risk factor. They find that accruals quality is significant factor in explaining the time-series variation in excess return. However, Core et al. (2008) claim that Francis et al.

(2005) do not provide evidence that accruals quality is a priced risk. They suggest using a two-stage cross-sectional regression (2SCSR) method to test whether accruals quality is a priced factor (e.g., Fama and MacBeth, 1973). They find no significant association between accruals quality and the realised return. However, the results of Core et al. (2008) show a significant positive risk premium for only the Fama and French *HML*[1] factor, and no significant risk premium for accruals quality, as well as *SMB*[2] factor and market risk premium. After controlling for low-priced stocks[3], Kim and Qi (2010) re-examine the model of Core et al. (2008) and find a significant negative association between earnings quality and the cost of equity capital. Moreover, Ogneva (2012) enters this debate by controlling for cash flow shocks[4], and finds a significantly negative association between accruals quality and the cost of equity capital.

A few studies use other proxies to estimate earnings quality rather than accruals quality, e.g., McInnis (2010) and Bhattacharya et al. (2003) use smoothness; Barth et al. (2013) use timeliness; Li (2010b) and García Lara et al. (2011) use conservatism. Specifically, Bhattacharya et al. (2003) explore the association between the cost of capital at a national level and three national level proxies of earnings manipulation, one of which is earnings smoothness. From their investigation, they find that countries with higher earnings smoothness have a higher cost of equity capital. However, McInnis (2010) finds no association between earnings smoothness and the cost of equity capital. By using timeliness (earning transparency), Barth et al. (2013) find that firms with higher earnings transparency have a lower cost of capital. By using conservatism, both García Lara et al. (2011) and Li (2010b) find a significantly negative association between conditional conservatism and the cost of equity capital.

In summary, earnings quality is considered to be a premier or summary indicator of the quality of accounting information. Most empirical studies use exclusively one proxy to express earnings quality. The exception is Francis et al. (2004), who use different proxies to estimate earnings quality. In terms of the accruals quality proxy, previous studies

---

[1] *HML* is the return to book-to-market factor-mimicking portfolio (high-minus-low book-to-market factor).
[2] *SMB* is the return to size factor-mimicking portfolio (small-minus-big factor).
[3] Low priced returns defined as returns with two adjacent prices less than $5, sometimes referred to as "penny stocks".
[4] The term "cash flow shock" describes revision in expectation of future benefits accruing to equity holders; this is adopted from the finance literature (e.g., Campbell and Ammer 1993).

agreed that there is a negative association between accruals quality and the cost of equity capital. The exception is Core et al. (2008) who counter this argument. Most of the studies focus on the US data except Gray et al. (2009) who focus on Australian data, and Mouselli et al. (2013) who focus on UK data. In terms of other accounting-based proxies, few previous studies examine the association between the cost of equity capital and these other proxies i.e., earnings persistence, predictability and smoothness, and those produce mixed results.

### *1.1.2 Earnings quality and information asymmetry*

Information asymmetry refers to some stakeholders obtaining more insider information about underlying firms than others (Callahan et al., 1997; Easley et al., 2002; Iatridis, 2011). Therefore, information asymmetry leads to three main problems in corporate finance: firstly, adverse selection which means a lack of distinction between positive and negative investment opportunities, since investors prefer to choose the investment that is characterised by lower risk or higher safety. Secondly, moral hazard which means that, if the investment plan does not serve the managers' interest, they will not join it. Thirdly, monitoring cost which is used to restrict the ability of manager to fool previous shareholders and new shareholders (Callahan et al., 1997; Easley et al., 2002).

Most of theoretical studies document three streams which demonstrate the impact of the quality of accounting information on information asymmetry. In the first stream, the focus is on changing the behaviour of uninformed investors; perhaps those investors are investing and trading in firms which are well known or that they judge favourably. Therefore, if the quality of accounting information of a firm increases, it leads to a reduction in the processing cost of public disclosure of such a firm. Consequently, there is an increased number of uninformed investors who trade in such a firm's stocks (Merton, 1987; Fishman and Hagerty, 1992). A higher amount of trading by uninformed investors reduces the probability of trading against a privately informed investor (Kyle, 1985). Therefore, higher quality of accounting information that is disclosed to the public is related to less informed investors; this leads to a reduction in information asymmetry (Brown et al., 2004).

The second stream shows that the high quality of accounting information can reduce the information asymmetry by changing the incentives of investors to search for private information. Verrecchia (1982) and Diamond (1985) find a negative association between

the quality of accounting information and the cost of private information which investors seek to acquire. Therefore, the higher quality of accounting information reduces the incentives of investors to acquire private information.

The third stream shows that the quality of accounting information could reduce information asymmetry by reducing the information risk (Diamond, 1985; Diamond and Verrecchia, 1991; Easley and O'hara, 2004). They show that poor quality of accounting information may lead to higher information asymmetry by increasing the information risk since less informed investors are in disadvantage level compared to informed investors in adjusting their portfolio allocations. Therefore, higher information asymmetry of a firm leads investors to ask for extra compensation to hold stock of such firm; this may lead to higher cost of equity capital (Diamond, 1985; Diamond and Verrecchia, 1991; Easley and O'hara, 2004).

A growing body of empirical work in the accounting literature supports this last conjecture. In this regard, most empirical studies, which investigate the association between the quality of accounting information and information asymmetry, focus more on disclosure quality as a proxy for the quality of accounting information rather than earnings quality, (e.g., Welker, 1995; Heflin et al., 2005; Brown and Hillegeist, 2007). Their findings suggest that the disclosure quality has a significantly negative impact on information asymmetry. On the other hand, there are few studies investigate the association between earnings quality and information asymmetry (e.g., Jayaraman, 2008; Ascioglu et al., 2012; Bhattacharya et al., 2013). In particular, Jayaraman (2008) investigates the association between earnings smoothness and information asymmetry. When compared to firms with poor earnings smoothness, he finds that firms with high earnings smoothness have both higher bid-ask spreads and *PIN*. He concludes that more informed trading occurs when earnings are smoother than cash flows. Moreover, Bhattacharya et al. (2013) investigate the association between accruals quality and information asymmetry through trading cost. They find a negative association between accruals quality and market liquidity (information asymmetry). Both innate and discretionary components of earnings quality have a significant effect on information asymmetry. However, the innate factors have a greater effect than the discretionary components. Finally, Ascioglu et al. (2012) examine the impact of earnings management on market liquidity (information asymmetry). They find a significant positive association

between earnings management activities, both accounting and real based earnings management proxies, with illiquidity.

In summary, compared with disclosure quality, there are relatively few previous studies which investigate the association between earnings quality proxies and information asymmetry. These studies focus on accruals quality as a unique proxy of earnings quality. In addition, these studies appeared to focus exclusively on US data.

### *1.1.3 Earnings quality and analysts' information environment*

Besides the cost of equity capital and information symmetry, the use of the analysts' information environment as a dependent variable for earnings quality has the advantage that analyst forecasts are related only to earnings whereas the cost of equity capital is likely to reflect other information beside earnings. Therefore, an investigation of the association between earnings quality and analysts' information environment reflects the direct effect of earnings quality on the usefulness of decisions (Dechow et al., 2010).

This part of the research is interested in two streams of the previous literature: the first stream examines the association between the quality of accounting information and the number of analysts following a firm. The second stream examines the association between the quality of accounting information, and both the dispersion of analysts' forecasts and the accuracy of analysts' forecast (analysts' properties). For the first stream, the accounting literature focuses mainly on the association between analysts following and firm disclosure quality; the main hypothesis is whether firms with high disclosure quality have a large number of analysts following (e.g., Bhushan, 1989). In this regard, previous studies provide mixed results on the association between the quality of accounting information and analysts following. Lang and Lundholm (1996) find that firms with more informative disclosure policies have a larger number of analysts following. Also, Healy et al. (1999) find a positive association between disclosure quality and analysts following. Conversely, Barth et al. (2001) and Lehavy (2009) argue that a firm's poor quality of disclosed accounting information leads to larger numbers of analysts following that firm; this is because their reports are likely to become more valuable and in greater demand by investors. Further, after controlling for operating uncertainty, Lobo et al. (2012) find a negative association between accruals quality and analysts following a firm. Overall, the question of whether earnings quality has a significant impact on financial analysts following is still unclear.

In addition to the impact of the quality of accounting information on analysts following, there is, also, an impact on the dispersion and accuracy of analysts' forecasts. In this regard, whilst there is an extensive literature on dispersion and accuracy of analysts' forecasts, few studies examine the impact of earnings quality on dispersion and accuracy of analysts' forecasts (e.g., Eames and Glover, 2003; Lobo et al., 2012), with the majority focusing on the impact of disclosure quality (e.g., Lang and Lundholm, 1996; Hope, 2003a; Irani and Karamanou, 2003; Vanstraelen et al., 2003). In particular, Lobo et al. (2012) investigate the association between accruals quality and both the dispersion and accuracy of analysts' forecasts. They find that firms with lower accruals quality have larger analysts' forecast errors and high forecasts dispersion. However, Eames and Glover (2003) test the association between earnings predictability and analysts' forecasts error and find no significant association. In accordance with these results, it is clear that using different proxies of earnings quality leads to different results. Overall, there are mixed results for the association between earnings quality and both dispersion and accuracy of analysts' forecasts.

## 1.2 Research Motivations

This study is motivated by six major considerations. Firstly, although the importance of earnings quality has been evident, especially in the last decade (e.g., Schipper and Vincent, 2003; Dechow and Schrand, 2004; Dechow et al., 2010; Walker, 2013; Dichev et al., 2013), there are controversies in the literature. Most notably, the association between accruals quality and the cost of equity capital is still unclear. Amongst others, Francis et al. (2005) argue that there is a significant negative association between the two variables, whilst Core et al. (2008) counter this argument using two-stages cross sectional regression tests.

Secondly, earnings are considered to be one of the main inputs in analysts' valuation models, therefore, the quality of earnings is a crucial factor for analysts in making useful decisions (Block, 1999; Barker and Imam, 2008; Clatworthy et al., 2012). However, previous studies focus too generally on the role of public information on analysts' information environment and, here, there is a lack of evidence in the literature which examines the impact of earnings quality on analysts' information environment.

Thirdly, beyond the association between accruals quality and the three aspects of capital market, there are few studies that investigate the association between other accounting-

based earnings quality proxies and the three aspects of capital market. Also, the previous studies provide little guidance on the comparative impact of earnings quality proxies on capital markets aspects, and whether there are given circumstances or particular contexts in which one proxy is more vital than other proxies (see Dichev et al., 2013; Perotti and Wagenhofer, 2014).

Fourthly, previous studies provide mixed results about earnings smoothness as a proxy of earnings quality (e.g., Leuz et al., 2003; Francis et al., 2004). A number of previous studies consider earnings smoothness as a desired quality of earnings, since it reflects either the natural consistency in operations or the accruals process' elimination of transitory noise or managers who look favourably on this aspect (e.g., Francis et al., 2004; Tucker and Zarowin, 2006; Dichev and Tang, 2009). Other previous studies consider the opposite explanation, highlighting the opportunistic and misleading "over-smoothing" of earnings with regard to the underlying cash flows or economic events (Leuz et al., 2003). In order to understand these mixed results, the researcher uses different context rather than US, UK (non-US) listed firms and distinguishes between the innate (fundamental) and discretionary (artificial) earnings smoothness, to determine the impact of each component on decision usefulness and capital market aspects.

Fifthly, most previous studies, which focus on the impact of earnings quality on the three aspects of capital market, are conducted in the US. This limits the generality of findings vis-à-vis contexts beyond the US. The quality of accounting information is shaped by the interface of different features such as the accounting standards, the legal and political system, the tax system, the development of financial market, capital structure and ownership (see Ball et al., 2000; Leuz et al., 2003; Soderstrom and Sun, 2007).

In relation to the UK, although the UK and the US share some common features, e.g., both have a common law system, dispersed ownership, strong investor rights, strong legal enforcement and large equity markets (Leuz et al., 2003; Nobes and Parker, 2012), there are differences in other areas. Of note is that UK listed firms adopt IFRS whilst US listed firms apply US GAAP. In this regard, Dichev et al. (2013) find that 181 CFOs, who are working in the US market, rank accounting standards as the second most important determinant of earnings quality after the business model. Regardless of the widespread mandatory adoption of IFRS, there is comparatively little evidence of the economic consequences of IFRS which are less examined and less comprehensive than US GAAP.

Previous studies argue, also, that IFRS propose additional discretion and less guidance; thus, it provides additional room for earnings management. (e.g., Benston et al., 2006; SEC 2008).

On the other hand, previous studies argue that IFRS are considered as principles-based standards and inexpensive to apply than US GAAP, which are likely realised as being too detailed and complex (e.g., Ijiri, 2005; Bennett et al., 2006; PwC 2009). A number of studies, also, find that the adoption of IFRS improves the general information environment. They find that, after the adoption of IFRS compared to various local GAAP, there are more analysts following, less dispersion in analysts' forecasts and greater accuracy in analysts' forecasts (Ashbaugh and Pincus, 2001; Cuijpers and Buijink, 2005; Wang et al., 2008; Horton et al., 2013).

In this regard, previous studies suggest that there are significant differences in earnings quality reported between the two accounting systems (Haverty, 2006; Ding et al., 2007; Hopkins et al., 2008; O'Connell and Sullivan, 2008; Gordon et al., 2008; Henry et al., 2009). Also, demand for public disclosure and accounting information is likely to vary between the said two countries. For example, in the US, retail investors' direct stock holdings constitute about half of capital markets but, in the UK, their share is around 18% of the market (Investment Company Institute, 2010; Office for National Statistics, 2010). Therefore, the researcher considers that, in the context of this study, this different setting may lead to different results from those in the US. This because previous studies document that earnings management is considered as one of the main determinant of explaining the ability of stock market participants e.g., investors and analysts to forecast future earnings (e.g., Leuz et al., 2003).

Sixthly, a number of previous studies challenge the hypothesis that the accounting standards leads only to high (less) quality of accounting information (e.g., Ball et al., 2003; Leuz, 2003; Ball and Shivakumar, 2005; Burgstahler et al., 2006). They argue that the quality of accounting information are shaped by many other factors, such as the legal institutions of a country, the power of the enforcement regime, the forces of capital market, ownership and governance structure, and firms operating characteristics. Therefore, if these factors remain constant, the accounting standards have limited impact on the quality of accounting information (Hail et al., 2010). According to this view, the results of this study are expected to be the same as the previous literature that is applied

in US, since the accounting standards are the main difference between the US and the UK market.

## 1.3 Research Objectives

Motivated by this debate, the primary objective of this thesis is to examine the association between earnings quality and three capital market aspects in the UK after the adoption of IFRS in 2005. In particular, the researcher tests the extent to which what is reported to be the higher of four earnings quality proxies, known as accounting-based earnings quality proxies (Francis et al., 2004), are associated with a lower cost of equity capital, lower information asymmetry, higher number of analysts following, lower dispersion of analysts' forecasts and greater accuracy of analysts' forecasts in the UK market.

In addition, this thesis tests the relative impact of the four earnings quality proxies on the three capital market aspects in order to determine which proxy matter most to investors and analysts. Although these proxies are based on different sets of information, this study does not provide any hypotheses for that ranking. The proxies, which process more information to users, are perhaps in better position than others. Accruals quality is based on three subsequent effects of cash flows; earnings persistence and predictability are based on net income from the financial statements; and earnings smoothness is based on the volatility of earnings and cash flows.

This thesis aims, also, to determine whether the innate component, which is driven by economic fundamentals, and the discretionary component, which is driven by management choices, of each earnings quality proxy, impact similarly on the three aspects of capital market. Finally, the thesis is concerned with studying the impact of the financial crisis on the association between earnings quality and both the cost of equity capital and information asymmetry.

## 1.4 Research Philosophy and Methodology

The researcher regards this study as being set within the positivistic (functionalist) paradigm. The notion of such research is to investigate the status quo and search for universal regularities and causal relationships between the variables used in the study. Therefore, this study employs statistical analysis to test the research hypotheses; these are constructed and explained in accordance with a theoretical framework established from the relevant literature. Different theories of accounting such as capital need theory and

decision usefulness theory are used as explanatory theories in this context to explain the association between earnings quality and the three aspects of capital market.

The sample of this thesis covers all UK non-financial firms listed on the London Stock Exchange during the period from 2005 to 2011 and in order to avoid any survivorship bias, both active and dead equities are included in the sample. The *Thomson DataStream* and the *I/B/E/S* Databases are used to collect the observations for all variables. Following the literature review, this thesis excludes the financial institutions from the sample because their financial reporting processes are unlikely to conform to other industries. Financial institutions, as regulated industries, use industry specific accounting rules and therefore differ in their incentives to produce earnings quality (Peasnell et al., 2005). Financial institutions face regulatory monitoring which is tied explicitly to accounting data; such regulations create incentives to manage the income statement and balance sheet variables of interest to regulators (Healy and Wahlen, 1999). In total, there are 8,175 firm-year observations which represent 28% of all UK companies available in the *DataStream*. The number of distinct firms each year ranges from 1,074 to 1,224.

In this study, univariate analyses are performed in order to report the descriptive statistics for the variables used in the multivariate analysis. Two-tailed t-tests of differences in means are performed in order to compare the dependent variables of poor and high decile rank of each earnings quality proxy for all firm-year observations. Three multivariate regressions, i.e., Fama and MacBeth (1973) average annual regression; Newey and West (1987) pooled regression; and panel data with fixed and random effects regression, are used to test empirically the hypotheses of the thesis. The dependent variables are the cost of equity capital, information asymmetry, analysts following, the dispersion of analysts' forecasts and the accuracy of analysts' forecasts. These dependent variables are regressed against four earnings quality proxies e.g., accruals quality, earnings persistence, earnings predictability and earnings smoothness, plus control variables. *STATA* computer software package is used to test the different hypotheses.

## 1.5 Research Contributions

This study contributes to the literature in many ways. Firstly, to the best of the author's knowledge, this study is amongst the first to examine the impact of earnings quality on three aspects of capital market for UK listed firms, particularly after the requirement to adopt IFRS in 2005. According to the regulations of the European Union (EU), all

publicly traded EU firms were obligated to change from local GAAP to IFRS in 2005. Therefore, from 2005 onwards, those firms are required to prepare their financial reports consistent with IFRS. The transition to IFRS is considered to be the biggest change to financial reporting within the EU in 30 years (Jermakowicz and Gornik-Tomaszewski, 2006). The ostensible objectives of the adoption of IFRS include improving the quality of accounting information and achieving greater transparency, accuracy, timeliness and comparability of financial reporting (Ball, 2006; Iatridis and Dimitras, 2013). Also, improving the quality of financial reporting by IFRS may reduce the information risk for less-informed (typically small) investors, helping them to compete better with well-informed (e.g., professional) investors. This may lead to a lower information asymmetry, higher number of analysts following, less dispersion across analysts' forecasts and greater accuracy for analysts' forecasts. All of these results may lead to a lower cost of equity capital (Ball, 2006).

Secondly, this research goes beyond the association between accruals quality and the three aspects of capital market and focuses on the impact of other accounting-based proxies of earnings quality. Earnings quality is a multi-dimensional concept or construct, hence, using one proxy to express earnings quality may not be enough to cover the concept. Therefore, investigating the impact of different earnings quality proxies on the capital market aspects might help to compare the different effects of values of each proxy and, thereby, determine which proxy matters most to users (e.g., investors and analysts).

Thirdly, these analyses are extended by examining whether there is a different association between the capital market aspects and both innate and discretionary components of earnings quality. This analysis shed light on the role of IFRS and the UK institutional and regulatory factors in increasing the quality and precision of accounting information and reduces information asymmetry for both future cash flow and future earnings, thus the information risk that associated with discretionary earnings quality is expected to be reduced.

Finally, this study tests the association between earnings quality and both the cost of equity capital and information asymmetry during the period of financial crisis in a country with strong fiscal sustainability. The findings would shed light on the impact of macroeconomic conditions on the relationship between earnings quality and the cost of equity capital. Also, it shed light on the type of accounting information that matter to

investors through the financial crisis in determining the price of cost of equity capital. Finally, it would help other participants in the financial reporting process, e.g., policy makers and accounting regulators, to prepare defence mechanisms against a crisis.

## 1.6 Summary of the Results

The empirical results of this thesis can be classified into three sections based on the dependent variable which is examined: the cost of equity capital; information asymmetry; and analysts' information environment.

### *1.6.1 The cost of equity capital*

The results indicate a significantly negative association between each of the accounting-based earnings quality proxies considered separately and the cost of equity capital that is measured by earnings-price ratios in relation to their industry peers (*IndEP*). The exceptions or least consistent associations are found for smoothness. This low significant association between the cost of equity capital and earnings smoothness mirrors the corresponding conflicting impressions in the research literature (see Dechow et al., 2010; Dichev et al., 2013). Also, the results show that the predictability proxy explains more of the variation in estimates of the cost of equity followed by accruals quality, then persistence and, finally, smoothness. Economically, the largest impact (earnings predictability) increases the cost of equity capital by 315 basis points (bp) when we move from firms with the best predictability decile to those with the worst decile. Compared with the results of Francis et al. (2004), this finding suggests that, especially for earnings predictability and earnings smoothness, there are differences between IFRS and US GAAP in the sense of the impact of earnings quality proxies on the cost of equity capital. This finding is consistent with the study of Folsom et al. (2013), who find the principles-based standards i.e., IFRS are more informative, persistent and predictive of future earnings and cash flows than rules-based standards i.e., US GAAP.

Adding the financial crisis to the test, it increases the explanatory power of the models. However, in the period of the financial crisis, the results show a significantly larger impact for both earnings predictability and persistence on the cost of equity capital relative to the impact of accruals quality and smoothness. This indicates that, through the period of the financial crisis, investors paid more attention to the change in earnings rather than the relationship between earnings and cash flow. Also, during the period of the

financial crisis, the results show a larger impact for market beta on the cost of equity capital compared to the full sample period. This suggests that, throughout the crisis, investors pay more attention to the change in the whole stock market. The results indicate, also, that earnings quality has a larger impact on the cost of equity capital during the period of the crisis than before the crisis. This finding suggests that, when making decisions on capital allocations during the period of the financial crisis, investors pay more attention to the quality of accounting information.

Regardless of the method used to disentangle the components of earnings quality to innate and discretionary components, the results show the effects on the cost of equity capital by a unit of innate earnings quality are larger in terms of both magnitude and statistical significance than the effects by a unit of discretionary earnings quality. In economic terms, the greatest impact of innate accruals quality is the increase in the cost of equity capital by 576 bp between the highest and lowest decile rank of innate accruals quality firms, whereas the impact of discretionary accruals quality is 198 bp. This finding indicates that investors assign to firms, with poor earnings quality due to innate component, a higher cost of equity capital when compared to poor earnings quality due to a discretionary component.

### *1.6.2 Information asymmetry*

The results indicate a significantly negative association between earnings quality and information asymmetry that is measured by the percentage quoted spread. These results may be interpreted as supporting the predictions of analytical models which document a significant association between earnings quality and information asymmetry (Lambert et al., 2012). Also, the results show that earnings smoothness has the largest impact on information asymmetry compared to other earnings quality proxies. Moreover, the results show a significant association between innate component of earnings quality and information asymmetry. However, the results indicate no significant association between the discretionary component of each earnings quality proxy except earnings smoothness and information asymmetry. The results indicate that the innate component has a larger effect on information asymmetry compared with the discretionary component. During the period of the crisis, the results indicate a stronger association between earnings quality and information asymmetry when compared to the period before the crisis. This suggests that during the period of the crisis, firms seek to provide investors with useful information

in order to increase the number of informed investors and, then, reduce information asymmetry between investors.

### *1.6.3 Analysts' information environment*

The results indicate that there are significant positive associations between analysts following and earnings quality proxies except in the case of earnings smoothness. There are significant negative associations between earnings quality proxies and the dispersion of analysts' forecasts. With the exception of earnings persistence and smoothness, there are significant positive associations between the accuracy of analysts' forecasts and earnings quality proxies. These results highlight the importance of earnings quality in improving the analysts' information environment. Of the four earnings quality proxies, earnings predictability has the largest impact on the analysts' information environment. These results suggest that financial analysts pay more attention to the sustainable and predictable earnings than the association between accruals and cash flow in making their decisions.

Furthermore, the results provide evidence that the innate component has a larger impact on analysts' information environment. This result indicates that the uncertainty due to intrinsic economic fundamental such as business environment has a larger impact on analysts' information environment than the uncertainty due to management reporting discretion and measurement error. In this regard, the results indicate that the innate component of both earnings persistence and earnings smoothness has a significantly positive impact on analysts' forecasts accuracy. However, the discretionary component of the same proxies has a significantly negative impact on the accuracy of analysts' forecasts. This finding sheds light on the impact of each component of earnings quality on the accuracy of analysts' forecasts, and how analysts consider the discretionary component of earnings smoothness and persistence under IFRS.

## 1.7 Thesis Structure

The remainder of this thesis proceeds as follows:

Chapter two discusses earnings quality definitions, proxies and different measures for each proxy.

Chapter three discusses the definition and measures of the three aspects of the capital market i.e., the cost of equity capital, information asymmetry and analysts' information environment.

Chapter four discusses the research philosophy followed by the theoretical framework which is used to explain the association between earnings quality and the three aspects of capital market.

Chapter five reviews previous studies that investigate the association between earnings quality and the considered three aspects of the capital market. It presents, also, a selected review of the literature on the differences between IFRS and US GAAP regarding the proxies of earnings quality.

Chapter six outlines the research hypotheses of the study and explains the research methodology used to test these hypotheses empirically.

Chapter seven reports the empirical results of the association between earnings quality and the cost of equity capital. It presents a univariate and multivariate analyses and a number of sensitivity analyses.

Chapter eight reports the empirical results of the association between earnings quality and information asymmetry. It presents a univariate and multivariate analyses and a number of sensitivity analyses.

Chapter nine reports the empirical results of the association between earnings quality and analysts' information environment. It presents a univariate and multivariate analyses of the three proxies of analysts' information environment: analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy. In addition, it also presents a number of sensitivity tests.

Chapter ten concludes the study, presents the main conclusion of the research and identifies its limitations and areas of future research.

## 1.8 Summary

With particular regard to the UK market after the 2005 adoption of IFRS, this thesis aims to investigate the association between earnings quality and three aspects of the capital market: the cost of equity capital; information asymmetry; and analysts' information environment. In order to achieve the main objective, the researcher uses both the capital need and decision usefulness theories under the functionalist paradigm.

This chapter provided an overview of research topic of this thesis by providing a general background, followed by the research motivation, research objectives and a summary of the research philosophy and methodology. Then, the chapter outlined the research contributions, and summarised the empirical results. Finally, it outlined the structure of the remaining chapters in this thesis. The next chapter discusses earnings quality.

# Chapter 2: Earnings Quality

## 2.1 Introduction

Earnings quality in the capital market is of interest to those who participate in any step in the process whereby information is created, distributed and used for the purposes of capital allocation (Francis et al., 2006). This chapter discusses definitions of earnings quality, as the concept of earnings quality remains rather vague and there is no consensus on it proxies in previous studies. This chapter also discusses the different measures for each proxy in an equity valuation context, as earnings quality as a construct is not the same as its proxies and measurement.

## 2.2 Earnings Quality Definitions

A definition of earnings quality could begin with earnings management, which arises when judgment in financial reporting is used by managers to adjust financial reports to either affect contractual outcomes that rely on reported accounting numbers or to deceive number of stakeholders about the fundamental economic performance of a firm (Schipper, 1989; Healy and Wahlen, 1999; Leuz et al., 2003). A broader definition is that of Walker (2013, p.446) who defines earnings management as "The use of managerial discretion over (within GAAP) accounting choices, earnings reporting choices, and real economic decisions to influence how underlying economic events are reflected in one or more measures of earnings". It is clear that earnings management is related to earnings quality. That is, one may argue that higher earnings management have lower earnings quality. Yet, the lack of earnings management is insufficient to guarantee higher earnings quality, as there are certain other factors that might affect the quality of earnings. For instance, it could be argued that accountants who follow a poor set of accounting standards may produce a lower quality of financial reports. Therefore, taking these other contributing factors into consideration will help in drawing a strong connection between earnings quality and earnings management (Lo, 2008).

Earnings quality is considered to be an important feature of the financial reporting system. Therefore, high quality financial information is intended in this context to help users (i.e. investors, creditors and analysts) to make useful decisions and judgments, thus developing the efficiency of the capital market (Ewert and Wagenhofer, 2012b). This

view derives from the notion that use of accounting information in the capital market is fundamental.

While previous studies consider earnings quality as an important element of firms' financial reporting, surprisingly, the concept of earnings quality remains rather vague and there is no consensus on it, regardless of numerous attempts to make it more precise and to deliver a theoretical foundation. In particular, the main reason for this problem is that the definition of quality may differ according to the perspective of differing groups e.g., investors, auditors, analysts, creditors or standard setters (Francis et al., 2004; Francis et al., 2006; Dechow et al., 2010; Chen et al., 2010; Dichev et al., 2013; Nelson and Skinner, 2013; Perotti and Wagenhofer, 2014). This thesis focuses mainly on the view of investors and analysts in understanding earnings quality, as their decision and opinions are important for the efficiency of capital market (Ewert and Wagenhofer, 2012b). The researcher classifies the different definitions of earnings quality in an equity valuation context into three groups; the first group emphasises the association between earnings quality and performance. For example, Dechow et al. (2010, p.344) define earnings quality as introducing more information about the performance features of a firm that are related to a definite decision made by a specific decision maker. According to Dechow et al. (2010), this definition has three characteristics. First, there should be a relationship between earnings quality and decision-relevance of the information as the term "earnings quality" alone is meaningless; the definition of earnings quality depend on the type of decision model. Secondly, the quality of earnings numbers that reported to users relies on whether they are informative about the firm's financial performance. Thirdly, earnings quality relies on the capability of the accounting information system to measure the performance of a firm accurately (Dechow et al., 2010).

Instead, explicitly limiting relevant decision to decisions about or involving the assessment of current and future performance and firm values, Dechow and Schrand (2004, p.5) define high earnings quality as "when the earnings number accurately annuitizes the intrinsic value of the firm." They then determine the requirements for high quality of earnings as being that they (1) reflect accurately the firm's current performance, (2) are useful predictor of future performance and (3) provide a good indicator for firm value evaluation.

The second group emphasises the association between earnings quality and future operating cash flow. For example, Cohen (2003) defines earnings quality in terms of a high association between current earnings and future operating cash flow. Similarly, Mikhail et al. (2003, p. 124) define earnings quality as "the amount of variation in future cash flows explained by prior earnings (or earnings components)". Further, Ewert and Wagenhofer (2012a) define earnings quality as the reduction of the market's uncertainty related to cash flow due to the earnings reported in the current year.

The third group considers decision usefulness with a narrower set of decisions and instead focuses explicitly upon the maintenance of capital, and deduces the definition of earnings quality from the theory of economic income. For example, Schipper and Vincent (2003, p.98) define earnings quality as "the extent to which reported earnings faithfully represent Hicksian income". According to the IASB Conceptual Framework, faithful representation is considered as the second fundamental qualitative characteristic of useful financial information to the users. It also determines three sub-characteristics for a perfect faithful representation: to be neutral, complete and free from error (IFRS Foundation, 2010). In particular, users should feel confident that information represents what it is supposed to represent. The objective of the IASB is to maximise these qualities to as great an extent as possible. Hicksian income is defined as "the amount that can be consumed (that is, paid out as dividends) during a period, while leaving the firm equally well off from the beginning to the end of the period" (Hicks, 1939, p. 176).

The focus on decision usefulness arises for two reasons. First, there is the IASB Conceptual Framework, which identified six "qualitative characteristics" of useful financial information. These characteristics show the types of information that are possibly most useful to the primary users of financial reports. Two of the qualitative characteristics, relevance and faithful representation, are specified as "fundamental characteristics". Information is relevant if knowing a given piece of information would contribute to differential decision making. High quality information that is relevant should help in predicting a future outcome. The remaining four qualitative characteristics are described as "enhancing", since they further improve the usefulness of financial information that is already relevant and faithfully represented. The enhancing characteristics are: comparability, verifiability, timeliness and understandability (IFRS Foundation, 2010; Iatridis, 2011). The second reason is that decision usefulness is

commonly used and empirically tractable in accounting research (Schipper and Vincent, 2003).

Along with the focus on decision usefulness, which is adopted by the IASB and by various academic literature, earnings quality and, more broadly, financial reporting quality are important to those who use financial reports for both investment decision making and for contracting purposes; thus, the standard setters cite the quality of financial reports as an indirect indicator of the financial reporting standards quality (Schipper and Vincent, 2003; Francis et al., 2006; Dichev et al., 2013).

To sum up, high earnings quality should have four characteristics: it should, first, faithfully represent current performance; second, be an indicator for future earnings and performance; third, have a relationship with future operating cash flow, and; fourth, help users to make useful decisions.

## 2.3 Earning Quality Proxies

Earnings quality is a multidimensional concept. According to previous studies, no proxy is superior for all decision models (Dechow et al., 2010; Dichev et al., 2013; Singleton-Green, 2014). Therefore, the choice of any earnings quality proxy depends on certain determinants such as research question, data availability and the estimation model (Francis et al., 2006). Some research questions in previous studies call for a proxy of earnings quality that is associated with investors' perceptions of earnings. For example, research that investigates the value relevance of earnings presumes earnings is useful to a particular participant in the market (i.e. investors) whose aggregate judgments and decisions are summarised by stock prices and returns. Alternatively, other research questions focus only on direct proxies of earnings quality depending on accounting data (i.e., without reference to stock prices or returns) such as accruals quality. More narrowly, they may test the association between earnings and cash flow. In addition, there other research questions focus on the differences among total, innate and discretionary components of earnings quality (Francis et al., 2006).

Previous studies have investigated a number of proxies of earnings quality. These proxies can be categorised as either accounting-based, which typically depend on accounting information only, or market-based, typically depending on both accounting and market data (Francis et al., 2004). In addition, Francis et al. (2006) note that the difference between accounting and market-based proxies lies in reference constructs. In particular,

accounting-based proxies assume that the functions of earnings is to assign cash flows to reporting periods via accruals, whereas the market-based proxies assume that the function of earnings is to reflect economic income as shown by stock returns.

Focusing on the accounting-based characteristics, Dechow and Dichev (2002), Francis et al. (2005) investigate accruals quality by using the mapping between cash flows, earnings and accruals. Penman and Zhang (2002) and Richardson et al. (2005) focus on persistence of earnings over time. Lipe (1990) uses predictability of future earnings as a reflection of earnings quality, while Leuz et al. (2003) investigate the smoothness proxy as a time series property of earnings. Turning to market-based proxies, Collins et al. (1997) and Francis and Schipper (1999) use the value relevance of earnings. Other market-based proxies such as timeliness and conservatism have also been investigated (e.g., Basu, 1997; Watts, 2003a; Bushman et al., 2004; Bushman et al., 2011).

### *2.3.1 Accruals quality*

The characteristics of decision usefulness such as relevance and faithful representation have been captured in the literature through modelling the association among accruals, cash flows and earnings. Generally, proxies employ a firm-specific time series, a cross-sectional industry accrual or cash flow estimation process to model earnings quality (e.g., Dechow and Dichev, 2002; Francis et al., 2004; Francis et al., 2005). Accruals are the difference between earnings and cash flows, so one of the primary functions of accruals is to adjust the recognition of cash flow through periods. In this case, the use of adjusted earnings may be a good measure for a firm's performance. Therefore, accruals quality is defined as "the extent to which working capital accruals map into cash flow realisations, where a poor match signifies low accruals quality" (Dechow and Dichev, 2002, p.36). This view of accruals quality is operationalised as the standard deviation of the residuals from regressing firm working capital accruals on three types of cash flow from operations: preceding, current, and following year of that firm (Dechow and Dichev, 2002).

Previous studies introduce different models to measure accruals quality. Table 2-1 summarises the accruals models that have been widely used in the literature. The objective of any model is to determine abnormal accruals that represent a distortion. There are two types of error when the models measure abnormal accruals. The first type of error (or the Type I error) is known as a misclassification error, and occurs when the accruals model classifies accruals as abnormal but represents the main performance (normal

accruals). The second error (or the Type II error) occurs when the accruals model classifies accruals as normal when they are not (Dechow et al., 2010). The researcher evaluates each model to determine its capability to detect individually the normal and abnormal portions of accruals and alleviate Type I and Type II errors.

Jones (1991) model explains the variation in accruals (working capital accruals and depreciation) as a function of sales growth and property, plant and equipment (PPE). Although both these variables of sales growth and PPE are related to firm performance, and Jones model proves a correlation among these two variables and accruals, the explanatory power of this model is only around 10%, which is considered a low rate to explain the variation in accruals (Dechow et al., 2010). One of the assumptions used to explain the low explanatory power of the model is discretionary accruals, which appear in the residuals of the model, and which managers could use as a veil for fundamental performance. In line with this assumption, Dechow and Schrand (2004) document a high positive correlation between the residuals and total accruals. Further, Dechow et al. (1995) find a negative correlation between residuals and cash flow performance and positive correlation between residuals and earnings performance. Nevertheless, Xie (2001) finds a lower predictive ability of the residuals than the normal accruals for next-year earnings. These findings suggest a high Type I error for Jones (1991). Other studies also confirm that Jones (1991) suffers from Type II error (Dechow et al., 2011). The Jones (1991) model is shown below:

$$\frac{TA_{j,t}}{Assets_{j,t-1}} = \alpha\left(\frac{1}{Assets_{j,t-1}}\right) + \beta_1\left(\frac{\Delta Rev_{j,t}}{Assets_{j,t-1}}\right) + \beta_2\left(\frac{PPE_{j,t}}{Asssets_{j,t-1}}\right) + \varepsilon_{j,t} \qquad \text{Equation (2-1)}$$

Where:

$TA_{j,t}$ = total accruals of a firm in the current year are calculated as:

$$TA_{j,t} = \left(\Delta CA_{j,t} - \Delta Cash_{j,t}\right) - \left(\Delta CL_{j,t} - \Delta STDebt_{j,t}\right)$$

$Assets_{j,t-1}$= total assets of a firm in the preceding year.
$\Delta Rev_{j,t}$ = change in revenues of a firm between current and preceding years.
$PPE_{j,t}$ = gross value of property, plant and equipment of a firm in current year.
$\Delta CA$ = changes in current assets of a firm.
$\Delta Cash$ = changes in cash and cash equivalent of a firm.
$\Delta CL$ = changes in current liabilities of a firm.
$\Delta STDebt$ = changes in short-term debt of a firm.

Dechow et al. (1995) attempt to reduce the Type II error that appears with the Jones model by modifying the model through the adjustment of sales growth to be growth in credit sales, as they argue that credit sales are often manipulated. This adjustment increases the explanatory power of the model and reduces Type II error. However, Dechow et al. (1995) model still suffers from a Type I error, to an even greater extent than the original Jones model[5] (Dechow et al., 2010). Another weakness of the Dechow et al. (1995) model is arguably related to the limitation of observations that should be sufficiently large to obtain valid coefficient estimates; however, this problem can be solved by estimating the model cross-sectionally (Ahrens, 2009). The Dechow et al. (1995) model is set out below:

$$\frac{TA_{j,t}}{Assets_{j,t-1}} = K_1\left(\frac{1}{Assets_{j,t-1}}\right) + K_2\frac{\Delta Rev_{j,t}}{Assets_{j,t-1}} + K_3\frac{PPE_{j,t}}{Assets_{j,t-1}} + \varepsilon_{j,t} \qquad \text{Equation (2-2)}$$

The Dechow et al. (1995) model has two steps: first, they run the above equation each year by industry, and estimate the industry-and-year-specific coefficients ($K_1, K_2, K_3$) to estimate firm-specific normal accruals (i.e. Non-discretionary accruals, *NA*) as a percentage of lagged total assets in the below equation, then they calculate the abnormal accruals (*AA*) in year *t*, using this equation $AA_{j,t} = TA_{j,t}/Asset_{j,t-1} - NA_{j,t}$., $AQ_{j,t} = |AA_{j,t}|$, with larger values of $|AA_{j,t}|$ indicating poorer accruals quality.

$$NA_{j,t} = \widehat{K}_1\left(\frac{1}{Assets_{j,t-1}}\right) + \widehat{K}_2\frac{(\Delta Rev_{j,t} - \Delta AR_{j,t})}{Assets_{j,t-1}} + \widehat{K}_3\frac{PPE_{j,t}}{Assets_{j,t-1}} \qquad \text{Equation (2-3)}$$

Where: $\Delta AR_{j,t}$ = change in Accounts Receivable between year *t*-1 and year *t* for a firm.

Kothari et al. (2005) try to solve the problems that related to both the Jones and modified Jones models by countering the concerns of the high correlations between the residuals and performance in both models. They add return on assets (ROA) to the Jones model to control the normal level of accruals conditioning to ROA. In particular, they identify a

[5] The Dechow et al. (1995) model suffers from classifying accruals as abnormal while representing normal accruals.

firm in the same industry which has a similar rate of ROA to the sample firm and then subtract the residuals of that firm (i.e., discretionary accruals) from those of the sample firm to produce ‘‘performance-matched’’ residuals (Dechow et al., 2010). However, it is better to use this model if correlated performance is an important issue as it is likely to add noise to the measure of discretionary accruals. Moreover, if the earnings are being managed, this model will extract too much discretion, resulting in low power tests (Dechow et al., 2010). In fact, the performance-matching procedure normally gives better results than adding *ROA* as an additional variable (Ahrens, 2009). Kothari et al. (2005) model is given below:

$$\frac{TA_{j,t}}{Assets_{j,t-1}} = \alpha + \beta_1 \left(\frac{1}{Assets_{j,t-1}}\right) + \beta_2 \frac{\Delta Rev_{j,t}}{Assets_{j,t-1}} + \beta_2 \frac{PPE_{j,t}}{Assets_{j,t-1}} + \beta_4 ROA_{t\ (or\ t-1)} + \varepsilon_{j,t} \quad \text{Equation (2-4)}$$

Where:

$ROA_{t\ (or\ t-1)}$ = Return on assets of a firm in current year (or preceding year).

Dechow and Dichev (2002) assert that the association between accruals and cash flows is important. They focus on short-term working capital accruals and omit modelling the association between long-term accruals and cash flows. They regress working capital accruals on current, previous, and future cash flows, as accruals predicts payments or collections of future cash and reverse when cash previously recognised in accruals is paid or collected (Dechow and Dichev, 2002). “The explanation powers of this model are higher than the other modified jones model; 47% at the firm level, 34% at the industry level, and 29% at the pooled level” (Dechow et al., 2010, p. 359). They consider the standard deviation of the residuals of this model as a proxy of accruals (earnings) quality. They conclude that firms with larger standard deviations have lower accruals (earnings) quality, longer operating cycles and more volatile earnings, accruals and cash flows, compared to firms with a smaller standard deviation (Dechow et al., 2010). However, this model suffers from an important limitation, which is that it cannot determine the accounting distortions that occur by long-term accruals (e.g., impairments of PPE and goodwill) which could be particularly important to evaluate the earnings quality (measurement error) (Dechow et al., 2010). The Dechow and Dichev (2002) model is shown below:

$$\Delta WC_t = \alpha + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \varepsilon_t \quad \text{Equation (2-5)}$$

Where:
$\Delta WC_t$= the changes in working capital of a firm between current year and preceding year.
$CFO_t$= cash flow from operation of a firm in current year.

McNichols (2002) documents many limitations of the Dechow and Dichev (2002) model. First, she points out that the model does not distinguish whether the estimation errors happen because of low management experience, high variability in a firm's business environment, or intentional earnings management. Second, they assume that the errors are uncorrelated to each other and to cash flows. However, previous studies suggest that estimation errors are not independent from cash flows or from each other. Third, regarding firms that have longer operating cycles, the elements that constitute earnings quality do not have to be included in current accruals. Finally, she concludes that the Dechow and Dichev (2002) model may contain measurement errors and may also ignore some important aspects, for example, acquisitions or mergers (McNichols, 2002).

However**,** McNichols (2002) attempts to solve some of the limitations of the Dechow and Dichev (2002) model by proposing a hybrid model after adding the changes in sales revenue and PPE to the old model. She argues that adding these variables is important to establish expectations of current accruals, over and above the effects of cash flow from operation. The results show that the explanatory power of the suggested model is increased significantly after adding both variables, thus reducing the measurement error. The McNichols model is shown below:

$$\frac{TCA_{j.t}}{Assets_{j,t}} = \alpha_j + \beta_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \beta_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \beta_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \beta_{4,j}\frac{\Delta Rev_{j,t}}{Assets_{j,t}} + \beta_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + v_{j,t} \quad \text{Equation (2-6)}$$

Where:
$Assets_{j,t}$= average total assets of a firm at time *t* and *t*-1.
$AQ_j = \sigma(\hat{v}_{j,t})$. $AQ_j$ is the standard deviation of a firm's residuals, which a large standard deviations indicates poor accruals quality.

Francis et al. (2005) develop the Dechow and Dichev (2002) model in two ways. Firstly, they follow the suggestion of McNichols (2002) by adding two variables to the model, which are sales growth, that reflect performance, and PPE, to add the effect of deprecation

to the model, which helps expanding the model to a broader measure of accruals. Nevertheless, Francis et al. (2005) do not investigate the impact of these modification on decreasing Type I or Type II. Secondly, they extend the Dechow and Dichev (2002) model by disentangling the standard deviation of the residual (accruals quality) at firm level into an innate component that reflects business models and environmental development and a discretionary component that reflects the managerial choices (Dechow et al., 2010).

In detail, Francis et al. (2005) regress the accruals model cross-sectionally by industry, then compute the standard deviation of the residuals for each firm in year $t$ $[\sigma(v_j)_t]$ by using the values of the residuals in five years, from year $t$-4 to year $t$. The standard deviation of the residuals $\sigma(v_j)_t$ represents the accrual quality (AQ), large standard deviations of residuals indicating poor accruals quality. The using of industry specification assumes that the residual is the same within the industry. Accordingly, number of firms might have large residuals due to the variation caused by the classification of industry instead of earnings management or errors (Dechow et al., 2010).

There are two concepts included in this model. The first is the use of operating cash flow as a reference construct, meaning that large (small) residuals leads to poor (high) accruals quality, due to less (greater) precision in relation to the mapping of current accruals to previous, current, and subsequent periods of cash flow. Second, the variability of the residuals rather than their magnitude drives the proxy (Francis et al., 2005; Francis et al., 2006; Gray et al., 2009). This concept implied that systematically large (small) residuals in a regression of accruals on cash flows do not create a problem of inference for investors, in terms of the ability to predict future earnings, as it is possible to identify and adjust the systematic component of the residual. It is conceivable that the standard deviation of a series of systematically large positive residuals could be low, signifying that there is only a slight inference problem. Hence, the quality of accruals supports the view that high-mean, low-variance firms have good quality of earnings (Francis et al., 2006).

One limitation of this model is that it uses a comparatively small part of total accruals i.e., current accruals, and does not contain the impact of larger, more numerous and arguably more complicated accruals, such as pensions, asset retirement obligations, and deferred tax assets and liabilities (Francis et al., 2006). However, according to Ecker et al. (2006),

estimates of the quality of non-current accruals have a significant positive correlation with estimates of the quality of current accruals. This suggests that current accruals proxy, being easier to compute and less data intensive, may be a suitable proxy than the proxy of total accruals quality, which although more difficult to operationalize, and which comprises both current accruals and non-current accruals.

**Table 2-1: Summary of widely used accruals quality models**

| Accrual Model | Measurement | Notes |
|---|---|---|
| Jones (1991) model | Accruals are a function of sales growth and PPE. Total assets deflate all variables in preceding year. | The model suffers from Type I and Type II errors. |
| Dechow et al. (1995) | Adjusts the Jones model by adding credit sales instead of total sales. | Adds some improvement to explanatory power of the Jones model and reduces Type II error; however, the model still suffers from Type I error. |
| Kothari et al. (2005) | Uses ROA to match firm-year observation with another firm from the same year and industry. | It is preferred to use when performance is an issue; however, it can decrease the power of the test. |
| Dechow and Dichev (2002) | Accruals are modelled as a function of three types of cash flow from operations: past, present, and future year. | It focuses only on short-term and does not address errors in long-term accruals. |
| McNichols (2002) | Modifies the Dechow and Dichev (2002) model by adding changing in growth in sales and *PPE*. | The model offers some improvement to the Dechow and Dichev (2002) model. |
| Francis et al. (2005) | Estimates the accruals model by industry-year.<br>The accruals model is decomposed into two main components: an innate and a discretionary components. | The model does not capture the effects of non-current accruals on cash flow from operations.<br>Innate estimation errors are the predicted component from regression. |

Source: Dechow et al. (2010)

### *2.3.2 Innate and discretionary components of earnings quality*

Dechow and Dichev (2002) and Francis et al. (2005) isolate earnings quality into two components, an innate component, which reflects business models and operating environments, and a discretionary component of earnings quality, which reflects the reporting determinants such as accounting choices, implementation decisions, managerial error, auditing, governance and enforcement. They hold that separating innate from discretionary components has some advantages over the nature of innate determinates, as these are presumed to be relatively slow to change. Hence, they show the innate factors as predetermined at any given reporting date, although likely to be modified over time. They leave indeterminate the time period over which the business model and operating

environment can change, as they recognise that some changes can be abrupt (e.g., securitising receivables, exiting a line of business), whereas, other factors can change gradually (e.g., building a brand, entering a line of business other than through the acquisition of an existing business) (Dechow and Dichev, 2002; Francis et al., 2005; Francis et al., 2006).

Empirical studies identify two approaches to isolate innate and discretionary earnings quality. Under the first approach, they regress the total earnings quality proxy, which includes both innate and discretionary components, on innate factors that they believe it describes the business model and operating environment of firms: for example, firm size, standard deviation of both cash flows and sales, operating cycle length, and frequency of loss (Francis et al., 2005; Francis et al., 2006). Equation (2-7) describes the first approach.

$$\sigma(\varepsilon_j)_t = \alpha_j + \beta_{1,j} Size_{j,t} + \beta_{2,j}\sigma(CFO)_{j,t} + \beta_{3,j}\sigma(Sales)_{j,t} + \beta_{4,j} OperCycle_{j,t} + \beta_{5,j} NegEarn_{j,t} + v_{j,t} \quad \text{Equation (2-7)}$$

Where:
$\sigma(CFO)_{j,t}$ is the standard deviation of cash flow from the operation of a firm,
$\sigma(Sales)_{j,t}$ is the standard deviation of the sales of a firm,
$OperCycle_{j,t}$ is the log of operating cycle, which is calculated as the sum of the days accounts receivable and days inventory of a firm,
$NegEarn_{j,t}$ is the number of years in which a firm reported net income before extraordinary items (*NIBE)* < 0 out of the preceding 10 years.
The predicted value of $\sigma(\varepsilon_j)_t$ indicates the innate portion of accruals quality of a firm, as it reflects the quality of the earnings system to capture the fundamental performance of a firm, and the residual ($v_{j,t}$) indicates the discretionary accrual quality.

$$InnateEQ_{j,t} = \alpha_j + \beta_{1,j} Size_{j,t} + \beta_{2,j}\sigma(CFO)_{j,t} + \beta_{3,j}\sigma(Sales)_{j,t} + \beta_{4,j} OperCycle_{j,t} + \beta_{5,j} NegEarn_{j,t} \quad \text{Equation (2-8)}$$

It should be noted that the first approach may suffer from type I error because the innate factors might reflect estimation errors which leads to decreasing the power of the residual to reflect intention. Also, this approach may suffer from type II error because it could lead to bias (in an unknown direction) in the discretion proxy (Dechow et al., 2010).

Moving to the second approach, the innate factors are added as control variables to the main regression model in which the total earnings quality is added as dependent variable in that model. In the model, the predicted coefficient of earnings quality captures the part

of earnings quality that is associated with the test variable and adds gradually to the effects captured by the innate factors. This is known as the discretionary portion. For instance, if a researcher wishes to know the selection deprecation methods is associated with poorer or better earnings quality, this association can be tested by using the following equation:

$$TotalEQ_j = \gamma_0 + \gamma_1 DepnMethod_j + \gamma_k Innate(K)_j + v_j \qquad \text{Equation (2-9)}$$

Where $DepnMethod_j$=1 if a firm uses straight line depreciation and 0 otherwise, $Innate(K)_j$= vector of innate factors for a firm.

$\gamma_1 > 0$ ($\gamma_1 < 0$) suggests that the straight-line depreciation is associated with poor (high) earnings quality, after controlling for the innate component of earnings quality. if it assumed that all innate factors have been included in $Innate(K)_j$, a significant value for $\gamma_1$ indicates the effect of the selection of depreciation method on the discretionary component of earnings quality (Francis et al., 2006).

Another application of the second approach replaces $TotalEQ$ with a dependent variable that captures an outcome of interest, such as the cost of equity capital. In this case, the independent variables would include $TotalEQ$ and the innate factors, and the estimated coefficient on $TotalEQ$ would capture the effect of discretionary earnings quality on the dependent variable (Francis et al., 2005; Francis et al., 2006).

The two approaches used to isolate earnings quality to innate and discretionary components are not alternatives, as only the first approach permits direct comparisons between the effects of innate and discretionary earnings quality. This is because it gives separate estimates of these components, while the second approach does not give a separate estimate of the discretionary impact by controlling for the innate effect (Francis et al., 2005; Francis et al., 2006).

Moreover, these two approaches are not the same in terms of their sensitivity to omitted innate factors. In the first approach, omitted innate factors result in the misspecification model in the regression of total earnings quality on innate factors, as well as more noise in the error term. In the second approach, if a dependent variable of interest is regressed on *TotalEQ* and an incomplete set of innate factors, this would result in an upwardly biased coefficient estimate on *TotalEQ* (i.e., an upwardly biased estimate of the effect of discretionary earnings quality) to the extent that the omitted innate factors had a positive correlation with *InnateEQ* factors (Francis et al., 2006).

This reflection suggests that researchers may wish to use both approaches, if this is practical as it would be expected that the first approach would achieve a lower bound inference about the effects of discretionary earnings quality, while the second would be expected to achieve an upper bound inference (Francis et al., 2006).

### *2.3.3 Earnings persistence and predictability*

Earnings persistence and earnings predictability represent the time series proxies of earnings quality in the previous literature (Perotti and Wagenhofer, 2014). Persistence refers to the earnings sustainability (Revsine et al., 2005). Also, Miller and Rock (1985) define persistence as the present value of the change in expected future earnings because of current unexpected earnings. In general, previous studies define earnings persistence from a perspective of decision usefulness to help investors in equity valuation by measuring the extent to which current earnings persist or recur in the future (Perotti and Wagenhofer, 2014). There are two general streams of this research. The first stream focuses on the assumption that greater earnings persistence may lead to better inputs to equity valuation models; thus, higher earnings quality than does a lower earnings persistence (Dechow et al., 2010). The target of these studies is to determine financial characteristics related to earnings persistence.

The second stream of research focuses on addressing the wider case of using earnings to improve equity valuation outcomes (Dechow et al., 2010). Therefore, the earnings amount that reflects the annuity of anticipated future cash flows is possibly be persistent and predictable (Dechow and Schrand, 2004). Thus, earnings are viewed to be of high quality if they are more persistent (sustainable) and predictable (Revsine et al., 2005; Penman and Zhang, 2002; Richardson, 2003; Lipe, 1990).

Moving to predictability, the IASB Conceptual Framework identifies useful information as having "predictive value" if it can help users to predict future outcomes (e.g. future financial performance) (IFRS Foundation, 2010). In order to have predictive value, information does not have to take the form of an explicit forecast, since information on past transactions or events may be used as a basis for predications about the future (Melville, 2008). Consistent with the Conceptual Framework of the IASB, the academic literature uses earnings predictability as metric to measure the capability of current earnings and its components of a firm to predict the future earnings. For example, Schipper and Vincent (2003) define predictability as the capacity of the entire financial

reporting system, including earnings components and other disaggregation of the summary earnings number, to enhance the ability of users to forecast the items of their interest e.g., future earnings. Therefore, predictive ability captures the relevance of earnings in decision-making. Lipe (1990, p. 50) defines predictability as "the ability of past earnings to predict future earnings."

The difference between earnings persistence and earnings predictability is summed up as earnings persistence as reflecting the autocorrelation in earnings; however, earnings predictability as a function of the average absolute proportion of shocks of annual earnings (Lipe, 1990). To calculate both of them, Francis et al. (2004) measure earning persistence as the slope coefficient from regressing current earnings on preceding earnings, while Lipe (1990) measures earnings predictability as the variance of estimating residuals from the persistence equation model as proxy of the variance of earnings shocks. Earnings persistence and predictability equations are shown below:

$$Earn_{j,t} = \emptyset_{0,j} + \emptyset_{1,j} Earn_{j,t-1} + v_{j,t} \qquad \text{Equation (2-10)}$$

Where:
$Earn_{j,t}$ = net income before extraordinary items of a firm in current year.
$Earn_{j,t-1}$ = net income before extraordinary items of a firm in preceding year.

$$Pred_{j,t} = \sqrt{\sigma^2(\hat{v}_{j,t})} \qquad \text{Equation (2-11)}$$

Where:
$Pred_{j,t}$= earnings predictability in the current year of a firm.
$\sigma^2(\hat{v}_{j,t})$= Estimated error variance of a firm in the current year, calculated from earnings persistence equation of such firm.

### *2.3.4 Earnings smoothness*

Earnings smoothness represents the variability of earnings compared to the variability of cash flows (Francis et al., 2004). Previous studies suggest a measure for earnings smoothness that derives from the association between cash flow variability, which is driven by underlying business fundamentals, and earnings variability, which is driven by both business fundamentals and management choices (Leuz et al., 2003; Francis et al., 2004). The reason behind the use of variability for both variables is that it is considered to be a risk measure; thus, investors search for gradually growing earnings with low volatility, as their expected return in this case will be positive. This earnings pattern is known as earnings smoothness.

Earnings smoothness has been defined as the volatility reduction of reported earnings that could exist in the absence of certain actions (Allayannis and Simko, 2009). These actions take two forms. The first is taking a real strategic business decisions, for example, exiting a business line, effecting product demand through changing the price or cutting costs, while the second is the use of accounting discretion to smooth earnings (Allayannis and Simko, 2009; Roychowdhury, 2006; Rountree et al., 2008; Graham et al., 2005).

Previous studies document conflicting results in terms of earnings smoothness (Dichev et al., 2013; Dechow et al., 2010). Some of those conclude that smoothness misleads users, as the true economic performance is veiled; thus, smoothness indicates poor earnings quality (e.g., Leuz et al., 2003). They argue that earnings smoothness reflects the extent to which financial accounting standards permit managers to artificially reduce earnings variability, to obtain certain benefits from the capital market, which are that related to a smooth stream of earnings (Leuz et al., 2003). According to this view, high earnings smoothness would indicate poorer earnings quality. This view is based on evidence that earnings smoothness is associated with predicted factors of low earnings quality, e.g., low quality of financial reporting standards and less rigid enforcement regimes.

On the contrary, in the US context, other studies conclude that smoothness improves both persistence and predictability, thus leading to more informative earnings, and hence it could be useful to investors for its predictive value, which is considered to be high earnings quality (e.g., Barnea et al., 1976; Dechow, 1994; Graham et al., 2005; Tucker and Zarowin, 2006; Dichev and Tang, 2008). This alternative view begins with the opinion that the purpose of accounting is to determine earnings, which are accounting accruals plus operating cash flows, and that the purpose of accruals is to smooth cash flows by filtering out some of their volatility (Perotti and Wagenhofer, 2014). Earnings smoothness as an indicator of high earnings quality reflects the idea that managers use their private information about future earnings to smooth out transitory fluctuations and thereby obtain a more representative (normalised) reported earnings number. To the extent that current earnings which are more representative of future earnings are of higher quality, smoother earnings indicate higher quality earnings. Results reported by Francis et al. (2004) suggest that capital market participants reward smoothing earnings streams with reduced costs of equity capital. This finding is consistent with a notion that earnings smoothness is desirable (at least for investors) because it reflects higher quality financial reporting decisions (Rountree et al., 2008). However, results in Francis et al. (2004)

cannot rule out the possibility that investors reward earnings smoothness for reasons unrelated to earnings quality (Francis et al., 2006).

Ahrens (2009) documents a solution for this problem by splitting earnings smoothness into two portions. The first portion is natural smoothness, which happens naturally as the result of certain production processes on earnings streams, which is considered to be a positive signal, as it will be easy to forecast future earnings from previous values, meaning high earnings quality. The second portion is intentional smoothness, which happens when some firms smooth earnings intentionally to benefit from the advantages of such an earnings stream (Eckel, 1981). This may occur in two situations. First, it could happen when explanations are given by the management regarding taking actions to report smooth earnings, which may happen because they have private information, when intentional smoothness might be beneficial (Nelson and Skinner, 2013). Second, it could occur when the management wishes to achieve private benefits, and therefore carry out smoothing actions without informing the investors. In this case, smoothness might mislead stakeholders because the earnings amount will not reflect the real earnings.

Smoothness has been measured in different ways in the literature, all of which are likely to be highly correlated, and also use cash flow as the reference construct for unsmoothed earnings, and thereby assuming that cash flows are not subject to earnings management: (1) the ratio of firm-level standard deviation of net income before extraordinary items, to its standard deviation of operating cash flow, and both deflated by lagged total assets (see Equation (2-12)) (Francis et al., 2004); (2) the ratio of firm-level standard deviation of operating income, to the standard deviation of cash flows from operations, and both lagged by total assets (Leuz et al., 2003); (3) the ratio of firm-level standard deviation of non-discretionary net income (equal to operating cash flows plus *NA*) to the standard deviation of cash flows from operations (Hunt et al., 2000).

$$Smooth_{j,t} = \frac{\sigma(Earn_{j,t}/Total\ Assets_{j,t-1})}{\sigma(CFO_{j,t}/Total\ Assets_{j,t-1})} \qquad \text{Equation (2-12)}$$

Where:
$Smooth_{j,t}$ = earnings smoothness of a firm in current year.
$\sigma(Earn_{j,t})$ = standard deviation of net income before extraordinary items of a firm in current year.
$CFO_{j,t}$ = operating cash flows of a firm in current year.

### *2.3.5 Value relevance*

Value relevance proxy is based on the idea that accounting numbers should explain the information that related to stock returns. Together with Ball and Brown (1968), many researchers use the approach of usefulness of accounting information to investigate the contemporaneous relationship between accounting earnings and stock return. This approach is used to evaluate the capability of accounting earnings to interpret stock returns in order to measure the relevance of accounting information. Hence, if the accounting information presented to investors is significant, then the explanatory power of accounting earnings should exhibit a high rate for stock returns (Lev, 1989). Previous studies measure value relevance by the explanatory power ($R^2$) of regressing accounting earnings on stock returns to investigate the usefulness of financial reporting (Lev and Zarowin, 1999; Francis and Schipper, 1999; Francis et al., 2004). In particular, value relevance is measured by the adjusted $R^2$ from the following regression:

$$RET_{j,t} = \delta_0 + \delta_1 EARN_{j,t} + \delta_2 \Delta EARN_{j,t} + \varepsilon_{j,t} \quad \text{Equation (2-13)}$$

Where:
$RET_{j,t}$ = stock return in of a firm in current year;
$EARN_{j,t}$ = net income before extraordinary items of a firm in current year *t*, deflated by market value of equity at the end of preceding year of such firm;
$\Delta EARN_{j,t}$= change in net income before extraordinary items between current year and preceding year, deflated by market value of equity at the end of preceding year of such firm.

### *2.3.6 Conservatism and timeliness*

Timeliness is similar to value relevance, in sense of the reference construct for both of them, which is stock returns, and the measure itself being based on explanatory power ($R^2$). Timeliness is defined as the time in which the economic condition of a firm, whether good or bad, is reflected in the reported earnings, and is measured as the explanatory power of a reverse regression of earnings on returns (Francis et al., 2006). The use of timeliness as a measure of earnings quality is based on the same assumptions that support value relevance as an earnings quality proxy. Following Ball et al. (2000) and Bushman et al. (2004), the measure of timeliness is the adjusted $R^2$ from Equation (2-14). Smaller values of Timeliness imply less timely (i.e., lower quality) earnings. Equation (2-14) is typically estimated on a firm-specific basis in time series regression.

$$EARN_{j,t} = \delta_0 + \delta_1 NEG_{j,t} + \delta_2 RET_{j,t} + \delta_2 NEG * RET_{j,t} + \varepsilon_{j,t}$$

Equation (2-14)

Where:
$NEG_{j,t}$ = 1 if $RET_{j,t}$ <0 and 0 otherwise, all other variables are already defined.

Moving to conservatism that was given substantial attention in accounting literature in the last decade (e.g., Watts, 2003a; Watts, 2003b; Beaver and Ryan, 2005; Ryan, 2006; Givoly et al., 2007; Guay and Verrecchia, 2008; Artiach and Clarkson, 2011). Conservatism is defined "in terms of the differential verifiability required for recognition of profits versus losses" (Watts, 2003a, p. 207). Therefore, accountants are usually prudent and have a tendency to receive a higher degree of verification to realise good news as profits compared to realise bad news as losses (Basu, 1997; Artiach and Clarkson, 2011). From the definitions of timeliness and conservatism, it could be concluded that both capture the reliability of earnings for decision-making.

Despite the significant attention in the literature given to accounting conservatism, the accepted definition of conservatism is unclear. Therefore, it is not surprising to find that different proxies are used in the literature to measure conservatism reflecting different approaches to conservatism. The most notable proxies in the literature are Basu (1997) model, Ball and Shivakumar (2005) model, Beaver and Ryan (2005) model, Givoly et al. (2007) model, Penman and Zhang (2002) model and Khan and Watts (2009) model. Of these, the Basu model has received the greatest attention in the literature (Wang et al., 2009; Artiach and Clarkson, 2011).

Moreover, conservatism is classified into conditional or unconditional conservatism. Conditional conservatism indicates to the term of conservatism as an asymmetry in the response of earnings to bad and good news. In particular, it means that "book values are written down under sufficiently adverse circumstances but not written up under favourable circumstances, with the latter being the conservative behaviour" (Beaver and Ryan, 2005, p. 269); for example, the lower of cost or market accounting for inventory or the impairment of *PPE*. Conditional conservatism is also known as *ex-post*, news-dependent, or income statement conservatism. In contrast, unconditional conservatism is defined as "a systematic bias in book relative to market value arising from aspects of the accounting process determined at the inception of assets and liabilities yield expected unrecorded goodwill" (Beaver and Ryan, 2005, p. 269); for example, using the LIFO

method in the inventory cost system, and using the accelerated depreciation as a deprecation method. This is also known as *ex-ante*, news-independent, or balance sheet conservatism (Beaver and Ryan, 2005; Artiach and Clarkson, 2011).

The most prominent example of conditional conservatism is the Basu (1997) model, whereas the both the Beaver and Ryan (2005) and Penman and Zhang (2002) models may be considered as proxies of unconditional conservatism. However, it is unclear whether the other models e.g., those of Givoly and Hayn (2000), Ball and Shivakumar (2005) or Khan and Watts (2009) are conditional or unconditional. It is likely that they could capture components of both types of conservatism (Artiach and Clarkson, 2011).

### *2.3.7 Other proxies*

Previous studies have constructed other proxies for earnings quality such as earnings variability, earnings informativeness (earnings response coefficient), earnings opacity, earnings aggressiveness and e-loadings but these have been used less widely in the literature. Table 2-2 shows the measurement of these other proxies.

**Table 2-2: Other earnings quality proxies**

| Proxy | Author | Measurement |
|---|---|---|
| Earnings Variability | Dechow and Dichev (2002) | The rolling standard deviation of net income before extraordinary items of a firm, deflated by beginning total assets of current year for such firm. |
| Earnings Informativeness (or earnings response coefficient) | Teoh and Wong (1993) | The estimated slope coefficient on the level or change in earnings, or some aggregation of the estimated slope coefficients on both the level and change in earnings. The dependent variable could be a long-term measure (e.g., annual returns) or an indicator of a short term market reaction to an event, such as a three-day cumulative abnormal return surrounding an earnings announcement. |
| Earnings Opacity | Bhattacharya et al. (2003) | An index that combines three measures: earnings aggressiveness, loss avoidance, and earnings smoothness. |
| Earnings Aggressiveness | Bhattacharya et al. (2003) | Total accruals scaled by lagged total assets. |
| E-loadings | Ecker et al. (2006) | The slope coefficient from regressing excess returns on a factor mimicking portfolio, and adding other control variables to the model that affect returns, such as firm size, market risk premium and book-to-market ratio). |

## 2.4 Summary

This chapter discusses the different definitions of earnings quality in an equity valuation context, and concludes that high earnings quality should have four characteristics: first, earnings should faithfully represent current performance. Second, high earnings quality should be an indicator for future earnings and performance. Third, it should have a relation to current and future operating cash flow. Fourth, it should help users make useful decisions. In addition, there is a clear observation from previous studies that there is no proxy for earnings quality that is superior for all decision models. Therefore, this chapter classifies the different proxies of earnings quality into two main categories: accounting-based proxies and market-based proxies. Accounting-based proxies typically depend on accounting information only such as accruals quality, earnings persistence, earnings predictability and earnings smoothness. Moving to market-based proxies, these typically depend on both accounting and market data such as value relevance, timeliness and conservatism (Francis et al., 2004). In addition, there are some other proxies that used in literature, although to a lesser extent. These include earnings variability, earnings informativeness (or earnings response coefficient), earnings opacity, earnings aggressiveness and e-loadings.

In particular, this chapter discusses the different models that used in previous literature to measure each proxy of earnings quality. For example, it provides information about different models that have been widely used in the literature to measure accruals quality; it starts with the Jones (1991) model, then the Dechow et al. (1995) model, then the Kothari et al. (2005), followed by the Dechow and Dichev (2002) and McNichols (2002) model, and finally Francis et al. (2005) model. The next chapter discusses capital market aspects.

# Chapter 3: The Aspects of Capital Market Focused upon

The main objective of this chapter is to discuss three key aspects of capital market affected by earnings quality which have been investigated widely by previous studies, and are to be focused upon here. Those aspects are classified into two types: first, the cost of equity capital, which is considered to be a summary indicator of investors' resource allocation decisions; second, other aspects that are viewed by previous studies as intermediary aspects between the quality of accounting information i.e. earnings quality and the cost of equity capital, including information asymmetry and analysts' information environment (analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy).

## 3.1 The Cost of Equity Capital

It is expected that managers, investors and researchers need an accurate estimate of their firm's cost of equity capital. For example, managers need an accurate estimate of the cost of equity capital for capital budgeting. Investors need an accurate cost of equity capital estimate for equity valuation, while academic researchers need this to determine the effect of parameters of interest on producers, customers and regulators of accounting information on firms' cost of raising equity funds (Botosan and Plumlee, 2005; Francis et al., 2006; Botosan et al., 2011). Therefore, a broad range of individuals and groups have a compelling interest in determining the best way to measure the cost of equity capital (Botosan and Plumlee, 2005). The cost of equity capital can be defined as the rate of return required by investors of a firm for putting their capital at risk in a business (Davis et al., 1999). Further, Francis et al. (2006) define the cost of equity capital as the *ex-ante* return demanded by suppliers of equity capital, or, equivalently, the discount rate which, when applied to expected cash flows, yields the current stock price.

### *3.1.1 The cost of equity capital estimates approaches*

Empirically, the cost of equity capital can be estimated by using two approaches: (1) the *ex-post* cost of equity capital models, which can be estimated by reference to market data such as price earnings ratio or realised returns. (2) The *ex-ante* cost of equity capital models, which can be estimated by reference to analysts' forecasts by either the residual income model or dividend discount model. This approach has been used by many previous studies (e.g., Claus and Thomas, 2001; Gebhardt et al., 2001; Botosan and

Plumlee, 2002; Gode and Mohanram, 2003; Easton, 2004). Table 3-1 shows the different proxies that used in prior literature to measure the cost of equity capital.

#### *3.1.1.1 The ex-post cost of equity capital approach*

According to this approach, the cost of equity capital is analysed by reference to a time series of realised returns, where the realised return of a firm is defined as the price-scaled change in its stock price between two different periods after adjustment for dividends (Francis et al., 2006). Prior studies determine two components of realised return: (1) the expected return (normal return) and the unexpected return (abnormal return). The differences between both components of realised returns are pertinent for analyses of the association between earnings quality and realised returns, as earnings quality potentially affects both components, but in different ways. In particular, earnings quality will affect the expected return component if the former is perceived by investors as proxying for information risk (or information precision), and information risk is a priced factor. This information precision effect is expected to be linear: poorer (better) earnings quality is associated with higher (lower) expected returns. On the other hand, the effect of earnings quality on the abnormal return component is expected to be nonlinear, because when earnings quality is poor there is a higher incidence of mispricing, which can result in either positive abnormal returns or negative abnormal returns. Consequently, the association between abnormal returns and earnings quality is U-shaped. These different effects present research design issues for empirical investigations of the association between earnings quality and realised returns, because those returns contain both the expected returns (linear) piece and the abnormal returns (nonlinear) piece (Francis et al., 2006).

According to the *ex-post* approach, there are three proxies of cost of capital: the Capital Asset Pricing Model (CAPM) that developed by Sharpe (1964); the Three-Factor-Fama and French (1992) Model; and the Arbitrage Pricing Theory (APT) model that introduced by Ross (1976). Awkwardly, the average realised returns (*ex-post*) approach has been shown to have weakness points in many situations. For example, after testing CAPM and the three-factor based industry cost of capital, Fama and French (1997) find these proxies are "unavoidably imprecise". They determine three disadvantages: 1) difficulties in determining the correct asset-pricing model; 2) imprecision in the factor loadings estimates; and 3) imprecision in factor risk premia estimates. Therefore, previous studies

attempt to use another approach to estimate the cost of equity capital that does not depend on average realised returns. Specifically, they use the *ex-ante* approach to estimate the implied cost of equity capital (e.g., Claus and Thomas, 2001; Gebhardt et al., 2001; Easton, 2004; Ohlson and Juettner-Nauroth, 2005).

#### *3.1.1.2 The ex-ante (implied) cost of equity capital approach*

The *ex-ante* approach refers to analysts' forecast-based proxies, in the sense that they reflect investors' (as proxied by analysts') expectations or forecasts of outcomes such as earnings and dividends (Richardson et al., 2010). According to this approach, the implied equity cost of capital (ICC) for a firm is defined as the internal rate of return (IRR) that equates the stock price of a firm to the present value of all expected earnings available to equity-holders (Richardson et al., 2010). One of the main advantages of this approach is that it does not have to depend on noisy realised returns or on a particular asset-pricing model, but a discounted future-cash-flow model. Thus, the *ex-ante* approach applies standard fundamental valuation methods and uses observed market prices and forecasts of earnings to derive the market's assessment of the equity risk (cost of equity capital) of a firm (Richardson et al., 2010). A number of these proxies include derivations from a dividend discount formula for stock price (dividend valuation model) or residual income model. Because analyst-based estimates of the differences between actual estimates would be attributable to differences in the assumptions, demands on the data and samples used in the estimation. For this reason, researchers who use the cost of equity capital as a market outcome measure tend to test the sensitivity of their results with differences in cost of equity capital estimates (Francis et al., 2006). For the residual income model, previous studies develop their estimates to the implied cost of equity capital based on the residual income of Ohlson (1995). Examples of these are the economy-wide method (Claus and Thomas, 2001), and the industry method (Gebhardt et al., 2001). Moving to dividend valuation models, previous studies develop their estimates of the cost of equity capital from the classic dividend valuation models; for example, the finite horizon model (Gordon and Gordon, 1997), the target price model (Botosan and Plumlee, 2002), the economy-wide growth model (Ohlson and Juettner-Nauroth, 2005), the price-earnings growth ratio model (PEG) (Easton, 2004).

**Table 3-1: Formulae of the cost of equity capital models**

| Proxy | Common name | Formula |
|---|---|---|
| ***Ex-post* Approaches** | | |
| CAPM | The Capital Assets Pricing Model | $E(R_i) = R_f + \beta_i(R_m - R_f)$<br>Where:<br>$E(R_i)$: the rate on a risk-free security plus a risk premium, it represents *CoEC*;<br>$(R_f)$: the risk-free rate of interest from return on market<br>$(R_m)$: market return<br>$\beta_i$: firm's beta |
| $R_{jt} - Rf_t$ | Three-Factor Model, Fama and French (1992) | $R_{jt} - Rf_t = a_j + b_j(Rm_t - Rf_t) + s_j SMB_t + h_j HML_t + \varepsilon_t$<br>Where:<br>$R_{jt} - Rf_t$ = the excess return at time *t* of firm *j*, it represents *CoEC*,<br>$R_{jt}$ = Return on a stock at time t of firm *j*,<br>$Rf_t$ = Return on the risk free asset at time *t*,<br>$(Rm_t - Rf_t)$ = the excess return to market portfolio, Rm, = Return of the whole stock market,<br>$SMB_t$ = the return to the size factor portfolio at time t,<br>$HML_t$ = the return to the book-to-market value factor portfolio at time *t*. |
| $r_{APT}$ | Arbitrage Pricing Theory (APT) | $r_{APT} = a_i + \sum_{j=l}^{N} \beta_{ij} F_j + u_i$<br>Where:<br>$r_i$ is the realised return on asset *i*, it represents *CoEC*,<br>$j = 1,..N$ are orthogonal zero mean systematic risk factors,<br>$\beta_{ij}$ is asset *i*'s factor loading (beta) with respect to factor $F_j$ |
| **The *ex-ante* Approach: (Residual Income Model)** | | |
| $r_{CT}$ | Economy-wide method (Claus and Thomas, 2001) | $P_0 = BV_0 + \sum_{t=1}^{5}(1 + r_{CT})^{-t}\left((E(ROE_t) - r_{CT})E(BV_{t-1})\right) + (1 + r_{CT})^{-5}(r_{CT} - g)^{-1}(E(ROE_5) - r_{CT})E(BV_4)(1 + g))$<br>Where:<br>$P_t$ = price of the share at period t.<br>$r_{CT}$ = the expected cost of equity capital (*CoEC*).<br>$E_0(.)$ = the expectations operator.<br>$dps_t$ = dividends per share for year *t*.<br>$ROE_t$= Return on equity in year *t*. |
| $r_{GLS}$ | Industry method (Gebhardt et al., 2001) | $P_0 = BV_0 + \sum_{t=1}^{11}(1 + r_{GLS})^{-t}\left((E(ROE_t) - r_{GLS})E(BV_{t-1})\right) + (1 + r_{GLS})^{-11}(E(ROE_{11}) - r_{GLS})E(BV_{11})$ |
| **The *ex-ante* Approach (Dividend valuation Model)** | | |
| $r_{DIV}$ | Target price method (Botosan and Plumlee, 2002) | $P_0 = \sum_{t=1}^{5}(1 + r_{DIV})^{-t}E(dps_t) + (1 + r_{DIV})^{-5}(P_5)$ |
| $r_{OJN}$ | Economy-wide growth method (Ohlson and | $r_{OJN} = A + \sqrt{A^2 + \left(\frac{eps_1}{P_0}\right) \times \left(\frac{eps_2 - eps_1}{eps_1} - (\gamma - 1)\right)}$ |

| | | |
|---|---|---|
| | Juettner-Nauroth, 2005) | Where:<br>$A = \frac{1}{2}\left(\gamma - 1 + \frac{dps_1}{P_0}\right)$ and<br>$eps_t$= earnings per share at the period t<br>$\gamma$ = the rate of growth in abnormal earnings post forecast horizon. In implementing the model, $\gamma$ is equal to the risk-free rate less 3%, where the 3 % represents economy-wide growth. |
| $r_{PEG}$ | Price earnings growth ratio model (PEG) (Easton, 2004) | $r_{PEG} = \sqrt{\frac{E(eps_2) - E(eps_1)}{P_0}}$ |
| $r_{MPEG}$ | Modified price-earnings-growth ratio method (Easton, 2004) | $r_{MPEG} = A + \sqrt{A^2 + (E(eps_2) - (E(eps_1))/P_0}$<br>$A = E(dps_1)/2P_0$ |
| $r_{GOR}$ | Finite horizon model (Gordon and Gordon, 1997) | $P_0 = \sum_{t=1}^{4}(1 + r_{GOR})^{-t}E(dps_t) + ((r_{GOR}(1 + r_{GOR})^4)^{-1}E(eps_5)$ |
| **The mean of different *ex-ante* proxies** | | |
| $r_{HL}$ | Mean implied cost of capital (Hail and Leuz, 2006) | The mean of $r_{CT}$, $r_{GLS}$, $r_{MPEG}$ and $r_{OJN}$. |
| $r_{DKL}$ | Mean adjusted implied cost of capital (Dhaliwal et al., 2006) | The mean of $r_{CT}$, $r_{GLS}$ and $r_{OJN}$ after limiting each implied estimate to 0.5 |

### *3.1.2 The cost of equity capital – proxy choice*

Previous studies conduct systematic investigations of different proxies that used to measure the cost of equity capital (e.g., Botosan and Plumlee, 2005; Easton and Monahan, 2005; Botosan et al., 2011; Guay et al., 2011). One of those studies is Botosan et al. (2011), which arguably documents the most precise test for evaluating the different proxies of the cost of equity capital against number of criteria (Artiach and Clarkson, 2011); however, the results of such tests differ from the results of Botosan and Plumlee (2005). These sets of criteria include test for validity of construct. In this regard, Botosan et al. (2011) follow Carmines and Zeller (1979) in defining construct validity as: "Fundamentally, construct validation is concerned with the extent to which a particular proxy relates to other proxies consistent with theoretically derived hypotheses concerning the concepts (or constructs) being measured." Carmines and Zeller (1979, p. 23).

Botosan et al. (2011) test nine models of the *ex-ante* cost of equity capital ($r_{CT}$, $r_{DIV}$, $r_{GLS}$, $r_{GOR}$, $r_{OJN}$, $r_{MPEG}$, $r_{PEGST}$, $r_{GM}$ and $r_{PEG}$) against two determinants which are known as risk factors and future realised return. They find that all proxies are supported to construct

validity tests except $r_{PEGST}$, and $r_{FF}$. They find, also, that $r_{DIV}$ is the dominant proxy in sense of results intensity. As for the risk factors model, they conclude that $r_{PEG}$, $r_{PEGST}$ and $r_{DIV}$ dominate the other models through embedding their associations with the firm-specific risk factors. However, to add the future realised return model and the impact of analysts' forecast bias, they use the same model as Easton and Monahan (2005), and find that both analyses give support for the validity of $r_{DIV}$ and $r_{PEG}$ only, because these are the only proxies that have a strong association with both firm-specific risk and future realised returns as predicted by theory.

Moving to Botosan and Plumlee (2005), they test the construct validity of five proxies of the cost of equity capital, $r_{DIV}$, $r_{PEG}$, $r_{GOR}$, $r_{GLS}$ and $r_{GM}$, against certain criteria such as firm-specific risk factors. They argue for using this construct validity, as the different proxies of the cost of equity capital could be assessed by the extent to which they have associations with the firm-specific risk factors in a theoretically predicable and stable manner. They conclude that two proxies that they consider, $r_{DIV}$ and $r_{PEG}$, are consistently and predictably associated with five firm-specific risk factors i.e., market risk, leverage risk, information risk, residual risk[6] and growth. Therefore, they recommend using these two proxies, $r_{DIV}$ and $r_{PEG}$, to measure the cost of equity capital against dominant proxies as opposed to the three alternatives proxies they examine.

On the other hand, Easton and Monahan (2005) and Guay et al. (2011) test their selected proxies against future realised returns. They argue that in equilibrium, the relationship between expected return and realised return should be positive. Nevertheless, their methods of measuring realised return are different, as Easton and Monahan (2005) use a direct method and Guay et al. (2011) use and indirect method. However, both find a negative correlation between *ex-ante* proxies and *ex-post* observed stock return, and they argue that the problem appears to stem from the quality of analysts' forecasts of earnings used to compute the *ex-ante* proxies. Therefore, they conclude that none of the proxies of those that are selected gives valid estimates of the construct of interest; thus, these proxies are poor measures of the expected equity returns of a firm.

[6] They measured residual risk by firm size and/or book-to-price.

## 3.2 Information Asymmetry

Information asymmetry can be defined as a problem of a firm to the level that it generates observed "information risk" (Callahan et al., 1997), which is defined as a type of risk for which market participants may ask for compensation, hence increasing the cost of capital of the firm. Therefore, lower information asymmetry may reduce information risk, and thus may lower the cost of capital of the firm (Chatham, 2004). Information asymmetry also refers to some stakeholders obtaining more insider information about underlying firms than others do (Iatridis, 2011), therefore leading to three main problems in corporate finance: first, adverse selection, which means lack in distinguishing between positive and negative investment opportunities, as investors prefer to choose the investment that characterised by lower risk or higher safety. This problem arises when one party of a transaction takes advantage of the ignorance of the other party to pay a low price or to charge a high price. Second, moral hazard, which means if the investment plan does not serve the interest of managers, they will not join it. Third, monitoring cost which is used to restrict the ability of manager to fool previous shareholders and new shareholders. Therefore, information asymmetry is considered to be a risk factor for uninformed investors.

Recently, a clear distinction has been made between "insiders", "informed traders" and "uninformed traders". Insiders are firms' officers who have fiduciary responsibilities to shareholders, while, informed traders are those who wish to gain profit from private information not available to uninformed traders (Madhavan, 2000; Chatham, 2004). Information asymmetry is costly to firms, because in illiquid markets, investors change prices to compensate for holding stocks. Increasing the precision of accounting information should lead to a reduction in the likelihood of information asymmetry among traders; thus increasing the market liquidity (Diamond and Verrecchia, 1991). Therefore, for the aim of this thesis, information asymmetry is assumed to be between informed and uninformed traders (investors) in the capital market, which previous studies identify as market liquidity.

### *3.2.1 Proxies of information asymmetry*

Information asymmetry and its proxies have received much attention in the finance literature. Previous studies used different proxies to measure information asymmetry; these proxies can be classified into four categories: analysts' forecasts proxies,

investments opportunity set proxies, stock return proxies and market microstructure proxies (Clarke and Shastri, 2001).

For analysts' forecasts proxies, previous studies use both analysts' forecasts accuracy and dispersion as indirect proxies for information asymmetry (e.g., Elton et al., 1984; Krishnaswami and Subramaniam, 1999). Their argument for using these proxies is based on the findings of Blackwell and Dubins (1962) who determine that analysts' opinions are likely to converge as the amount of information available about an unknown quantity increases. However, this approach has received much criticism such as: the analysts' forecasts errors being typically biased. An important assumption in previous studies using these metrics is that analysts produce unbiased information for investors. However, Easterwood and Nutt (1999) find that analysts under-react to negative information and over-react to positive information; consequently, proxies based on forecast errors are likely to misstate the degree of information asymmetry. Second, forecast errors might be correlated with the riskiness of the firm. That is, some firms may have higher forecast errors because they have more volatile earnings, rather than because of higher levels of information asymmetry.

The second approach is investment opportunity set proxies. Previous studies following this approach argue that in high growth firms, managers have a greater knowledge about the investment opportunities of their firms, and are also aware of the expected future cash flow from firms' assets (Smith and Watts, 1992). Based on this argument, they use proxies related to investment opportunities such as the ratio of market value to book value of equity (McLaughlin et al., 1998), the market-to-book ratio (Collins and Kothari, 1989) and earning price (EP) ratio (Chung and Charoenwong, 1991). Although those proxies might be good as indirect proxies, they have weak points such as the following. (1) The book value of assets is subject to considerable measurement error when a firm has long-lived assets in addition to the frequent use of this ratio to measure firm performance (Smith and Watts, 1992). (2) Penman (1996) argues that earnings-price ratio can also be interpreted as a proxy of risk or an earnings growth indicator. (3) These proxies used to measure information asymmetry need accounting data, which is available only on a quarterly or yearly basis. Accordingly, studies use these proxies could be employing a "stale" measure of information asymmetry. This problem could be particularly severe for high-risk firms where the investment opportunity set can change dramatically across quarters. (4) A high market-to-book equity or asset ratio could be an indicator of

monopolistic power. In particular, firms may have a high market-to-book because of the power to charge a higher price for goods and services and not because of growth opportunities.

The third group is stock return proxies. Previous studies that follow this approach measure information asymmetry as the residual volatility in daily stock returns (Bhagat et al., 1985). They use the residual volatility proxy as a reflection of the uncertainty of firm value. However, the main criticism to this approach is that some factors related to firm uncertainty, such as rate changes by the Federal Reserve, are revealed simultaneously to both insiders and outsiders. Thus, residual volatility is likely to overstate the level of information asymmetry about a firm (Clarke et al., 2004).

The fourth group is market microstructure proxies, an approach which offers an information-based explanation of market friction and the price of immediacy. It posits that an important element of the spread is the adverse-selection component that covers the market makers' losses to better-informed traders. Using microstructure proxies to measure information asymmetry has some potential benefits, such as: the researcher who uses microstructure measures not requiring a long time series of data; in addition, it could be used for most quoted firms. However, there are weaknesses in the use of microstructure proxies such as the following. (1) These proxies measure only trading costs of small number of shares, and therefore, this is considered a poor indicator of the extent of information asymmetry (O'Hara, 1995). (2) Those proxies provide different estimates point of the adverse selection component of the spread. For instance, according to George et al. (1991) the adverse selection component is around 10%, whereas Madhavan et al. (1997) hold that it is around 40%. (3) Neal and Wheatley (1998) introduce evidence that existing proxies of the spread are mis-specified. They show that there is no significant difference between the adverse selection component for a sample of closed-end funds and a control sample of common stocks.

Previous studies have developed numerous empirical models to measure information asymmetry by using the bid-ask spread (Chung et al., 2004; Affleck-Graves et al., 2000). The bid-ask spread is established by the dealer(s) (i.e., specialist or market maker) of a firm's stock and it has a transaction cost in the market. "The dealer affords liquidity to the market by being ready to buy at the "bid" price and being ready to sell at the "ask" price" (Demsetz, 1968, p. 40). Market makers quote two prices: the ask prices, at which

they will sell the stocks, and the bid price, at which they will buy stocks (Madhavan, 2000). Therefore, at any point in time, the quoted bid-ask spread represents the difference between the available lowest quote to sell (the ask) and the available highest quote to buy (the bid). Demsetz (1968) argues that the market maker provides a service of 'predictive immediacy', as a trader who seeks immediacy in the execution of his order can view the spread as one component of his transaction cost. The dealer in the security provides immediacy by being willing to buy at the bid price and sell at the ask price. In this framework, dealers place the bid and ask prices symmetrically around the true price and profit from the random arrival of buy and sell orders. The spread represents a measure of the value of the liquidity service provided by the dealer (Demsetz, 1968).

Previous microstructure studies indicate that the bid-ask spread is a function of market maker's adverse selection cost (e.g., Amihud and Mendelson, 1980; Glosten and Harris, 1988). The adverse selection cost is compensation to the dealer for carrying on the risk of dealing with traders who may hold important information. Glosten and Milgrom (1985) document that there is a positive association between the trading risk with a participant who has private information of a firm, and the size of the spread. Also, Callahan et al. (1997) document that bid-ask spread reflects the degree of "information asymmetry risk" as perceived by the dealer. In summary, a higher level of information asymmetry leads to a larger bid-ask spread.

#### *3.2.1.1 Bid-ask spread forms*

Different forms of bid-ask spread are used in the previous literature such as quoted spread, effective spread, percentage spread, and logarithmic transformations of one or more of those. Table 3-2 shows the different forms of bid-ask spread, and the measurement of each one of them. However, both Chung et al. (2004) and Affleck-Graves et al. (2000) note that there is no agreed number and form of bid-ask spread proxies in the literature.

**Table 3-2: The different forms of *bid-ask spread***

| Form Name | Equation |
|---|---|
| Quoted spread (raw spread) | $Qouted\ Spread_{jt} = Ask_{jt} - Bid_{jt}$ |
| Percentage quoted spread | $(\%Spread = Qouted\ Spread_{jt}$ / MidpointSpread |
| The natural logarithms of spread | $LOG(Spread) = \ln(\text{Quoted}\ Spread_{jt})$ |
| The natural log percentage spread | $LOG(\%Spread) = \ln(\%Spread_{jt})$ |
| The effective spread | $effectSpread_{jt} = 2\left(Price_{jt} - MidPointSpread_{jt}\right)$ |
| The percentage effective spread | $\%effectSpread_{jt} = \frac{2\left(Price_{jt} - MidPointSpread_{jt}\right)}{MidPointSpread_{jt}}$ |
| The change in spread | $\Delta Spread = Spread_{jt} - Spread_{jt-1}$ |

Where: $Price_{jt}$ is the price of stock in a specific date of a firm.

### 3.3 Analysts' Information Environment

Financial analysts have been widely studied in the accounting and finance literature. They are considered to be primary participants in the capital market and their reports are widely used by other capital market participants (e.g., Lys and Sohn, 1990; Schipper, 1991; Womack, 1996; Cox and Kleiman, 2002; Fogarty and Rogers, 2005; Matsumoto et al., 2011; Jiao et al., 2012). Previous studies suggest that analysts play an important role in enhancing the usefulness and informativeness of accounting information by providing analyses of this information to investors (Bradley et al., 2014; Jiao et al., 2012). The importance of financial analysts is seen to arise particularly from subsequent effects on the efficiency of the capital markets. For instance, the number of analysts following a certain firm is commonly used as a proxy for a firm's information environment (e.g., O'Brien and Bhushan, 1990; Lang and Lundholm, 1996; Walther, 1997; Ayers and Freeman, 2003; Irani and Karamanou, 2003). In addition, previous studies use analysts' forecasts consensus as a measure of firm performance evaluation (Degeorge et al., 1999; Kasznik and McNichols, 2002; Lopez and Rees, 2002). Another body of literature uses analysts' forecast dispersion as a measure of uncertainty and estimation risk. They argue that firms prefer to decrease the dispersion across analysts, and therefore decrease the overall dispersion in capital market earnings expectations, to reduce the cost of equity capital of firms indirectly (e.g., Barry and Brown, 1985; Daley et al., 1988b; Ziebart, 1990; Imhoff and Lobo, 1992; Lang and Lundholm, 1996; Barron and Stuerke, 1998; Barron et al., 1998; Jiang et al., 2005; Zhang, 2006; Barron et al., 2009). This study captures the properties of analysts' information environment by using three variables: analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy - where

more number of analysts following, lower analysts' forecasts dispersion and greater analysts' forecasts accuracy indicate a richer information environment (Byard et al., 2011).

### *3.3.1 Financial analysts following*

The number of analysts following a certain firm is commonly used as informativeness proxy for a firm's information environment (e.g., O'Brien and Bhushan, 1990; Lang and Lundholm, 1996; Walther, 1997; Ayers and Freeman, 2003; Irani and Karamanou, 2003). Financial information quality is regarded as one of the main factors that affecting the amount of analyst coverage in firms. Yu (2010) concludes that firms with better governance disclosure attract a more number of analysts following. Simpson (2010) suggests that regular non-financial disclosure of key performance indicators is useful to analysts when they make forecasts. In addition, firms that provide higher quality information are more favourable in the eyes of analysts than firms that offer poor quality information or firms that only comply with mandatory disclosure requirements (Gelb and Zarowin, 2002).

Given that a higher quality of disclosure helps analysts to collect, analyse and disseminate a firm's private information, it is not surprising to see a strong body of literature supporting the view that analysts prefer to cover firms with high quality information (e.g., Gelb and Zarowin, 2002; Lang and Lundholm, 1993; Lang and Lundholm, 1996).

### *3.3.2 Financial analysts' forecasts dispersion*

Higher information quality in financial statements is expected to reduce the investors' uncertainty, thus reducing the information risk of a specific firm. Barry and Brown (1985) focus on analysts' forecast dispersion proxy and argue that analysts' forecast dispersion is a proper proxy of uncertainty and estimation risk. Firms have incentives to decrease the forecasts dispersion among analysts, and therefore, in capital market, reduce the overall dispersion of earnings expectations. Also, there is an evidence suggests that forecast dispersion is influenced by the quantity and quality of financial disclosures and that any significant change to the access of this financial information could alter forecast dispersion (Dechow et al., 1996; Swaminathan, 1991).

Previous studies measure financial analysts' dispersion by using different proxies such as (1) the standard deviation of analysts' forecasts divided by stock price (e.g., Hope, 2003b; Duru and Reeb, 2002; Lang and Lundholm, 1996). (2) The variance of analysts' forecasts instead of standard deviation (e.g., Morse et al., 1991, Daley et al. 1988). (3) The variation coefficient, which is measured the standard deviation of analysts' forecasts deflated by the mean or median of earnings per share forecasts of a particular period (e.g., Ajinkya et al., 1991; Comiskey et al., 1987; Elliott and Philbrick, 1990; Ziebart, 1990; Imhoff and Lobo, 1992; Das and Saudagaran, 1998).

### *3.3.3 Financial analysts' forecasts accuracy*

Previous studies use different proxies to measure the accuracy of analysts' forecasts. For example, they use the absolute value of forecast errors to evaluate the dynamics and quality of forecast errors across time (e.g., O'Brien and Bhushan, 1990; Stickel, 1992; Chopra, 1998; Dunn and Nathan, 2005). Where forecasts are matched across firms, as in Stickel (1992), it is not important to deflate the forecast error. However, where forecast errors are compared across firms, the error will be partly a function of the scale effect. Therefore, previous studies used to deflate the error. A number of previous studies (e.g., Capstaff et al., 1995; Acker and Athanassakos, 1997) chooses to deflate the forecast error by actual earnings. This approach has the disadvantage of generating outliers when the actual earnings are close to zero. This is a less frequent occurrence when the share price is used as the denominator and indeed this is the most frequently employed measure of forecast error in the current forecast literature (e.g., Ali et al., 1992; Abarbanell and Lehavy, 2003; Lim, 2001; Gu and Wu, 2003; Mikhail et al., 2003).

## 3.4 Summary

This chapter discusses and focuses on three key aspects of the capital market. These aspects are classified into two types: first, the cost of equity capital, which is considered to be a summary indicator of investors' resource allocation decisions; second, other aspects that are viewed by previous studies as intermediary aspects, e.g., information asymmetry and analysts' information environment. For the cost of equity capital section, it discusses the definition of the cost of equity capital and the two main approaches that used to measure the cost of equity capital: (1) the *ex-post* cost of equity capital proxies, which can be estimated by reference to market data, and (2) the *ex-ante* cost of equity capital proxies, which can be estimated by reference to analysts' forecasts by either the residual income model or dividend discount model. Moving to the second section, which focuses on information asymmetry, this discusses the definition of information symmetry and the different approaches used to measure information asymmetry in prior literature; for example, the analysts' forecasts approach, the investments opportunity set approach, the stock return approach and market microstructure proxies (Clarke and Shastri, 2001). It also discusses the different forms of bid-ask spread. Finally, this chapter discusses analysts' information environment proxies. This section is classified into three sub-sections, which are analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy. The next chapter discusses the research paradigm and theoretical framework of this research.

# Chapter 4: Research Paradigm and Theoretical Framework

## 4.1 Introduction

For Denzin and Lincoln (1994), any research design consists of three main steps: first, choose the research paradigm, which is regarded as guiding the research process; second step, select the appropriate methodology to connect the selected paradigm to the empirical work, and; finally, determine the methods of data collection and data analysis. The main objective of this chapter is to outline the appropriate paradigm that guides the current research methodology and methods employed to test the research hypotheses and achieve its purposes. The chapter consists of two main sections. Section 1 presents the research paradigm, which focuses on Burrell and Morgan framework, and section 2 discusses theoretical framework which consists of a collection of theories that help to explain and predict phenomenon in the social sciences.

## 4.2 Research Paradigm

One of the main problem faces by social science researchers is deciding which theoretical and philosophical assumptions they will base their research on (Hoque, 2006; Burrell and Morgan, 1979). The research of numerous researchers is based, explicitly or implicitly, on a research paradigm, which is a number of philosophical assumptions concerning the nature of social science and that of society (Burrell and Morgan, 1979). Collis and Hussey (2009) define a research paradigm as "a framework that guides how research should be conducted, based on people's philosophies and their assumptions about the world and the nature of knowledge" (Collis and Hussey, 2009, p. 55).

Burrell and Morgan (1979) document a general framework for the analysis of social theory. They suggest that all social science research can be classified into four key paradigms: functionalist; interpretive; radical-humanist; and radical-structuralist (Burrell and Morgan, 1979). Those paradigms (framework) are based on two dimensions: the subjective-objective dimension that demonstrate the assumptions of the nature of social science; and the regulation-radical change dimension that demonstrate the assumptions of the nature of society (Burrell and Morgan, 1979).

### *4.2.1 The subjective-objective dimension*

The first dimension of the Burrell and Morgan framework is the subjective-objective dimension, which is based on the assumptions of the nature of social science. These assumptions are related to the ontology of the social world (nominalism and realism), epistemology (anti-positivism and positivism), human nature (voluntarism and determinism), and methodology (ideographic and nomothetic) (Burrell and Morgan, 1979). Those assumptions are shown in Figure 4-1. The ontological nature assumption is focused on the nature of reality concerning the social phenomena that are being investigated (Creswell, 1998). It concerns whether the "reality" to be investigated is of an "objective" nature and exist independently of the individual's awareness (realism), or is a relative concept, a product of individual consciousness and only understood by investigating the perceptions of the human actors (nominalism) (Burrell and Morgan, 1979; Crotty, 1998).

The epistemological assumption is focused on the nature of knowledge and how researchers understand the world. This includes a test for the association between the researcher and what is being researched to determine whether knowledge is something which can be acquired objectively, (positivist), or is something which has to be personally experienced subjectively acquired (anti-positivist) (Burrell and Morgan, 1979; Collis and Hussey, 2009).

The third assumption is the human nature, which focuses on the association between human beings and the environment. The two main dimensions underpinning this concept are termed "determinism" and "voluntarism". The determinist approach is based on the idea that human beings and their experience are products of their environment. In contrast, the voluntarist approach is based on the idea that human beings and their experience are independent, free-willed, creator and controllers of their environment (Burrell and Morgan, 1979).

The final assumption is the methodological assumption, which focuses on how the researcher gains knowledge about the world. This assumption is determined by the researcher's choice of the former three assumptions. The two main approaches underpinning this assumption are termed "nomothetic" and "ideographic". The nomothetic approach is based on seeing the social world as similar to the natural world and hence, data can be collected using protocols and procedures that arise from the natural

sciences, preferably using quantitative research techniques. Conversely, the ideographic approach is based on seeing knowledge as something that has to be personally experienced and there is a tendency to prefer collecting data using qualitative research techniques (Burrell and Morgan, 1979).

**Figure 4-1: The subjective and objective approaches**

| Subjective Approach | Assumptions | Objective Approach |
|---|---|---|
| Nominalism | Ontology | Realism |
| Anti-positivism | Epistemology | Positivism |
| Voluntarism | Human Nature | Determinism |
| Ideographic | Methodology | Nomothetic |

Source: Burrell and Morgan (1979, p. 3)

### *4.2.2 The regulation-radical change dimension*

The regulation-radical change is the second dimension of the Burrell and Morgan framework, and focuses on the assumptions of the nature of society. It consists of two approaches: the regulation approach and radical change approach. This dimension describes the nature of society assumption as a view of society either as orderly or subject to fundamental conflict (Burrell and Morgan, 1979; Chua, 1986). The regulation approach is focused on understanding and providing explanations for the status quo. Society is viewed as an entity, and the mechanisms by which the social order is maintained are investigated. In contrast, the radical approach looks beyond the status quo and is focused on finding explanations for the radical change in social systems. It is focused more on "what is possible" as distinct from "what is"; with alternatives instead of acceptance of the status quo, relative to the radical approach (Burrell and Morgan, 1979). The characteristics of the two approaches are shown in Figure 4-2.

**Figure 4-2: the regulation-radical change dimension**

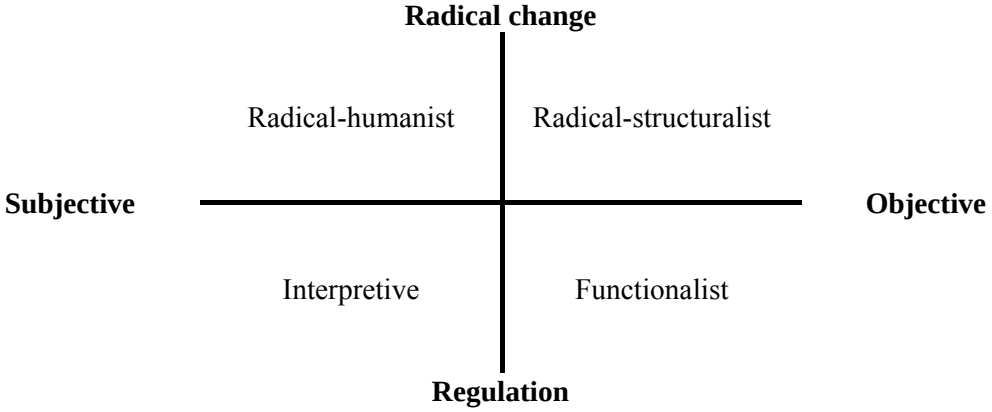
| Regulation approach | Radical change approach |
|---|---|
| The status quo | Radical change |
| Social order | Structural conflict |
| Consensus | Model of Domination |
| Social integration and cohesion | Contradiction |
| Solidarity | Emancipation |
| Need satisfaction | Deprivation |
| Actuality | Potentiality |

Source: Burrell and Morgan (1979, p. 18)

### *4.2.3 The four paradigms*

The two dimensions, the subjective-objective dimension and the regulation-radical change dimension, lead to four mutually exclusive paradigms: the functionalist (positivism), interpretive, radical-humanist, and radical-structuralist. Burrell and Morgan (1979) argue that each paradigm views the world in a particular way; thus, these paradigms identify four interpretations of the social world based on different philosophical assumptions with regard to the nature of science and of society.

**Figure 4-3: Four paradigms for the analysis of social theory**




Source: Burrell and Morgan (1979, p. 22)

Burrell and Morgan (1979) argue that each paradigm represents a particular standpoint and identifies a quite separate social-scientific reality, and it is mutually exclusive of other paradigms. The origin of the radical paradigms (structuralist and humanist) lie in the radical change dimension and hence attempt to go beyond the status quo and essentially seek change. The basis of the radical-structuralist paradigm is based on an objective perspective. This paradigm attempts to comprehend radical change, as does the radical humanist paradigm, although it is subjective. At the other extreme lie the interpretive and the functionalist paradigms, which represent the regulation dimension and hence attempt to examine the status quo. A subjective perspective of reality is the basis of the interpretive paradigm, which attempts to comprehend the status quo "within the realism of individual consciousness and subjectivity (Burrell and Morgan, 1979). In contrast, although the functionalist paradigm views reality as objective and external to the individual, it also seeks to discover explanations of the status quo, the social order, consensus, social integration, solidarity, and reality from an objective perspective (Burrell and Morgan, 1979).

According to Burrell and Morgan (1979) all social science researchers fall into one or other of the aforementioned four paradigms, based on the philosophical assumptions they employ in their research. Indeed, Chua (1986, p. 603) proposes that specific accounting theories may also be categorised using these four paradigms[7]. In accounting research, the functionalist paradigm is associated with the positivist approach, while the interpretive paradigm is connected to the interpretive approach and both radical paradigms are linked with the critical approach in accounting research (Chua, 1986). This study is carried out within the functionalist (positivist) paradigm, as discussed in further detail in the following section.

### *4.2.4 The functionalist (positivism) paradigm*

The standpoint of the functionalist (positivist) paradigm is connected to the objectivist approach (realism, positivism, determinism and nomothetic), and is embedded in the sociology of regulation. It is concerned with offering explanations of the status quo, social order, consensus, social integration, solidarity and realism (Burrell and Morgan, 1979, p. 26). It frequently addresses problems and emphasises the provision of practical answers to practical problems and the generation of useful knowledge.

Positivist is the paradigm most frequently used by natural science researchers. The positivist paradigm in social sciences focuses on the belief that the social world is regular and ordered and therefore human behaviour can be studied in a manner similar to that used in the natural sciences. According to this paradigm, it is possible to give logical or mathematical evidence for each logically justifiable assertion (Walliman, 2011; Collis and Hussey, 2014). Currently, social science researchers who carry out research under this paradigm still apply logical reasoning; thus, precision and objectivity support their approach rather than subjectivity and intuitive interpretation. As those researchers consider reality is independent of us, they assume that the act of examining social reality does not impact that reality (Creswell, 2014; Collis and Hussey, 2014).

[7] However, Chua (1986, p. 603) argues that the Burrell and Morgan framework has many problems. These problems stem from their use of mutually exclusive dichotomies, the latent relativism of truth and reason which their framework encourages, and the dubious nature of the differences between the radical-structuralist and humanist paradigms. For a detailed discussion of these difficulties, see Chua (1986, p. 626).

In accounting, positivist research is an offshoot of academic accounting research which attempts to elucidate and forecast particular phenomena, such as accounting practices (Watts and Zimmerman, 1986). Elucidation refers to offering reasons for what occurs in specific circumstance, while forecasting predicts the possibility of similar circumstances arising somewhere else. Therefore, positivist research attempts to generalise and predict cause and effect relationships from the analysis based on hypothesised, general relationships (Watts and Zimmerman, 1986; Collis and Hussey, 2009, p. 56).

Positivist research seeks facts of or reasons for social phenomena, but without taking into account the individual's subjective state. Only phenomena which can be observed and measured are held to be knowledge (Hoque, 2006; Collis and Hussey, 2009). Positivism works on the ontological assumption that objective reality exists, although human beings may not be aware of it (Chua, 1986; Collis and Hussey, 2009). Positivist research therefore aims to seek universal uniformities and causal relationships between the variables used in research. Due to the requirement to carry out statistical analysis, the positivist approach frequently uses large samples and depends largely on quantitative data (Collis and Hussey, 2009). Finally, the quantitative accounting research is typically associated most closely to the functionalist (positivist) paradigm due to its seeking an objective view of the world (Hoque, 2006). As the current research takes an objective view of the world, it may be considered to follow the positivist (functionalist) paradigm.

## 4.3 Theoretical Framework

As discussed previously, the major problem confronting an accounting researcher is which theoretical framework is most appropriate (Hoque, 2006). A theoretical framework is defined as "a collection of theories and models from the literature which underpins a positivist study" (Collis and Hussey, 2009, p. 92). The main aim of theory is to explain and predict the phenomena addressed by guiding researchers to develop their research questions, to select a particular research method and to interpret the results of their research (Mathews and Perera, 1996; Riahi-Belkaoui, 2004). A theory is a "set of interrelated variables, definitions, and propositions that specifies relationships among the variables." (Collis and Hussey, 2014, p.51). Kerlinger (1964, p. 11) provides another definition of theory as "a set of interrelated constructs (concepts), definitions and propositions that present a systematic view of phenomena by specifying relations among variables with the purpose of explaining and predicting the phenomena". Positivist

accounting researchers must implicitly decide on which theories they will base their research on, as this will determine the entire course of the research project such as the research hypotheses and data collection methods; without an appropriate research hypothesis, it is difficult for positivist researchers to know which facts or data to investigate (Watts and Zimmerman, 1986).

In accounting information quality research, the issue of explaining the motivations of firms for disclosing high quality information to users, e.g., investors and analysts has attracted considerable attention. Firms should have incentives to provide high quality information to their users e.g., reducing the cost of capital. Most researchers focus on the quality of accounting information and they have applied a number of theoretical perspectives to explain this phenomenon. To date researchers have tended to select a suitable theory that corresponds most closely to their hypothesis (Linsley and Shrives, 2000). The most common theories employed in previous literature to interpret and explain the quality of accounting information are the capital need theory, the signalling theory, the stewardship theory and the decision usefulness theory. The explanations for these theories are as follows.

### *4.3.1 Capital needs theory*

The notion of 'capital needs' has been referred to by a number of previous studies (Meek and Gray, 1989). Firms in the capital market compete with each other to raise capital through offering different types of shares (Meek et al., 1995). Capital need theory posits that the need to raise capital is the main reason for firms to provide high quality of information, as they may consider that high quality of financial information will reduce the uncertainty among investors and reduce the cost of equity capital (Choi, 1973). Many empirical studies have applied this theory to explain variations in the quality of financial information that provided by firms (e.g., Cooke, 1993; Firth, 1980; Abd-Elsalam and Weetman, 2003).

High information quality should lead to more efficient allocation of capital within the market and, therefore, help stock market to evaluate and price the shares more accurately. Therefore, it is expected that high earnings quality will increase the number of capital providers and allow firms to attract new shareholders, thus enabling firms to enjoy a healthy demand for shares with liquidity market (Craven and Marston, 1999) and increase the ease by which new capital can be raised (Cooke, 1993; Marston and Shrives, 1996).

It is also assumed that high quality of financial information will increase transparency and reduce information asymmetries across market participants e.g., investors and analysts. Therefore, reduce investors uncertainty regarding the timing and expected future cash flow and thereby enable investors to make investment decisions; thus, capital may be raised cheaply (e.g., Choi, 1973; Cooke, 1993; Firth, 1980; Abd-Elsalam and Weetman, 2003).

### *4.3.2 Signalling theory*

Signalling theory was developed by Spence (1973) in the labour market to explain the behaviour of this market (Watts and Zimmerman, 1986). It is a general phenomenon applicable in any market with information asymmetry (Morris, 1987), and has been employed by many researchers (e.g., Craven and Marston, 1999; Abd-Elsalam and Weetman, 2003) to explain cross-sectional variation in voluntary disclosure levels and has also been linked to agency theory (Morris, 1987). Akerlof (1970) states that voluntary disclosure is viewed as a form of signalling relating to information asymmetry in the market, and signalling theory can address these problems of information asymmetry and reduce this asymmetry by the party with more information signalling it to others (Morris, 1987). If information available to the market is non-specific, then share prices will reflect general perceptions of risk and, hence this may result in some mis-pricing, together with the phenomenon of adverse selection (Akerlof, 1970). Beatty and Welch (1996) report a positive association between the number of risk warnings disclosed in the flotation prospectus and mis-pricing at the end of the first day of trading. Financial information may be used by firms to signify underlying reality, and to influence external users when making decisions of different purposes.

Large firms may also have the incentive to disclose high quality information in order to send a signal to the market to avoid potential lawsuits. Since signalling is a reaction to information asymmetry in markets, in this case, firms have information (for example, about risks and the way the risks are managed) that investors do not. In such circumstance, firms with high quality risk management systems will have an incentive to provide specific risk information to the market as a signal as this can then be used to adjust the price upwards (Lev and Penman, 1990).

However, signalling is costly and the cost of signal is higher for the bad type than it is for the good type (Spence, 1973). The incentive to make disclosures in order to differentiate

a firm from other firms will only continue for as long as the resulting increase in market capitalisation exceeds the signalling cost (Morris, 1987). It is argued that only good quality firms will use this instrument, because the quality of firms can be later observed without difficulty, and firms would be punished by the market if they send wrong signals (Morris, 1987).

### *4.3.3 Stewardship theory*

Stewardship theory proposes that agents can be trusted and are look after the resources confided to them well, thus obviating the necessity for monitoring (Donaldson and Davis, 1991; Donaldson and Davis, 1994; Davis et al., 1997). Managers should be accorded autonomy based on trust, as they are not opportunistic and their actions are in the owners' best interests. The expenses of monitoring and regulating their actions are thus reduced. Stewardship theory holds that stewards act collectively, as they strive to attain the aims of the organisation, such as profitability. This, in turn, benefits the principals through the positive effects of profits on dividends and share prices (Davis et al., 1997).

To reflect on accounting information, previous studies determine two main roles of this information. First, decision usefulness (valuation) role that reflects the future oriented information role by using information to make valuation decisions. Second, the stewardship role that reflects the *ex-post* role of information by using that information to control and monitor the management's use of capital, which need more focus on the past actions (Holthausen and Watts, 2001; Cascino et al., 2013). In particular, if capital provider i.e., the owners use the information for stewardship purposes, they value that information if it is informative about managers' effort (Hölmstrom, 1979; Lambert and Larcker, 1987). However, if they use the information for valuation purposes, they value that information if it is related to future cash flows in spite of whether the information is due to effort of managers (Beyer et al., 2010).

Overall, the theoretical studies document that although the two roles of accounting information are sometimes aligned, and they likely to agree on their implications for the meaning of high earnings quality (see Kothari et al., 2010), this is not always the case. For example, Lambert (2010) and Dichev et al. (2013) argue that there is a clear consensus that the two roles are not always aligned, even if information for valuation is sometimes useful for stewardship. Also, Gjesdal (1981) demonstrates that the objectives of both decision usefulness and stewardship are not always aligned.

These differences between the two approaches lead often to different desirable measures for earnings quality (Cascino et al., 2013; Dichev et al., 2013). For example, conservatism is likely to be desired under stewardship, because of a reluctance to realise bad news, while neutrality is generally desired for valuation purposes (Bushman and Indjejikian, 1993; Dutta and Zhang, 2002; Wu and Zhang, 2009; Kothari et al., 2010). Another example, Christensen et al. (2005) indicates that the increasing earnings persistence proxy and reducing the reversible components are commonly desired for valuation purposes, but not for contracting purposes.

Therefore, the current research focuses only on valuation approach (decision usefulness), as opposed, to a contracting or stewardship approach. The reason for this choice stems from the opinion of using accounting information are fundamental for valuation purposes, in sense of giving a basis for other uses, i.e., stewardship. Because valuation role are *ex-ante* decisions while stewardship assessments are ex-post evaluations of outcomes, evidence on whether, how and to what degree earnings quality influences capital market resource allocation decisions is fundamental to understanding why and how accounting matters to investors and others, including those charged with stewardship responsibilities. Demonstrating a link between earnings quality and, for example, the costs of equity and debt capital implies a basic economic role in capital allocation decisions for accounting information; this role has only recently been documented in the accounting literature.

### *4.3.4 Decision usefulness theory*

Decision usefulness theory assigns particular type of information for particular users on the basis of assumed decision-making needs (Deegan and Unerman, 2011). The using of decision usefulness theory could be traced back to 1955 (Berry and Robertson, 2006). At this time, there was a direct criticism of financial reporting, on the ground that it was not giving enough help to users in making useful decision about economic events (Chambers, 1955). Thus, there were demands for financial reporting to be more useful to users in their decision making (Edwards, 1989).

The traditional objective of financial reporting is to provide helpful information to users to help them make useful decisions. Recently, it has been argued that financial reporting should help other groups of users, such as lenders and analysts to make useful decisions, since their needs may differ from those of investors (Deegan and Unerman, 2011). The current accepted rationale of financial reporting is to provide useful accounting

information that meets the decision making needs of all main groups of decision makers (Deegan and Unerman, 2011). Thus, the IASB adopted the decision usefulness theory as the main criterion of its Conceptual Framework in 2010. Furthermore, prior literature has also adopted this theory to underpin their theoretical framework and answer the research questions of their studies (e.g., Chambers, 1955; Deegan and Rankin, 1997; Glautier and Underdown, 2001; Hitz, 2007; Dunne et al., 2008).

In 2010, the IASB Conceptual Framework identified six "qualitative characteristics" of useful financial information. These characteristics show the types of information that are possibly most useful to the primary users of financial reports. Two of the qualitative characteristics are specified as "fundamental characteristics". These are Relevance and Faithful Representation. The remaining four qualitative characteristics are described as "enhancing" as they further improve the usefulness of financial information that is already relevant and faithfully represented. The enhancing characteristics are: Comparability, Verifiability, Timeliness and Understandability (IFRS IFRS Foundation, 2010), Together with the IASB Conceptual Framework, the characteristics of useful financial information are commonly tractable in accounting research (e.g., Snavely, 1967; Sterling, 1970; Schipper and Vincent, 2003).

According to Bebbington et al. (2001), there are two approaches to the decision usefulness theory: the decision-makers' approach and the decision-models approach. The decision-makers' approach depends on undertaking research that asks the users what information they need. Once that is determined, this knowledge is used to suggest what information should be provided to the users of financial statements. Much of this research is questionnaire-based. Another variant of the decision-makers approach, which is used in the current research, is security price research (capital market research). In brief, capital market research works on the assumption that if the capital market responds to information (as shown through share price changes that occur around the time of the release of particular information), then the information must be useful (Deegan and Unerman, 2011).

The second approach is the decision-models approach, which develops models based upon the researches' perceptions follow. This approach usually assumes that stakeholders have identical information needs. Unlike the decision-makers' approach, in the decision-

models approach, the decision makers' are not asked what is useful for decision-making (Deegan and Unerman, 2011).

Returning to capital market research, one of the main ways to assess the impacts of financial reporting decisions is to determine what impact releasing information has on share price (capital market research). Capital market research explores the role of accounting and other financial information in equity markets. That is, it examines how the disclosure of particular information influences the aggregate trading activities carried out by individuals participating within capital markets. Capital market research often involves examining statistical associations between financial information and share prices or return. Reactions of investors or other users e.g., financial analysts, are shown by their capital market reactions. Favourable reactions to information are presumed to be demonstrated by a price increase in the particular security, whereas unfavourable reactions to information are evidenced by a price decrease. No price change around the time of the release of information implies no reaction to the information (Deegan and Unerman, 2011).

The main objective of this study is to investigate the association between earnings quality and investment decisions of users such as investors and financial analysts. Therefore, the second variant of the decision-makers approach (capital market research) is the most appropriate approach to explain these associations.

### *4.3.5 Prior theoretical literature*

Many theoretical studies have used capital need theory and capital market research to examine the impact of accounting information on aspects of capital market. Those studies posit multiple channels through which accounting information quality, i.e., earnings quality could affect the cost of equity capital. The main hypothesis is that higher accounting information quality is associated with lower information asymmetry and a lower cost of equity capital. This main hypothesis is based on the theory that high quality accounting information reduces information risk by reducing information asymmetry between informed and uninformed investors, which is expected to lower the cost of equity capital. For example, Merton (1987) develops a model in which some investors are less informed than others of certain firms. He concludes that firm information of high quantity and quality can increase the familiarity of potential investors and ease their purchase of its securities; thus, increasing the demand for its securities. This in turn will increase the

firm's market value and reduce its cost of capital. In addition, Diamond and Verrecchia (1991) develop a trading model in an illiquid market by large traders with limited risk bearing capacity. The purpose was to test the impact of disclosure on market liquidity and hence the cost of capital through reducing information asymmetry among market makers. They show that policies that reduce the information asymmetry between informed and uninformed investors lead to increasing the market liquidity. This diminishes the firm's cost of capital, with a larger reduction in the cost of capital for larger firms.

In another example, Easley and O'hara (2004) propose a theoretical model within which information has an impact on the cost of equity capital of a firm through information asymmetry. In their framework, the information asymmetry problem clearly arises between the different types of investors, be they informed or uninformed. Informed investors are likely to hold fewer of the 'bad-news' stocks and buy more the 'good-news' stocks because they have access to all information, public or private. However, uninformed investors cannot imitate the informed investors' portfolio decision because they do not have access to the same private information. Uninformed investors can be expected ultimately to have a greater portion of the 'bad-news' stocks. Hence, to compensate, they ask for a higher expected rate of return. Hence, the risk becomes higher in accordance with the increase in the proportion of total private information. This in turn leads to investors asking for a higher rate of return (the cost of equity capital). Therefore, private information is considered here as a systematic risk, which leads investors to request compensation. Then, Easley and O'hara (2004) introduce an empirical implication of using the information precision and quantity available to investors to influence their cost of capital.

Taking another perspective, Hughes et al. (2007) question the validity of this linkage. They extend Easley and O'hara (2004) model by including large economies to the model, because they argue that the opportunity of full divarication exists in large economies and does not exist in Easley and O'hara (2004) model which uses finite economies. According to Hughes et al. (2007), risk premia in conditions of information asymmetry equal the products of betas and risk factor premia for large economies. Further, they contend that less resolution of uncertainty results from the greater information asymmetry gained by holding total information constant. Less resolution of uncertainty leads in turn to higher risk factor premia, and hence to higher costs of capital. Moreover, Hughes et al. (2007) assert that information asymmetry does not lead to cross-sectional differences in expected

returns in the model after controlling beta, although it does affect factor risk premia. However, Hughes et al. (2007) note that while an information asymmetry factor does not arise endogenously in the model, the model is silent on whether an information asymmetry factor exists.

Further, Lambert et al. (2012) also develop an equilibrium model to test the impact of information asymmetry/liquidity on the cost of capital under conditions of imperfect competition among investors, along with Diamond and Verrecchia (1991). However, their main result is not based on information asymmetry; rather, it is based on information imprecision. Consistent with Hughes et al. (2007), they find that the pricing effect introduced by Easley and O'hara (2004) is diversifiable. Nevertheless, Lambert et al. (2012) conclude that in a setting of perfect competition, the higher the average precision of investors' information available about a firm, the lower the cost of equity capital of that firm. The extent to which any differences between the market average precision and any single investor's information precision do not matter depends on the average precision being controlled for.

Based on their model, more precise information, which is received by some investors, would partly communicate through price, and then it would reduce the other investors' uncertainty. On the other hand, giving more information to more investors influences the cost of equity capital only since the extra information increases the average level of information precision (Bhattacharya et al., 2011).

## 4.4 Summary

This chapter discussed the research paradigm (philosophy) and theoretical framework that inform this study to explain the impact of earnings quality on capital market aspects. The first section discussed the two dimensions of the Burrell and Morgan framework, which are the subjective-objective dimension and the regulation-radical change dimension. The subjective-objective dimension is based on the assumptions of the nature of social science. Those assumptions are related to ontology of the social world (nominalism and realism), epistemology (anti-positivism and positivism), human nature (voluntarism and determinism), and methodology (ideographic and nomothetic) (Burrell and Morgan, 1979). The regulation-radical change, the second dimension of the Burrell and Morgan framework, describes the nature of society assumption as either a view of society as orderly or subject to fundamental conflict. This dimension consists of two approaches: the regulation approach and radical change approach. (Burrell and Morgan, 1979; Chua, 1986).

The current research is undertaken within the functionalist paradigm that represents a perspective which related to the objectivist approach (realism, positivism, determinism and nomothetic), and is firmly rooted in the sociology of regulation. It is characterised by a concern for providing explanations of the status quo, social order, consensus, social integration, solidarity and actuality (Burrell and Morgan, 1979, p. 26).

Moving to the theoretical framework, this section discusses the definition of theory. It also discusses a number of theories of accounting, which are proposed in the current research as explanatory theories, to identify the association between earnings quality and capital market aspects. These include capital need theory, signalling theory, decision usefulness theory, and stewardship theory. In addition, it discusses the theoretical studies that test the association between the quality of accounting information and capital market aspects. The main hypothesis of these theoretical studies is that higher accounting information quality is associated with lower information asymmetry and lower cost of equity capital. This main hypothesis is based on the theory that high quality accounting information reduces information risk by reducing information asymmetry between informed and uninformed investors, which is expected to decrease the cost of equity capital. The next chapter reviews the relevant previous empirical studies.

# Chapter 5: Literature Review

## 5.1 Introduction

The main objective of this study is to examine the association between earnings quality and three aspects of the UK's capital market: namely, the cost of equity capital; information asymmetry; and analysts' information environment. Therefore, for the sake of clarity for the reader, the researcher classifies previous empirical studies that examine these associations into five groups of studies dealing with the main variables of interest of this research. The first group addresses the association between earnings quality and the cost of equity capital. This is followed by a discussion of the association between earnings quality and information asymmetry and then the association between earnings quality and analysts' information environment. Next, the chapter discusses the interaction between earnings quality and different aspects of capital market. Finally, it discusses the association between IFRS and earning quality through two *sub*-groups: firstly, it discusses the differences between IFRS and Domestic Accounting standards (DAS) in terms of earnings quality; and, secondly, it discusses the differences between IFRS and US GAAP in terms of earnings quality.

## 5.2 The Association between Earnings Quality and the Cost of Equity Capital

Empirical studies discuss the association between earnings quality proxies and the cost of equity capital. Whilst various earnings proxies are employed, most interest is shown in accruals quality. Therefore, the researcher classifies the previous studies into the following *three* sub-groups: (1) the association between accruals quality and the cost of equity capital. (2) The association between other earnings quality proxies and the cost of equity capital. (3) The association between the innate and discretionary components of earnings quality and the cost of equity capital.

### *5.2.1 The association between accruals quality and the cost of equity capital*

Several empirical studies discuss the association between accruals quality and the cost of equity capital; however, they produce mixed results –Table 5-1 summarises these results. Francis et al. (2004) provide evidence that the cost of equity capital is associated more highly with accruals quality than with other earnings proxies. They consider seven proxies of earnings: accruals quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism. They use a cross-sectional regression analysis

with a sample ranging from 678 to 1,997 US firms per year (an average of 1,471 US firms per year and a total of 3,917 distinct firms) over 27 years from 1975 to 2001. Their main proxy of the cost of equity capital is based on the target price method ($r_{DIV}$) (Brav et al., 2005). In addition, they use two other proxies of the cost of equity capital as robustness tests: Easton (2004) PEG measures, $r_{PEG}$ and $r_{MPEG}$, and the cost of equity proxies based on portfolios of *realised* returns. Their model includes beta, size and book to market ratio as control variables. They find a statistically reliable association between each earnings proxy considered individually and the cost of equity capital. The exceptions (or the least consistent associations) are found for predictability and conservatism[8]. Also, they find that the accounting-based earnings proxies and accruals quality, in particular, explain more of the cross-sectional variation in the cost of equity capital estimates than do the market-based proxies.

Consistent with Francis et al. (2004) but examining one proxy for earnings quality, namely accruals quality as a proxy for information risk, Francis et al. (2005) revisit the association between earnings quality and the cost of equity capital. They employ a regression analysis by using the decile ranks of accruals quality for the sample of 91,280 US firm-year observations over the period from 1970 to 2001. They use decile ranks to control both outliers and non-linearities. Also, they use time-series standard errors of the estimated coefficients, as introduced by Fama and MacBeth (1973), to control for cross-sectional correlations. They measure accruals quality by using their proxy that extracts from the McNichols' (2002) modification of Dechow and Dichev's (2002) model. They use the price earnings ratio as an inverse measure to capture the investors' *ex-ante* assessment of the cost of equity capital. Also, they employ returns realizations (*ex-post*) as a proxy for the cost of equity by using CAPM (one factor) and the Fama and French (1993) (three factor) models. They use growth, beta, leverage and firm size as control variables. They find that lower accruals quality is related to higher cost of equity capital and larger equity betas.

There are number of differences in how Francis et al. (2005) model made the association between earnings quality and the cost of equity capital when compared to Francis et al. (2004) model. Francis et al. (2005) focused only on accruals quality instead of all other

[8] Conservatism is measured using the Basu (1997) model.

proxies that Francis et al. (2004) used to measure earnings quality. In this instance, accruals quality is the decile rank variable defined based on McNichols' (2002) modification of Dechow and Dichev's (2002) model, the modified model includes two additional independent variables (change in revenue and plant, property and equipment) and estimated cross-sectionally by industry rather than using Dechow and Dichev (2002) model. The earnings-price ratio (adjusted by subtracting the industry median of profitable firms) and asset pricing models such as CAPM and Fama and French models (*ex-post*) are used instead of the *ex-ante* cost of equity estimates derived from Value Line analyst information. Also, it added two control variables which were Growth (the log of 1 plus growth in book value over five years) and Leverage (ratio of interest-bearing debt to total assets) and excluded book to market ratio. Furthermore, the control variable, Size, was redefined (log of total assets, instead of log of market value). The time period, over which the rolling window variables were constructed, were shortened from ten to five years. This was possible because the model estimated cross-sectionally by industry instead of using a firm-specific regression. Francis et al. (2005) addressed the issue of innate variables differently from Francis et al. (2004). They decomposed accruals quality into innate and discretionary components, instead of inserting innate variables into the model in addition to the accruals quality construct.

In contrast to other studies, which show evidence of the significant association between earnings quality and the cost of equity capital, Core et al. (2008) argue that both Francis et al. (2004) and Francis et al. (2005) do not provide evidence that accruals quality is a priced risk. They suggest that a better specified test of whether a proposed risk factor is priced requires a two-stage cross-sectional regression (*2SCSR*) method, which in the first stage, it computes factor betas, and, in the second stage, it computes the factor risk premiums (e.g., Fama and MacBeth, 1973). They suggest, also, that realised returns premium ought to be significantly positive. By using both cross-sectional and time-series regressions, they examine whether accruals quality is a priced risk factor. They use a sample of 93,093 US firm-year observations between 1970 and 2001. They measure accruals quality by using the McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005) and they measure the cost of equity capital by using Fama and French (1992) model and the target price method ($r_{DIV}$) as a robustness test. Similar to Francis et al. (2004) model, their model includes beta, firm size and book to market ratio as control variables. They note that, for the purpose of determining a new

pricing factor related to accruals quality, the returns-based tests, as reported by Francis et al. (2005), are incomplete. They show that, although on average positive, the loadings on the accruals quality factor do not describe the cross-sectional variation in returns. Also, they indicate that, as a characteristic, accruals quality does not predict future (one-year-ahead) realised returns. Moreover, they report a significant positive risk premium for the Fama and French *HML* factor, an insignificant risk premium for Fama and French *SMB* factor, and an insignificant or negative market risk premium Overall, the results are inconsistent with accruals quality being priced by the market.

However, Kim and Qi (2010) re-examine the association between earnings quality and the cost of equity capital as Core et al. (2008) had tested it, but after controlling for low-priced returns. Rather than excluding low-priced returns in the test assets, they control for low-price returns by including an indicator dummy variable in the equation, which equals 1 if the return is calculated with the adjacent prices less than \$5[9], and 0 otherwise.

They use two-stage cross-sectional regression tests (*2SCSR*) for a sample of 103,682 US firm-year observations from 1970 to 2006. They use accruals quality as a proxy of earnings quality and they measure it using McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005). By using Fama and French (1992) assigned beta, they obtain even stronger results that accruals quality is priced. When the assigned individual stock betas are obtained from 100 size portfolios and 64 size-*BTM*-AQ portfolios, the accruals quality risk factor is statistically significant even without controlling for low-priced returns. Amongst the many risk factors which the tests considered, the accruals quality risk factor is the only one which is economically and statistically significant. This changed drastically after controlling for low-priced returns. Thus, it is evidence that low-priced returns had a significant influence on Core et al. (2008) results.

Building on the definition of realised return by Campbell and Shiller (1988), who define it as a combination of true expected return, expected return news and cash flow news, Ogneva (2012) enters this debate and examine the association between accruals quality and the cost of equity capital after controlling for the effects of cash flows shocks. She

[9] The benchmark of \$5 as low price was used in 1992 by the NYSE when it reduced the minimum tick size to sixteenths for stocks under \$5.

argues that Core et al. (2008) are incapable of finding an association between accruals quality and future realised returns as their inverse proxy of accruals quality - the residual accrual volatility proxy introduced by Dechow and Dichev (2002) – is correlated negatively with future cash flow shocks, i.e., firms with low *measured* accruals quality experience negative cash flow shocks in the future. Because of this correlation, namely, the higher expected returns related to poor accruals quality, firms are offset systematically the negative returns arising from adverse cash flow shocks which, thereby, lead to no association between future realised returns and *measured* accruals quality. She controls the effects of cash flows shocks by using two sets of analyses; firstly, she includes directly cash flow shocks as an additional control variable in the cross-sectional regression. Secondly, she modifies the Dechow and Dichev (2002) model to control indirectly the effects of cash flow shocks and to construct a proxy of accruals quality with less correlation to future cash flow shocks. She performs a two-stage regression analysis – as did Core et al. (2008) and Kim and Qi (2010) - with a sample of 81,340 US firm-year observations covering the period from 1971 to 2006. She measures accruals quality by using the McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005) but with a one year lag in order to prevent the look-ahead bias in asset pricing tests. She measures the cost of equity capital by using the three factors of the Fama and French (1992) Model.

She finds that poor accruals quality leads to higher realised return (the cost of equity capital proxy) after controlling cash flow shocks, by either adding future cash flow variables directly in the regression, or by using accruals quality proxy that has a lesser correlation with future cash flow shocks (indirect method).

This growing literature is supported further by Gray et al. (2009) who use the same methods as Francis et al. (2005) but with a different sample (Australian market) because they argue that a different setting might lead to different final results. They elaborate on the two differences between the US and Australian markets as follows: (1) Australian firms are highly reliant on private debt compared to public debt. Therefore, the level of information asymmetry through debt holders is perhaps lower in Australia when compared to America (the cost of debt excepted impact); (2) Australian firms follow a Continuous Disclosure Regime (CDR) designed ostensibly to improve the corporate disclosure quality to the public; in order to decrease the information asymmetry amongst

investors; and to increase the information precision average on the firms' excepted cash flows (the cost of equity excepted impact).

Specifically, Gray et al. (2009) investigate the association between accruals quality and the cost of equity and debt capital. They use a (*2SCSR*) test for a sample of 509 Australian firms (2,057 firm-year observations) covers the period from 1992 to 2005. They follow Francis et al. (2005) in measuring the variables and, consequently, they measure accruals quality by employing the McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005). They measure the cost of equity capital by using an industry-adjusted earnings-to-price ratio (*IndEP*) and asset pricing models. They determine growth, leverage, beta and firm size as control variables for the cost of equity capital. They find a significant negative association in Australia between accruals quality and the cost of equity capital.

Using the UK market and a two stage cross-sectional regression, Mouselli et al. (2013) examine whether accruals quality is a priced risk factor. They use a sample of all nonfinancial UK listed firm between 1991 and 2006. They measure accruals quality by using Dechow et al. (1995) model. When they add accruals quality as a factor in Fama and French three-factor model, they find that accruals quality is significant in explaining the time-series variation in excess return. When, they use a two stage cross-sectional regression, they find no significant association for UK stocks.

Consistent with Francis et al. (2004) but with an expansion of the proxies used to measure earnings quality, and also, the Australian market as used different sample, Wong (2009) investigates the association between earnings quality and the cost of equity capital. The total sample is 1,534 firm-year observations from 1992 to 2006. Ten proxies are used to measure earnings quality, seven of them as Francis et al. (2004): accruals quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism, plus three other proxies: total accruals, unexpected accruals and cash to profit proxies. The cost of equity capital is measured by three different sets of proxies: firstly, the historical earnings-price ratio; secondly, analyst forecast earnings to price i.e., the PEG ratio (Easton, 2004); and, thirdly, five valuation models which are *CAPM*, the dividend discount model (2 versions), the Ohlson and Juettner-Nauroth (2005) model and the residual income model. Furthermore, she partitions the data into profitable and loss firms to better understand the differential earnings quality effects of profitable and loss firms.

Growth, size, leverage, *BTM* and beta are used as control variables for the cost of equity capital.

Wong (2009) finds that accruals quality is associated negatively with the cost of equity capital when the cost of equity capital is proxied by the earnings-price ratio and *ex-ante* cost of equity proxies and it is driven mainly by profitable firms. When all ten measures of earnings quality are included in the model, accruals quality loses statistical significance. Other earnings quality measures are found to be statistically significant depending on the proxies of the cost of equity capital. When the cost of equity is proxied by the historical earnings-price ratio, there are strong association effects for total accruals and predictability. However, when the cost of equity is measured by analyst forecast earnings-price ratios (PEG model), the models show that relevance is associated significantly with the cost of equity capital. Finally, when the cost of equity estimates are derived from *ex-ante* valuation models, there are similar results for the proxies of relevance and persistence (but of the opposite sign). In contrast with previous US and Australian evidence, accruals quality is insignificant.

Extending this strand of research into emerging markets, Othman (2012) examines the association between accruals quality and the cost of equity capital for a sample of 461 Malaysian listed firms over the period from 2000 to 2007. She measures accruals quality by using the Cohen (2008) model, which obtained from the residuals of regressing future operating cash flows on the preceding period of earnings components. The Ohlson and Juettner-Nauroth (2005) Model is used to measure the cost of equity capital. He uses as control variables beta, book to market ratio, leverage, dummy variable for institutional investors, dummy variable for independent outside directors and firm size. For the robustness test, they use abnormal accruals to test the financial reporting quality, as well as using dividend yield as a proxy for the cost of equity capital. He finds a significant association between accruals quality, the number of shareholders, industrial competition, capital intensity and leverage. He finds, also, a significant reduction in the cost of equity capital for firms with higher accruals quality even after controlling for the influence of the corporate governance mechanisms of institutional ownership, independent outside directors, and firm-specific factors.

Moreover, another stream of literature investigate the association between accruals quality and the cost of equity capital and adding a mediator variable e.g. Aboody et al.

(2005) add insider trading; Francis et al. (2008) add voluntary disclosure; Li et al. (2009) add audit quality; and Mouselli et al. (2012) add disclosure quality.

Specifically, Aboody et al. (2005) investigate the association among earning quality, insider trading and the cost of equity capital. They use a time series regression of a sample of 989,530 US firm-month observations through the period from 1985 to 2003. They use two proxies to measure earnings quality: abnormal accruals measured by using the modified Jones 1991 model (Dechow et al., 1995) and by using the Dechow and Dichev (2002) model. They use the three factors of the Fama and French (1993) model to measure the cost of equity capital. They use beta, size and book-to-market ratio as control variables. They find that the risk of information asymmetry, proxied by accruals quality, is priced and insider trading is an important element in establishing this effect.

Francis et al. (2008) try to extend their previous studies by adding a new variable, voluntary disclosure, to the association between earnings quality and the cost of equity capital. They examine two associations: (1) the association between voluntary disclosure quality and earnings quality, and (2) the association between voluntary disclosures quality and the cost of equity capital. They use cross-sectional analysis for a sample of 677 firms for the fiscal year 2001. They use a constructed disclosure index as a measure of voluntary disclosure. They measure the cost of equity capital by using the target price method ($r_{DIV}$). They use the following four different proxies for earnings quality because they argue that there is no agreed proxy for earnings quality: (1) accruals quality, measured by using the McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005). (2) Earnings variability, measured by the standard deviation of the firm's earning over sample period (1992-2001). (3) Absolute abnormal accruals measured by the modified Jones (1991) model. (4) Composite proxy based on the scores from these three proxies. They use beta, size, *BTM* ratio, analysts following, number of segments and firm performance as control variables.

They find a significant positive complementary association between earnings quality and voluntary disclosure; this means that firms with high earnings quality have more expansive voluntary disclosures when compared to firms with poor earnings quality. In condition tests, they find a significant negative association between voluntary disclosure and the cost of equity capital. Moreover, they find that the effect of voluntary disclosure on the cost of equity capital decreased considerably or disappears entirely once it

conditions on earnings quality are applied. These results is robust for the alternative proxies of the cost of equity capital (including $r_{PEG}$), and alternative proxies of earnings quality. However, the results are not robust for voluntary disclosure alternative proxies (e.g., management forecasts, conference calls or press relations).

Li et al. (2009) examine the impact of audit quality on the association between earnings quality and the cost of equity capital. They use a sample of 1,067 Australian firm-year observations from 1999 to 2004. They use accruals quality (total accruals) as a measure of earnings quality and use the Easton (2004) model as a measure of cost of equity capital. They measure audit quality by two proxies: auditor effort based on unexpected audit fees and the choice of a city level industry specialist auditor. They use growth, size, leverage and beta as control variables. They find that, with assurance from higher quality auditing, earnings made up of larger accruals are perceived to have lower cost of equity capital when compared to those earnings, which generate higher future cash flows.

Mouselli et al. (2012) examine the association between disclosure quality and accruals quality and examine whether they are complements or substitutes in explaining the time-series variation in portfolio returns. They use a sample of all UK non-financial firms that are listed on the London stock exchange during the period from July 1997 to June 2004 for 5723 firm-year observations. They follow Hussainey et al. (2003) study to measure disclosure quality (See: Hussainey et al., 2003, p. 277:280). They measure accruals quality by using the absolute abnormal accruals for Dechow et al. (1995). They use the Fama and French (1992) model for portfolio returns.

They find a significant positive association between disclosure quality and accruals quality; this suggests that firms with poor disclosure quality have higher earnings management and poor accruals quality. For asset pricing tests, they find that both disclosure quality and accruals quality have a significant impact on explaining time series variation in the excess return of similar sets of portfolio; this suggests that they have similar information and confirms the substitute nature of both of them.

**Table 5-1: Summary of studies on the relationship between accruals quality and the cost of equity capital**

| Author(s) | Sample | Country | AQ measure | CoEC measure |
|---|---|---|---|---|
| Francis et al. (2004) | 3,917 firms (1975-2001). | USA | Dechow and Dichev (2002) model. | Target price method ($r_{DIV}$), Easton (2004) model and the cost of equity proxies based on portfolios of *realised* returns. |
| Francis et al. (2005) | 91,280 firm-year observations (1970-2001). | USA | The modified Dechow and Dichev (2002) model. | *IndEP* , Three Factors of the Fama and French (1992), and Easton (2004) model |
| Core et al. (2008) | 93,093 firm-year observations (1971-2002). | USA | The modified Dechow and Dichev (2002) model. | Three Factors of the Fama and French (1992), Target price method ($r_{DIV}$) |
| Kim and Qi (2010) | 103,682 firm-year observations (1970 – 2006) | USA | The modified Dechow and Dichev (2002) model. | Three Factors of the Fama and French (1992) |
| Ogneva (2012) | 81,340 firm-year observations (1971-2006). | USA | The modified Dechow and Dichev (2002) model. | Three Factors of the Fama and French (1992) |
| Gray et al. (2009) | 1992-2005 | Australia | The modified Dechow and Dichev (2002) model. | *IndEP*, Three Factors of the Fama and French (1992) |
| Wong (2009) | 1,534 firm-year observations (1992-2006). | Australia | The modified Dechow and Dichev (2002) model.<br>The modified Jones (1991) model and unexpected accruals and cash to profit | The earnings price ratio, PEG ratio (Easton 2004), the dividend discount model, the Ohlson and Juettner-Nauroth (2005) model and residual earnings model. |
| Othman (2012) | 461 firms (2000-2007) | Malaysia | Accruals quality extracted from Cohen (2008) model | Ohlson and Juettner-Nauroth (2005) model |
| Aboody et al. (2005) | 989,530 firm-month observations (1985 - 2003). | USA | The modified Dechow and Dichev (2002) model. | Three Factors of the Fama and French (1992) |
| Francis et al. (2008) | 677 firms. (1992-2000). | USA | The modified Dechow and Dichev (2002) model. | Three Factors of the Fama and French (1992), Target price method ($r_{DIV}$) |
| Li et al. (2009) | 1,067 firm-year observations (1999 -2004). | Australia | The modified Dechow and Dichev (2002) model. | Easton (2004) |
| Mouselli et al. (2012) | 5,723 firm-year observations (1997-2004). | UK | The modified Jones (1991) model by Dechow et al. (1995) | Fama and French (1993) model |

### *5.2.2 The association between other earnings quality proxies and the cost of equity capital*

The first sub-group discusses the most direct empirical evidence of the association between other earnings quality proxies and the cost of equity capital that comes from Francis et al. (2004). Generally, other previous studies used only one proxy to explain earnings quality e.g. McInnis (2010) and Bhattacharya et al. (2003) used smoothness; Barth et al. (2013) used timeliness; Li (2010b) and García Lara et al. (2011) used conservatism, Table 5-2 summarises these studies.

By using smoothness as a proxy for earnings quality, McInnis (2010) investigates the association between earnings quality and the cost of equity capital. He uses a cross-sectional regression analysis for 682,435 firm-month observations for 6,076 unique US firms over a period from 1975 to 2006. Earnings smoothness is measured as the standard deviation of earnings deflated by the standard deviation of cash flows from operations (both deflated by average total assets). He uses Value Line analysts' forecasted target prices as a proxy for the cost of equity capital. He uses firm size, beta and book to market ratio as control variables.

McInnis (2010) finds an insignificant association between earnings smoothness and average stock returns at either the firm or the portfolio level. He offers evidence that the main reason of the significant association between earnings smoothness and the implied cost of equity capital is optimistic bias in analysts' long-term earnings projections.

Also, Bhattacharya et al. (2003) examine the association between the country level cost of capital and earnings opacity; this consists of three additional constructs[10]: earnings aggressiveness; loss avoidance; and earnings smoothness. They analyse financial statements from 34 countries for the period from 1984 to 1998 (58,653 firm-year observations). They use accruals to measure earnings aggressiveness. They measure the loss avoidance by determining firms with small positive earnings and firms with small negative earnings by calculating net income divided by lagged total assets. If the results

[10] They define the earnings opacity of a country as "the extent to which the distribution of reported earnings of firms in that country fails to provide information about the distribution of the true, but unobservable, economic earnings of firms in that country" (Bhattacharya et al. 2003, p. 642)

between 0 and 1 percent that means small positive earnings, and if the results between 0 and -1 percent that means small negative earnings. Then, there is a calculation of the ratio of the number of firms with small positive earnings minus the number of firms with small negative earnings scaled by their sum. The higher that ratio for a country, the higher the loss avoidance proxy. For the earnings smoothness measure, they follow Leuz et al. (2003) by using the cross sectional correlation between the change in accruals and the change in cash flows, both deflated by lagged total assets. They measures the cost of equity capital by using estimates from dividend yields and the international asset pricing model (Bekaert and Harvey, 1995). They use three factors as control variables: accounting standards, enforcement of accounting standards and managerial motivation.

They find that countries with high earnings smoothness have a higher cost of equity capital. However, this association turns to be insignificant when they change the measure of the cost of equity capital by using an international factor-pricing model. Since their study does no focus on earnings smoothness, Bhattacharya et al. (2003) offer no reasons for their different results.

By using earnings transparency (timeliness) as a proxy for earnings quality, Barth et al. (2013) investigate the association between earnings quality and the cost of equity capital estimates based on Fama-French and momentum factors (Four factors model). They use a sample of 51,612 firm-year observations for 6,237 US firms over a 27-year period (1974-2000). They measure earnings transparency by the explanatory power of earnings and the change in earnings for contemporaneous returns. They defend their view on focusing on the explanatory power because it captures jointly the association between earnings and the firm's underlying economics, and investors' understanding of this relationship. They use leverage, growth, and the magnitude of the earnings response coefficient in the returns-earnings relationship as control variables. They find that firms with more transparent earnings have a lower cost of equity capital as reflected in subsequent excess returns and subsequent portfolio mean returns. They find, also, that firms with high transparent earnings have a lower expected cost of equity capital.

By focusing on the contracting benefits of conservatism and exploring its impacts on the equity capital markets around the world[11]; Li (2010b) investigates, at the country level, the impact of conditional conservatism and timeliness on the cost of debt and equity capital. She uses an empirical design based on the classical Basu (1997) model and *ex-ante* measures of the cost of equity capital. Specifically, they measure conservatism by using a modified Basu (1997) model in the country-level, and they measure timeliness by using incremental $R^2$ of good news and bad news. Also, she uses the non-price-based model proposed by Ball and Shivakumar (2005) as a robustness measure for conservatism. The following four models are used to measure the cost of equity capital: Claus and Thomas (2001); Gebhardt et al. (2001), Ohlson and Juettner-Nauroth (2005); and Easton (2004). However, she uses the average of the four proxies as the proxy for the cost of equity capital in order to reduce biases and measurement errors in the regression analysis (Hail and Leuz, 2006). In addition, she uses *ex-post* stock returns proxy, as an alternative proxy for the cost of equity capital. This does not rely on analyst forecasts since it is computed as one-year-ahead realised buy-and-hold stock returns, adjusted for stock splits and dividends. She uses a sample of 430 country-year observations or 62,292 firm-years covering 31 countries and 16 years, from 1991 to 2006. She uses two types of control variables. Firstly, she uses firm specific control variables such as *BTM*, leverage, return variability, earnings variability, size, sales growth. Secondly, she uses country specific control variables such as legal origin; the effectiveness of a country's legal systems and securities regulations; the country creditor right index; and the level of market integration. After controlling the differences in legal institutions and securities regulations, she finds that firms from countries with high conservative financial reporting systems have significantly lower cost of equity capital.

By using formal asset pricing model to measure the cost of equity capital, and by using firm-level measure of conditional conservatism (as in Callen et al., 2010), García Lara et al. (2011) investigate, for a sample of 54,389 US firm-year observations for the period from 1975 to 2003, the association between conditional conservatism and the cost of equity capital by two-stage cross-sectional regressions (*2SCSR*). They argue that

[11] Watts (2003a) determines four reasons for existence of conservatism: contracting benefits, litigation costs, taxation benefits and political pressures for standard setters and regulators.

conditional conservatism would increase bad news reporting precision and, thereby, reduce information uncertainty and the volatility of future stock prices. They measure a conditional conservatism by using firm-specific measure drawn from (Callen et al., 2010) and then introduce it in a linear fashion into an excess returns model, which is controlled, also, for the known risk factors, beta, firm size, *BTM*, and momentum[12] (Fama and French, 1993; Barth et al., 2013). They measure the cost of equity capital by using asset-pricing tests such as Fama and French (1992) model and with implied cost of equity capital that introduced by Brav et al. (2005) as a robustness test. They find a significant negative association between conditional conservatism and the cost of equity capital. This association is robust to the use of different testing methodologies and measurement procedures. They indicate, also, that without properly enforced conservatism in accounting, firm disclosure is less precise and this might lead to greater uncertainty, greater volatility of future prices, lower market values and, finally, an increased cost of equity capital.

[12] They measure momentum by the buy-and-hold return for 11-month period ending 1 month prior to the end of the year. They argue for the addition of momentum as a control variable because high conservatism firms are more likely to have negative returns, and they want to ensure that the results are not an artefact of momentum.

**Table 5-2: Summary of studies on the relationship between other earnings quality proxies and the cost of equity capital**

| Author(s) | Sample | Country | Earnings quality Proxy | CoEC Proxy |
|---|---|---|---|---|
| McInnis (2010) | 682,435 firm-month observations (1975-2006) | USA | Earnings smoothness | Value Line analysts' forecasted target prices |
| Bhattacharya et al. (2003) | 58,653 firm-year observations (1984-1998) | 34 countries | Earnings aggressiveness, loss avoidance, and earnings smoothness | the classical constant growth dividend discount model and Bekaert and Harvey (1995) international asset pricing model |
| Barth et al. (2013) | 51,612 firm-year observations (1974-2000) | USA | Earning transparency (Timeliness) | Fama-French and momentum factors (Four factors model) |
| Li (2010b) | 62,292 firm-year observations (1991-2006) | 31 Countries | Conservatism and Timeliness | Claus and Thomas (2001), Gebhardt et al. (2001), Ohlson and Juettner-Nauroth (2005), and Easton (2004) |
| García Lara et al. (2011) | 54,389 firm-year observations (1975-2003) | USA | Conditional conservatism | Fama and French (1993) |

### *5.2.3 The association between the cost of equity capital and both innate and discretionary components*

Most of the literature, which examines the association between earnings quality and the cost of equity capital do not distinguish between the two components of earnings quality. These are the innate component, which is driven by economic fundamentals, and the discretionary component, which is driven by management choices. However, the earnings management literature suggests a difference between the imprecision of earnings quality arising from both components. Most of the literature that isolates earnings quality into the innate and discretionary components, tests the association between these components and the cost of equity capital. For example, Francis et al. (2005) investigate whether the innate component of accruals quality - representing economic fundamentals - and discretionary component of accruals - reflecting managerial choices- have the same cost of equity capital effects. Consistent with their predictions**,** they find that the innate component has substantially larger effects on the cost of equity capital than does the discretionary component (up to two to five times the effect). They point out, also, that information risk having lower effects on the cost of equity capital when it is due to discretionary decision than when it is due to firm-specific operating and environmental characteristics.

Two points con be concluded from the results of Francis et al. (2005). Firstly, the finding is consistent with the notion that the information uncertainty which results from operating a business (the innate component), is fundamental in the sense of dominating reporting uncertainty (the discretionary component). This can change easily from period to period and is largely the result of relatively short-term management decisions. This finding is consistent, also, with Guay et al. (1996) who document that in broad samples and over long time periods, accruals would contain a mixture of quality-increasing and quality-decreasing accruals (Francis et al., 2006).

Secondly, in the context of models in which information quality has the potential to have capital market effects, discretionary earnings quality lends itself more readily to an information asymmetry interpretation than does innate quality. In particular, a manager making a financial reporting decision as to how to account for an event or transaction would know the underlying economics of the event or transaction being reported. (It is possible that some or much of this information is known, also, to well informed analysts and investors). The manager can reduce the information disadvantage of uninformed investors (i.e., he can reduce information uncertainty) by selecting a more revealing accounting implementation. In contrast, the innate portion of earnings quality reflects economic fundamentals — volatility emanating from business models and operating environments — about which the manager, and potentially well informed investors, have a much smaller information advantage relative to market participants generally. As a result, it seems more (less) difficult to conceptualize the innate (discretionary) component of earnings quality as capturing an information asymmetry type notion. Viewed in this way, the differential capital market effects of innate and discretionary earnings quality have the potential to inform the debate about whether information asymmetry drives expected returns effects (Easley and O'hara, 2004) or whether the average level of information precision drives the observed expected returns effects (Lambert et al., 2007), with information asymmetry effects being largely diversifiable (Hughes et al., 2007).

Several studies report effects similar to those in Francis et al. (2005) regarding a substantially larger cost of capital effect of the innate portion of earnings quality compared to the discretionary portion. For example, Gray et al. (2009) use realised cost of debt, industry adjusted price earnings ratios and asset pricing regressions to test for the cost of capital effects of accruals quality in the Australian market. When they split

accruals quality into an innate portion and a discretionary portion, they find strong evidence that innate accruals quality is priced, whereas the discretionary portion has small and insignificant pricing effects. Gray et al. (2009) argue that the reason, for the discretionary earnings quality having an insignificant cost of capital effect, is because of the Australian institutional and regulatory factors which limit disclosure discretion.

However, Gray et al. (2009) results are unlike Francis et al. (2005) in some other points such as when total accruals is disentangled to innate and discretionary components. The cost of debt is affected significantly by the firm's innate accruals quality but there is a lack of a relationship between discretionary accruals and the cost of debt. This is consistent with their argument about the Australian environment. Also, another different result from Francis et al. (2005) is that the association between innate accruals quality and the cost of equity capital is driven merely by the innate accruals component, and there is no evidence that discretionary accruals affects the cost of equity capital.

Similarly, Cohen (2008) finds that total earnings quality (he uses four proxies for earnings quality) is priced significantly. He uses an instrumental variable technique to account for the portion of the choice of earnings quality (by using predicted values from a regression of earnings quality on variables likely to influence managerial choice). He finds the pricing effects for this portion of choice are insignificant. The finding of the discretionary component is consistent with the finding of Francis et al. (2005). Also, Liu and Wysocki (2008) find that, when one controls for innate determinants of earnings quality as measured by accruals quality, the remaining pricing effect is modest. In fact, they find that the pricing effect of accruals quality is insignificant when the sample is restricted to NYSE firms and one includes all innate determinants and all the other earnings quality and information asymmetry measures in the same regression.

Francis et al. (2008) investigate, also, the association between voluntary disclosure and the both component of accruals quality. They find an association merely between voluntary disclosure and innate earnings quality and not with the discretionary earnings quality. These findings are consistent with the view that earnings quality is a determinant of voluntary disclosure.

Finally, Demirkan et al. (2012) investigate the relationship between discretionary accruals quality, agency problems (diversification) and the cost of equity capital. In particular,

they investigate whether discretionary accruals quality changes amongst single-segment and multiple-segment firms and whether the discretionary accruals quality has an inverse effect on their cost of equity capital.

They find that, when compared to multiple-segment firms, the discretionary accruals quality has a more significant effect on single-segment firms. Also, they find, when compared to multiple-segment firms, that innate component of accruals is of poorer quality in single-segment firms. Moreover, if discretionary accruals component is constant, they find that multiple-segment firms have higher cost of capital than single-segment firms do. However, if the innate component of accruals remains constant, they find that, when compared to single-segment firms, the cost of equity capital is lower for multiple-segment firms.

### *5.2.4 Summary of first group of literature*

Based on the analysis of previous studies of the first group, the following points could be reached: (1) the literature indicates contrary views. Most notably, the association between accruals quality and the cost of equity capital remains unclear. Amongst others, Francis et al. (2005) argue that there is a significant negative association between the two variables, whilst Core et al. (2008) counter this argument by using two-stages cross sectional regression tests. However, the researcher could interpret the results of Core et al. (2008) as the research designs that fail to show significance for other asset pricing models, such as the CAPM or the 3-factor model. Also, they fail to show significance for an earnings quality factor. (2) Beyond the association between accruals quality and the cost of equity capital, there is insufficient research investigating the association between other accounting-based earnings quality proxies and the cost of equity capital. (3) There is a debate about the impact of other earnings quality proxies on the cost of equity capital, e.g., McInnis (2010) find no association between earnings quality measured by earnings smoothness and the cost of equity capital. However, other studies find a significant association between earnings quality measured by either value relevance or conservatism and the cost of equity capital. (4) The effect of earnings quality is not stronger or greater than the effect of other cost for equity capital determinants (nor would previous studies expect it to be). (5) The weight of the existing empirical evidence suggests, also, that the bulk of the cost of equity capital effect by earnings quality appears to be associated with the portion of earnings quality that is associated with innate component; the earnings

quality effects associated with the discretionary or reporting determinants are less important. (6) According to the researcher's knowledge, there is no study investigates individually the association between either predictability or persistence and the cost of equity capital. (7) Most previous studies, focusing on the impact of earnings quality on the cost of equity capital, have been conducted in the US. This limits the generality of findings vis-à-vis contexts beyond the US.

(8) There is a clear agreement to use the McNichols' (2002) modification of Dechow and Dichev's (2002) model as a proxy of accruals quality. (9) Previous studies did not agree about the measure of the cost of equity capital, a number of them used *ex-post* measures and the remainder use the *ex-ante* measures. (10) Most studies use beta, size, leverage and growth as control variables for the cost of equity capital regression, and few studies replace both leverage and growth with *BTM*. (11) Previous studies use different tools to test the association between accruals quality and the cost of equity capital (Average annual regression (Fama and MacBeth, 1973) vs. pooled OLS regression vs. two stages cross sectional regression (*2SCSR*)).

### 5.3 The Association between Earnings Quality and Information Asymmetry

Most empirical studies that investigate the association between accounting information quality and information asymmetry, focus more on disclosure quality as a proxy for the quality of accounting information rather than earnings quality, (e.g., Heflin et al., 2005; Brown and Hillegeist, 2007). Specifically, Heflin et al. (2005) investigate the association between disclosure quality and information asymmetry. They measure disclosure quality by analysts' evaluations of firms' various disclosure activities as compiled by the Association for Investment Management and Research (*AIMR* scores). They measure information asymmetry by using depth-adjusted effective bid-ask spreads. They find a negative association between effective trading costs and disclosure ratings. They find, also, a positive association between disclosure quality and market liquidity.

Also, Brown and Hillegeist (2007) investigate the association between the disclosure quality and information asymmetry. They measure disclosure quality by using *AIMR* scores, and they measure information asymmetry by using the probability of informed trade (*PIN*). They use a sample containing mainly large firms that are assessed by *AIMR* between 1986 and 1996. They find a negative association between disclosure quality and

information asymmetry. In addition, they find a negative association between *PIN* and the quality of annual reports and investor relations activities. In contrast, they find a significant positive association between information asymmetry that measured by *PIN* and the quarterly report disclosure quality. Finally, their findings suggest that disclosure quality affects information symmetry at the market by mitigating the likelihood of investors finding any private information, and trading based on such private information.

However, few studies investigate the association between earnings quality and information asymmetry (e.g., Jayaraman, 2008; Bhattacharya et al., 2013; Ascioglu et al., 2012). In particular, Jayaraman (2008) investigates the association between earnings smoothness and information asymmetry. He measures information asymmetry by both bid-ask spread and *PIN*. Earnings smoothness is measured as the difference between earnings volatility and cash flow volatility. Two distinct samples are used based on the measure of information asymmetry. The sample consists of 69,218 (18,625) firm year observations for the bid-ask spread (*PIN*) covering the period from 1988 to 2005 (1988 to 2001). He finds, when compared to firms with poor earnings smoothness, that firms with high earnings smoothness have both higher bid-ask spreads and *PIN*. He concludes that more informed trading occurs when earnings are smoother than cash flows. Also, he deconstructs earnings smoothness into innate and discretionary components, and finds that the discretionary component is associated with more informed trading and, therefore, high information asymmetry. This suggests that, on average, managers' exercise proactive discretion in the form of income smoothing to the vast amount of different information and reinforces the association between earnings smoothness (the accruals component) and informed trading.

Moreover, Bhattacharya et al. (2013) investigate the association between earnings quality and information asymmetry through trading cost (liquidity). They use a sample of 11,893 US firm-year observations for the period from 1998 to 2005. The adverse selection of bid-ask spread is used as a measure of information asymmetry. As employed by Francis et al. (2005), they use the McNichols' (2002) modification of Dechow and Dichev's (2002) model as a measure of earnings quality. Also, two other measures of earnings quality are used as sensitivity tests; these are the coefficient on the accruals quality factor mimicking portfolio (e-loading) introduced by Ecker et al. (2006), and the magnitude of

industry-adjusted operating accruals scaled by total assets. They use market capitalization, stock prices, trading volume and stock return volatility as control variables.

They find a negative association between accruals quality and market liquidity. Both innate and discretionary components of earnings quality have a significant effect on information asymmetry. However, the innate factors have a greater effect than the discretionary components.

Ascioglu et al. (2012) examine the impact of earnings management on market liquidity (information asymmetry). They use three measures for liquidity: the Amihud (2002) measure of illiquidity; the Kim and Verrecchia (2001) measure of disclosure quality; and the *PIN*. The sample consists of 326 NYSE firms from 1996 to 2001. They measure earnings management by using four measures: the McNichols' (2002) modification of Dechow and Dichev's (2002) model; dummy variable of tendency of managers to avoiding reporting losses; and Roychowdhury (2006) provides two measures to examine real earnings management and the level of abnormal discretionary expenses. They use the daily average closing price, standard deviation of daily returns, and average trading volume turnover as control variables for liquidity.

They find a significant association between earnings management activities, both accounting and real based earnings management proxies, with illiquidity as measured by either the Amihud (2002) model or the Kim and Verrecchia (2001) proxies. Specifically, they find a positive association between both absolute abnormal accruals and absolute level of discretionary expenditures with illiquidity. Finally, they find support that greater illiquidity related to firms with small reported earnings.

Based on the analysis of the previous studies of the second group, the researcher reached the following conclusions: (1) there are relatively few previous studies that investigate the association between earnings quality proxies and information asymmetry, and most of them used accruals quality as a proxy of earnings quality. (2) Previous studies appear to focus exclusively on US data. (3) Previous studies agree to use bid-ask spread and *PIN* as proxies for information asymmetry. (4) The majority of the studies use size, trading volume and standard deviation of stock returns as control variables for information asymmetry.

## 5.4 The Association between Earnings Quality and Analysts' Information Environment

Previous studies provide mixed evidence on the association between accounting information quality and analysts' information environment. The accounting literature focuses mainly on the association between firm disclosure quality and analysts following, (e.g., Lang and Lundholm, 1993; Lang and Lundholm, 1996). Healy et al. (1999) indicate that those firms with higher disclosure quality have greater numbers of analysts following them. Conversely, Barth et al. (2001) argue that, perhaps, the services of financial analysts become more valuable and in greater demand when the quality of accounting reports about the firm's value is at lower level. In a broader setting, Lehavy (2009) find that more analysts followed firms with less readable 10-K's, but they spend more effort and provide reports with more information content. Both studies suggest poor quality accounting reports lead to a greater number of analysts following these firms.

In particular, Lang and Lundholm (1996) investigate the association between the disclosure practices of firms and both the analysts following and the properties of the analysts' earnings forecasts. They use a sample of 751 firms (2,272 firm-years observations) for the period from 1985 to 1989. The informativeness of firms' disclosures is measured by Financial Analysts Federation Corporate Information Committee (FAF) ratings. The analysis in the FAF report (1985-1989) consists of evaluations of the informativeness of a firm's disclosures through three dimensions: annual reports; quarterly and other reports; and investor relations and related aspects. There are four dependent variables, which are measured as follows: (1) number of analysts following measured by the number of analysts providing annual earnings forecast. (2) Forecast dispersion measured by the inter-analyst standard deviation of forecasts scaled by stock price. (3) Forecast accuracy measured by the negative of the absolute value of the analyst forecast error scaled by stock price. (4) Revision volatility measured by the standard deviation of median forecast changes, scaled by the stock price as of the beginning of the fiscal year. For analysts following regression, they use, as control variables, firm size, the standard deviation of return on equity and the historical returns-earnings correlation. For the forecast dispersion, accuracy and revision volatility regressions, they use firm size,

returns-earnings correlation, standard deviation of ROE, earnings surprise[13] and the per cent of new forecasts as control variables.

They find that firms with more informative disclosure policies have a larger number of analysts following, higher financial analysts' forecasts accuracy, less financial analysts' dispersion and, finally, less forecast revisions volatility. In particular, analysts' forecasts dispersion reduces with the greater quality of annual report disclosure and better investors' relations. However, there is no relationship between analysts' forecasts dispersion and the quality of the other corporate communications e.g., press release and quarterly reports. They find, also, that the accuracy of analysts' forecasts improves with better quality of other corporate communications and investor relations. However, there is no significant relation between the accuracy of analysts' forecasts and the quality of annual reports disclosure. They suggest, also, that the potential benefits of disclosure are increasing numbers of investors following the firm, mitigating estimation risk and reducing information asymmetry.

Moving to the association between earnings quality and analysts' information environment, Bradshaw et al. (2001) investigate the association between firms with high accruals and two types of professional investor intermediaries which are analysts and auditors. They aim to establish whether they give investors suitable information related to the future earnings problems of firms, which have poor accruals quality. Firstly, they investigate the earnings forecasts of sell-side analysts. Secondly, they examine the behaviour of independent auditors. They use a sample of 66,762 firm-year observations for the period from 1988 to 1998. They measure accruals quality by using a refine version of the Sloan (1996) model. They conduct their analyst forecast tests across fiscal months by using the median *I/B/E/S* forecast of the current year annual earnings. They investigate whether analysts impound fully the information in last year's accruals in their forecasts of this year's forecast errors. For auditor opinion and auditor changes, they collect data from the *COMPUSTAT* database; this provides six codes for the audit opinion: unaudited; unqualified; qualified; no opinion; unqualified with explanatory language; and adverse.

[13] They measure earnings surprise by the random walk forecast error deflated by price.

The results show that both analysts and auditors do not indicate in their reports any future earnings problems related to poor accruals quality.

Abarbanell and Lehavy (2003) investigate the association between the recognition of unexpected accruals and the presence of the two asymmetries in distributions of forecast errors. They recommend that firm reporting choices play a significant role in determining analysts' forecast errors. They use a sample of 33,548 observations for the period from 1985 to 1998. They measure unexpected accruals (earnings management) by using the modified Jones (1991) model by Dechow et al. (1995). They find that large negative unexpected accruals, which are largely negative and are included in reported earnings, go hand in hand with cross-section observations, which generate the tail asymmetry. They find, also, that, in the distributions of forecast error, the middle asymmetry is eliminated when the reported earnings component of the earnings surprise is taken away from the unexpected accruals.

By presenting earnings level as an essential control variable for earnings in the association between forecast error and earnings predictability, Eames and Glover (2003) investigate the relationship between analysts' forecast error and earnings predictability. They use a sample of 1,335 firms (29,432 firm-year observations) through the period from 1987 to 1999. They measure earnings predictability as the standard deviation of the percentage change in quarterly earnings from one year to another. Also, they measure the earnings level as the realised earnings for the current year deflated by lag in the value of the equity market. They use, as control variables, firm size, earnings level and value line timeliness ranking. After controlling the level of earnings, they find an insignificant association between earnings predictability and error in analysts' forecasts.

After controlling for operating uncertainty, Lobo et al. (2012) investigate the association between accruals quality and analysts following. They measure accruals quality by using the McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis et al. (2005). They measure analysts following as the number of analysts with annual earnings forecasts for the current fiscal year. As control variables for the analysts following the firm, they use firm size, return volatility, market to book ratio, operating cash flow volatility, annual trading volume and annual stock return during the fiscal year. They use a sample of 3,432 US firms of the period from 1983 to 2004.

They find higher accruals quality leads to more coverage by financial analysts. However, they find that firms with high accruals quality have more analyst forecast errors and forecast dispersion. Also, they submit evidence that analysts provide more private information in response to earnings announcements from firms with lower accruals quality. Specifically, they find that the dispersion of analysts' forecasts is higher for firms with lower accruals quality immediately after an earnings announcement. This suggests that analysts use the earnings announcements as opportunities to introduce additional pieces of private information for these firms. They find, also, that, compared to the discretionary component, the innate component has a greater impact on financial analyst coverage. Moreover, they find a lower consensus (more private information) for firms with both lower innate and discretionary accruals quality. In addition, analyst forecast revisions contain more private information for firms with both lower innate and discretionary accruals, and greater volatility in cash flow.

Based on the analysis of previous studies in the third group, the researcher reached the following conclusions: (1) there is a limited number of studies, which investigate the association between earnings quality proxies and analysts' information environment proxies. These studies, also, produced mixed results. (2) All previous studies focus exclusively on US data. (3) Most of these studies use accruals quality as a unique proxy for earnings quality. The exception was Eames and Glover (2003) study, which uses earnings predictability as a proxy for earnings quality and find no association between earnings predictability and the analysts' information environment.

## 5.5 The Interaction between Earnings Quality and Different Capital Market Aspects

In this group, the researcher investigates the previous studies, which test the association between earnings quality proxies and, in the same study, the three aspects of capital market: the cost of equity capital; information asymmetry; and analysts' information environment. A number of studies use accruals quality as a unique proxy for earnings quality (e.g., Cohen, 2008; Bhattacharya et al., 2011). Some other use conservatism as a unique proxy for earnings quality (e.g., García Lara et al., 2014; Artiach and Clarkson, 2011). However, Verdi (2006) and Ng (2011) use multiple proxy to measure earnings quality. Moreover, all of the following studies use regression model to test their

hypotheses except Bhattacharya et al. (2011), who use path analysis to test their hypotheses.

Cohen (2008) investigates the determinants and economic consequences of earnings quality. He uses a sample of 18,264 US firm-year observations of 2,857 firms for the period from 1987 to 2003. He uses two proxies to measure earnings quality. The first proxy depends on Barth et al. (2001) model in which he runs a regression of future operating cash flows earnings components of on previous period. The second proxy is McNichols' (2002) modification of Dechow and Dichev's (2002) model as used by Francis (2005). He uses three proxies for capital market consequences: (1) the cost of equity capital, (2) the standard deviation of stock returns, and (3) idiosyncratic risk. For the cost of equity capital, he uses four proxies which are Claus and Thomas (2001); Gebhardt et al. (2001); Ohlson and Juettner-Nauroth (2005) as implemented in Gode and Mohanram (2003), and Easton (2004). He averages the four proxies to mitigate any measurement error in the cost of equity capital proxies. He measures stock return volatility as the standard deviation of daily stock returns computed over the 12 months following June of year *t*. In order to measure idiosyncratic risk, he starts, firstly, with total risk that is measured as standard deviation of stock returns; this includes both systematic and idiosyncratic components. Then, he measures idiosyncratic risk, as the residual variance from regressing stock returns on the CRSP value-weighted market index over a 12-month period.

He finds that firms with higher earnings quality have lower idiosyncratic risk. Nevertheless, he does not find evidence that firms with higher earnings quality have certainly a lower cost of equity capital. These results document that, although there is a significant association between earnings quality and total firm risk, this association is led by the idiosyncratic diversifiable risk component rather than the systematic, undiversifiable, risk component.

By using path analysis instead of regression; Bhattacharya et al. (2011) investigate the direct and indirect association between earnings quality (a proxy for information risk), and the cost of equity capital. They use information asymmetry as a mediator variable for the indirect association between earnings quality and the cost of equity capital. In addition, they use beta as an additional mediator variable. The sample consists of 920 to 1,040 firms per year, for a total of 12,648 firm-years observations during the period from

1993 to 2005. They measure the cost of equity capital by using two measures: (1) the Value line forecast based measure used by Botosan and Plumlee (2005); and (2) a realised returns based measure. They measure earnings quality by using three measures: (1) the Dechow and Dichev (2002) model, (2) the modified Jones (1991) model; and (3) a combined proxy for the above two models and earnings variability. They measure information asymmetry by two measures: the adverse selection component of the bid-as measured in the study of Huang and Stoll (1996), and *PIN*. They use beta, size and book to market factors as control variables.

For all earnings quality proxies, they find a significant negative association between earnings quality and the cost of equity capital for two paths, the direct path and the indirect path that used information asymmetry as a mediator variable between earnings quality and the cost of equity capital. In addition, by using indirect path that mediated by beta, they find a significant association between earnings quality and the cost of equity capital. Empirically, the results show that the direct path is much more important than the indirect path(s).

By studying the information consequences of conservatism in accounting for financial analysts, debt holders and stockholders, García Lara et al. (2014) investigate the following associations: Firstly, they investigate the association between current changes in conservatism and both past and future changes in information asymmetry. Secondly, they investigate the association between conservatism and past and future stock return volatility. Thirdly, they investigate the relationship between conservatism and the precision of analysts' forecasts. Fourthly, they investigate the association between conservatism and credit risk. Finally, they analyse the effect of changes in conservatism on changes in the expected cost of capital. They use a sample of 32,641 US firm-year observations for the period from 1976 to 2006. They measure conservatism by using the firm specific proxy as developed by Callen et al. (2010), based on the Vuolteenaho (2002) return deconstruction model. Also, they measure conservatism by using Khan and Watts (2009) model as a robustness proxy. They measure information asymmetry as the bid-ask spread; this is defined as the natural log of one plus the average daily bid-ask spread over the fiscal year scaled by the midpoint of the spread, as a percentage.

They measure, as a percentage, stock return volatility as the natural log of one plus the standard deviation of one year of daily stock returns ending at the end of the fiscal year.

For credit risk variable, it equals one if credit risk increases; zero if there is no change; and minus one if credit risk decreases. They measure the cost of equity capital by using Fama and French (1993) three factor model supplemented by the Carhart (1997) momentum factor. For control variables, they use for information asymmetry: a) litigation; b) leverage; c) size; d) market-to-book ratio; e) beta; and f) current period bid-ask spread. They use for returns volatility a) litigation; b) leverage; c) size; d) market-to-book; e) beta; and f) current returns volatility. However, for the cost of equity capital, they use a) returns volatility; b) bid-ask spread; c) leverage; d) beta; e) size; f) market-to-book; and g) litigation. For credit risk, they use a) returns volatility; b) bid-ask spread; c) leverage; d) beta; e) size; f) market-to-book; and g) litigation.

They find that an increase in firm-level conservatism leads to a reduction in information asymmetry, a reduction in stock returns volatility, an improvement of the accuracy of analysts' forecasts, a reduction in credit risk, and a reduction in expected cost of equity capital. Therefore, they conclude that conservatism improve the information environment of the firm.

By adopting signalling theory; Artiach and Clarkson (2011) examine the association among conservatism, the cost of equity capital and information asymmetry. They base their analysis on the pooled sample of 1,782 US firm-year observations during the period from 1985 to 1994 and, then, they supplement this analysis by conducting a year-by-year analysis, also, a rank regression analysis. They measure information asymmetry by using a direct disclosure measure based on the analyst ratings data published in the *AIMR* reports. For sensitivity purposes, they consider, also, two alternative proxies. Firstly, they employed idiosyncratic volatility as an indirect measure and, secondly, as the extent of analysts following (Botosan, 1997). They measure conservatism by using the Givoly and Hayn (2000) model and for sensitivity, they use the Khan and Watts (2009) model. They measure the cost of equity capital by using both the Easton (2004) PEG model ($r_{PEG}$) and the Gebhardt et al. (2001) industry model as a sensitivity test. They use beta, *BTM* and size as control variables for the cost of equity capital.

They find a negative association between firm-level conservatism and the cost of equity capital. Also, they posit that the strength of this association is conditional upon the firm's information environment; this is strongest if there is high information asymmetry and is weakest (possibly negligible) if there is low information asymmetry. Moreover, the

strength of the association drops steadily when there is an increase in the disclosure proxy. Also, they find that the results are robust to alternative proxies for three main variables: the cost of equity capital; conservatism; and information asymmetry.

By using Principal Components Analysis (PCA), Verdi (2006) extends Francis et al. (2004) by investigating the association between information risk and the cost of equity capital. He argues that the PCA solution is steady over the samples' of 18 years; this reinforces the confidence that the information constructs are stable over time. Furthermore, to the extent that each of the individual proxies measure the underlying construct with error, the aggregation technique can reduce measurement error and lead to more reliable estimates. He uses a sample of 11,890 firm-year observations during the period from 1983 to 2001. He aggregates 14 information risk indicators into three constructs: (1) uncertainty such as accruals quality, persistence, predictability, earnings smoothness, firm volatility and share turnover. (2) Information asymmetry such as a bid-ask spreads, share depth, firm age, the number of analysts following the firm, trade volume and share turnover. (3) Value relevance and timeliness. He tests, also, whether an increase in the information risk along the three identified dimensions increases the cost of equity capital. In addition, he benchmark the information constructs against the individual indicators to test whether the aggregated factors perform better than the individual proxies, and whether the results are consistent across individual indicators loading on the same factor. He uses beta, book to market ratio, firm size and industry membership as control variables for the cost of equity capital.

He finds a significant positive association between uncertainty and the cost of equity capital. However, this association is reversed in sign and becomes insignificant when he uses a proxy of the cost of equity capital as derived by Gebhardt et al. (2001). Also, he finds a significant negative association between information asymmetry and the cost of equity capital. On the other hand, there is no association between both value relevance and timeliness and the cost of equity capital. By employing uncertainty and value relevance, the analysis is robust to the use of the alternative cost of equity capital measures as investigated by Guay et al. (2011). In contrast, there is a sensitive association between the cost of equity capital and information asymmetry when he uses the alternative measures of the cost of equity capital derived from Guay et al. (2011). These

findings highlight the lack of consistency in the association between proxies for information asymmetry and the cost of equity capital.

By using liquidity risk as a mediator variable, Ng (2011) investigates the association between earnings quality and the cost of equity capital. The final sample consists of 306,624 firm-months from January 1983 to December 2008. Earnings quality is measured by different proxies, such as relevance and reliability of reported earning; management earnings forecasts frequency and accuracy; and analyst earnings forecasts coverage and consensus. Relevance is measured as $R^2$ of earnings from a time series regression of stock returns on levels of and changes in the firm's earnings. Reliability is measured by accruals quality, which measured by the McNichols' (2002) modification of Dechow and Dichev's (2002) model. Management forecasts from the First Call database are employed to measure voluntary earnings disclosures, management forecasts accuracy and frequency of annual and quarterly earnings per share (EPS). The measure of the number of analysts following and analysts' forecasts consensus are measured based on analysts' forecast of annual EPS for the current fiscal year end from I/B/E/S database. He measures coverage in year *t* by the average monthly number of analysts following the firm from *t-4* to the *t*. He measures consensus by dividing the standard deviation of EPS forecasts over the mean of EPS forecasts. He measures liquidity risk by using liquidity beta and he measures market risk by using market beta. He measures both of them by using monthly stock returns over the past five years.

The results show evidences that higher earnings quality leads to lower liquidity risk and further lower cost of equity capital. The results show, also, a negative association between information quality and market risk. Finally, the results show that a smaller impact of earnings quality on the cost of equity capital through market risk than through liquidity risk.

Based on the analysis of previous studies in the fourth group, the researcher reached the conclusion of the same findings, shown in the former three groups, for example, (1) there are a few previous studies that investigate the association between earnings quality proxies and different aspects of capital market. (2) Most of studies focus exclusively on US data. (3) Most of studies use accruals quality as a unique proxy for earnings quality. (4) There are mixed results for the association between earnings quality and different aspects of capital market.

## 5.6 The Association between IFRS and Earnings Quality

The main objective of this section is to explore the previous studies that examine, in terms of earnings quality, the differences between IFRS and other accounting standards. Therefore, the researcher classifies this section into two *sub*-groups: firstly, it discusses the differences between IFRS and DAS in terms of earnings quality; and, secondly, it discusses the differences between IFRS and US GAAP in terms of earnings quality.

In 1973, the International Accounting Standards Committee (IASC) was established in order to set International Accounting Standards (IAS) and to promote their acceptance globally. Generally, the original IAS were descriptive in nature and covered many alternative treatments. As a consequence of this flexibility and an ongoing lack of comparability among countries, in the late 1980s, there was much criticism of the IAS. Because of this criticism, the IASC began the Comparability Project in 1987. As a result of this project, the revised IAS, which came into force in 1995, reduced considerably the alternative treatments and increased the requirements on respect of disclosure (Nobes and Parker, 2012). In the second half of 1995, the IASC and the International Organization of Securities Commission (IOSCO) approved the accounting issues, which needed to be addressed, so the IOSCO would endorsed the IAS. The subsequent Core Standards Project resulted, once again in the IAS being revised substantially. In May 2000, the IOSCO send their endorsement of the IAS to the IASC that was supplemented by "reconciliation where necessary to address outstanding substantive issues at a national or regional level" (IOSCO, 2000). The Core Standards Project had brought about a wider worldwide recognition of the IAS (Leuz, 2003; Van Tendeloo and Vanstraelen, 2005).

According to the European Union (EU) regulations, all publicly traded EU firms were obligated in 2005 to change from local GAAP to IFRS. Therefore, from 2005 onwards, those firms were required to ensure that their financial reports were consistent with IFRS. The transition to IFRS was to be considered the biggest change in 30 years to financial reporting within the EU (Jermakowicz and Gornik-Tomaszewski, 2006). The ostensible objectives of adopting IFRS included improvements to the quality of accounting information and, thereby, the accomplishment of greater transparency, accuracy, timeliness and comparability of financial reporting across EU countries (Ball, 2006; Iatridis and Dimitras, 2013).

There are two main groups of literature in the debate on the relationship between IFRS and the quality of accounting information. The first group compare IFRS with Domestic Accounting Standards (DAS) in terms of earnings quality. The second group compares IFRS with US GAAP in terms of earnings quality.

### *5.6.1 IFRS versus DAS: the conflicting views*

This group has two main schools of thoughts, the proponents of the view that the adoption of IFRS enhances the quality of financial reporting to users, and the opponents to this view.

#### *5.6.1.1 The proponents*

The proponents contend that the adoption of IFRS enhance the quality of financial reporting to users i.e., investors compared to DAS. They support this notion by arguing that IFRS reduce the discretion in financial reporting and more capital market oriented. Therefore, it is more relevant and more comprehensive to investors than most DAS (e.g., Ding et al., 2007).

Consistent with the argument of Ewert and Wagenhofer (2012b), who document that level of earnings management could be reduced and financial reporting quality could be improved by tightening the accounting standards, a number of studies argue that, compared to many DAS, IFRS reduce the amount of reporting discretion. For example, Gassen and Sellhorn (2006) find that, during the period from 1998 to 2004, IFRS firms have more earnings persistence, less earnings predictability, and more conditionally earnings conservatism than German GAAP firms. Chen et al. (2010) find that, after IFRS was applied in EU countries, there are a modest improvement of the quality of accounting information as measured by less managing earnings, a smaller magnitude of absolute discretionary accruals and higher accruals quality. Also, Barth et al. (2008) find that, during the period from 1994 to 2003 (1,896 firm-year observations), there was a significant improvement in accounting quality after the voluntary adoption of IFRS in 21 countries. Iatridis (2010) finds that, for UK sample, IFRS has a positive impact on the quality of accounting information measured by less earnings management, more timely loss recognition and to more value relevant accounting information. Christensen et al. (2009) find that earnings reconciliation from UK GAAP to IFRS conveys information, and the market reacts positively to IFRS reconciliation announcements.

In addition, previous studies test the impact of IFRS on the investor responsiveness to earnings. They find that, after adoption of IFRS compare to DAS, there is an improvement in the general information environment, a greater number of analysts following the firm, less analysts' forecasts dispersion and greater analysts' forecasts accuracy (Ashbaugh and Pincus, 2001; Cuijpers and Buijink, 2005; Wang et al., 2008; Byard et al., 2011; Tan et al., 2011; Jiao et al., 2012; Horton et al., 2013; Choi et al., 2013). Also, they find that, after its adoption, IFRS have a positive impact on other capital market aspects. These include better liquidity (Daske et al., 2008; Shibly and Dumontier, 2014; Daske et al., 2013), and the synchronous movement of stock prices (Beuselinck et al., 2010). Moreover, a number of papers investigate the association between the adoption of IFRS and the cost of equity capital (Ball, 2006; Daske et al., 2008; Li 2010a). Most of them measure the cost of equity capital by using the *ex-ante* (implied) proxies. For example, Li (2010a) examines the impact of the mandatory adoption of IFRS in the EU on the costs of equity of firms from 18 European countries. Generally, she finds reductions in the cost of equity capital for firms in countries where the adoption of IFRS is mandatory. Furthermore, Li (2010a) finds that a significant reduction in cost of equity capital occurred only in countries where there is strong legal enforcement. However, other studies fail to find a significant negative effect of the adoption of IFRS on the cost of equity capital (e.g., Cuijpers and Buijink, 2005; Daske, 2006). Collectively, these studies suggest that firms that apply IFRS have better quality of earnings than DAS and a significant impact on the investor responsiveness to earnings.

#### *5.6.1.2 The opponents*

The opponents of this view argue that the form and contents of accounting standards are controlled by the characteristics of each country's institutional framework and its business environment. Therefore, many countries with distinct economic systems and business cultures use different accounting standards and it is that case that the use of IFRS does not enhance necessarily the quality of accounting information (Chen et al., 2010). Those opponents studies (e.g., Ball et al., 2003; Leuz, 2003; Ball and Shivakumar, 2005; Burgstahler et al., 2006) challenge the premise that the accounting standards alone lead to more (less) accounting information quality. They argue that the quality of accounting information is shaped by many other factors. These include legal institutions of countries; the power of the enforcement regime; the forces of capital market (e.g., the need to raise

outside capital); ownership and governance structure; and firms operating characteristics. For example, Ball et al. (2003) argue that, in four East Asian countries, namely, Thailand, Malaysia, Singapore, and Hong Kong, the financial reporting is commonly in low quality. This was despite their standards being derived from common law countries and International Accounting Standards that are widely viewed as higher quality than code law standards. They conclude that this is due to other adverse factors and not the accounting standards per se (Ball et al., 2003; Jeanjean and Stolowy, 2008). Therefore, if these factors remain the same, the accounting standard will have limited impact on the quality of accounting information (Hail et al., 2010).

In addition, a number of opponents argue that, following the adoption of IFRS, there had been no change or reduction in the quality of accounting information. For example, Van Tendeloo and Vanstraelen (2005) find that German firms, which adopt IFRS voluntary, have more discretionary accruals and a lower negative correlation between cash flows from operations and accruals than firms which report under the German GAAP. Similarly, by using a sample of Swedish publicly listed firms between 2003 and 2006, Paananen (2008) find that after the adoption of IFRS in Sweden, there was a reduction in earnings quality as measured by earnings smoothness, managing earnings towards targets, timely loss recognition and value relevance. Moreover, by using 1,146 firm-year observations from Australia, France, and the United Kingdom between 2005 and 2006, Jeanjean and Stolowy (2008) investigate the impact of the mandatory adoption of IFRS on earnings management. They find that, after the adoption of IFRS in these countries, there was no reduction in earnings management and it even increases in France. By using questionnaires and case studies, Beattie et al. (2011) find that the adoption of IFRS in the UK is not believed to have enhanced the quality of accounting information. More recently, Ahmed et al. (2013) find a significant increase in both earnings smoothness and aggressive reporting compared to benchmark firms that apply DAS.

Moreover, the effect of IFRS on the cost of equity capital is also examined in prior studies. Fox et al. (2013) use the interviews technique for 32 people involved in the financial reporting process in three countries: the UK, Ireland and Italy through the period of January 2006 to May 2007. They find that the most of interviewee show their scepticism regarding that IFRS would affect the cost of equity capital.

In summary, in terms of the quality of accounting information, the empirical studies of the comparison between IFRS and DAS produce mixed results. Therefore, it seems unsafe to attempt to draw conclusions on the impact of the adoption of IFRS on both earnings quality proxies and capital market aspects. Previous literature suggests that, on average, IFRS' positive impact does not occur equally in all countries. Also, it is important to have strict enforcement mechanisms and reporting incentives in order to benefit from the adoption of IFRS.

### *5.6.2 IFRS versus US GAAP*

The second group of literature focuses on the comparison of IFRS and US GAAP in terms of the quality of earnings. Previous studies suggest that there are significant differences between earnings reported under IFRS and US GAAP (e.g., Haverty, 2006; Ding et al., 2007; Hopkins et al., 2008; O'Connell and Sullivan, 2008; Henry et al., 2009). They document that earnings reported under IFRS may differ from earnings reported under US GAAP because of differences in reporting flexibility. Specifically, IFRS are viewed commonly as being more principles-based, whilst US GAAP, are more rules based (Ijiri, 2005; Bennett et al., 2006; Agoglia et al., 2011). Moreover, they argue that IFRS propose additional discretion and less guidance and, therefore, additional room for earnings management. Also, they are less examined and less comprehensive than the US GAAP (e.g., Benston et al., 2006; SEC 2008). For example, Evans et al. (2012) use a web-based case to compare the earnings management behaviour of firms under the US GAAP vs. IFRS. They find that, under IFRS, financial officers perceive higher levels of allowable reporting discretion than financial officers do under US GAAP, and the perception of higher levels of allowable reporting discretion leads to a greater likelihood of earnings management and a relative preference for accounting over real earnings management.

In this regard, the researcher organises the second group of literature into three *sub-groups*: (1) studies which used cross-countries methodology to compare between IFRS and US GAAP (e.g., Barth et al., 2008; Atwood et al., 2011). (2) Studies which used the German market to compare between IFRS and US GAAP because they are allowed to choose between them (e.g., Lin et al. 2012, Bartov et al., 2005; Van der Meulen et al., 2007), (3) Studies that use reconciliation form between US GAAP and IFRS (e.g., Harris and Muller, 1999; Gordon et al., 2008; Eng et al., 2014).

The first *sub*-group focuses on studies used cross countries methodology (e.g., Barth et al., 2008; Atwood et al., 2011). In particular, Barth et al. (2008) examine the association between the applied financial accounting standards (US GAAP or IFRS) and earnings quality. They identify earnings quality as accounting amounts that demonstrate less earnings management, more timely loss recognition, and higher value relevance. They base their results on two comparisons of accounting quality. Firstly, they use a sample of non-US firms, which applied IAS and matched them with American firms, which applied US GAAP in order to compare the amounts of earnings quality. Secondly, they use the following two samples, one for non-US firms, which reconcile earnings and book value of equity determined under domestic standards, i.e., neither IAS nor US GAAP; and the one for those US firms, which used Form 20-F to reconcile earnings and book value of equity determined under the US GAAP. They do so to compare the respective amounts of earnings quality between IFRS firms and those US 20-F firms under US GAAP. The sample covers firms from 24 countries adopted the IAS between 1995 and 2006.

Their results demonstrate that, commonly in terms of earnings management and timely loss recognition, US GAAP firms have higher amounts of earnings quality than IFRS firms. However, there in terms of either value relevance for stock returns or frequency of small positive net income, there are no significant differences between US GAAP and IFRS firms. In addition, the difference in earnings quality between US GAAP and IFRS firms is largely attributable to firms locate in countries of German/French legal origin. They find, also, that the IAS earnings quality amounts does not differ from those of US GAAP accounting amounts, which are reconciled from domestic standards and reported by non-US firms, which are cross-listed on US markets. They suggest that, although the IAS earnings quality amounts are lower than those reported by US firms using US GAAP, they are of comparable quality to reconciled US GAAP amounts as reported by cross-listed firms.

Also, Atwood et al. (2011) examine the differences in both earnings persistence and the association between current earnings and future cash flows between firms which applied IFRS, firms which applied US GAAP and firms applied Domestic Accounting Standards (DAS). Their sample consists of 58,832 firm-year observations collected from 33 countries during the period from 2002 to 2008. They find no significant difference in the persistence of positive earnings between firms reporting under IFRS and those reporting

under the US GAAP. However, losses reported under US GAAP are more persistent than losses reported under IFRS. Notwithstanding, they find that, compared to earnings reported under the US GAAP, earnings reported under IFRS related less closely to future cash flows. Moreover, they find that the association between earnings and future cash flows, reported under IFRS, is similar to the association between earnings and future cash flows which reported under DAS.

The second *sub*-group consists of previous studies focusing on German firms since they are allowed to choose between IFRS and US GAAP. For example, Lin et al. (2012) use a sample of German high-tech firms, which switched from US GAAP to IFRS (switching firms), to test the changes in the accounting quality for these firms. They find that, compared to those under US GAAP, accounting amounts under IFRS commonly shows more earnings management, less timely loss recognition, and less value relevance. Also, they indicate that the accounting quality of the switching firms is reduced after the transition to IFRS because the US GAAP application exhibits a higher quality of accounting information than that applied under IFRS.

Also, Bartov et al. (2005) find that German firms that applying the US GAAP have the highest earnings response coefficients when compared to firms that applying either IAS or German standards. However, as such, this finding is indirect evidence for differences in the amounts of accounting quality because earnings response coefficients are affected by factors, e.g., risk which is considered not necessarily as a proxy of accounting quality.

Similarly, Van der Meulen et al. (2007) show empirical evidence about the differences of earnings quality between US GAAP and IFRS. During a period from 2000 to 2002, they use a sample of 325 firm-year observations for 129 German new-economy firms. They examine four earnings quality proxies: value relevance; timeliness (as market-based proxies); earnings predictability; and accrual quality (as accounting-based proxies). As regards predictability, they find a significant difference between US GAAP and IFRS. However, this difference in earnings predictability does not seem to be fully valued by investors because there is no significant difference between the US GAAP and IFRS regarding the value relevance proxy. Also, they suggest that a number of technical differences between IFRS and US GAAP might be too complex to be captured fully by public investors.

The third *sub*-group focuses on reconciliations from non-US to US GAAP (SEC Form 20-F, Item 17 or 18). For example, for a sample of 31 companies from 1992 to 1996, Harris and Muller (1999) investigate whether US GAAP reconciliation amounts provide information beyond IAS amounts, whether investors value these amounts differently, and whether IAS or US GAAP is more highly associated with market values, stock prices, and returns. After controlling for IAS amounts for market value and return models, they find that US GAAP earnings reconciliation amounts are value relevant. In tests to examine which accounting method, IAS or US GAAP, produces amounts that are most highly associated with prices-per-share and security returns, they find, when compared to US GAAP amounts, a higher significant association between IAS amounts and stock prices. However, they find, when compared to IAS amounts, a higher significant association between US GAAP amounts and market values. Finally, their test of the association between market values and either IAS or US GAAP produces mixed results.

Moreover, Gordon et al. (2008) uses a reconciliation form to investigate differences in earnings quality proxies between US GAAP and IFRS for a sample of 328 foreign firms that list in the US market and report under IFRS from 1/1/2006 to 08/01/2008. These firms were subject to the same level of US regulatory scrutiny, but varying degrees of regulatory scrutiny in their home countries. They examining three questions: firstly, are earnings under IFRS lower/higher than earnings under US GAAP? Secondly, are earnings under IFRS less/more informative than earnings under US GAAP? Thirdly, they examine the sensitivity of the comparison of earnings proxies under the two accounting standards to home country incentives, institutions, and regulatory factors. Specifically, they investigate whether under IFRS or US GAAP these firms' managers faced different regulatory and reporting incentives. They use the following nine measures of earnings quality proxies: accruals quality; earnings persistence; earnings predictability; cash persistence; cash predictability; smoothness; value relevance; timeliness and conservatism.

For the first question, they find that, with the exception of relevance proxy, which is significantly higher under US GAAP than under IFRS, there are no differences in both accounting standards from using these earnings proxies. In addressing the second research question, they use three tests to compare the informativeness provided from both IFRS and US GAAP. Firstly, they test whether accruals – under IFRS and US GAAP

considered individually – show *incremental* informativeness above and beyond cash flows. They find that both IFRS accruals and US GAAP accruals are *incrementally* informative above and beyond cash flows. Secondly, they investigate whether the earnings reconciliation, defined as the difference between IFRS accruals and US GAAP accruals, is *incrementally* informative. They find that the earnings reconciliation shows *incremental* information content over cash flows and accruals, whether accruals are determined by IFRS or US GAAP. Third, following Dechow (1994) they test for relative information content of IFRS versus US GAAP. They find that US GAAP earnings exhibit higher relative information content than IFRS earnings.

On the subject of the third research question, they expand their initial analysis and consider whether institutions and financial reporting incentives affect the earnings proxies differently under IFRS or US GAAP. Since their sample contains the population of IFRS reporting, non-US and US-listed firms, they consider the variations in institutions and financial reporting incentives across their firms' home country jurisdictions. They consider the following country-level institutional characteristics and reporting incentives: legal origin, auditor, analysts following, investor protection, and enforcement. They find significant evidence of differences for some earnings attributes such as accruals quality, earnings predictability and value relevance under IFRS vis-à-vis US GAAP in countries with common law, strong auditors, more analysts following, and low investor protection e.g., the UK.

Eng et al. (2014) investigate whether accounting amounts reported under IFRS by firms cross-listed in the US as American Depositary Receipts (ADRs) are comparable to those reported under US GAAP. They compare the two samples on the basis of four earnings quality proxies e.g., value relevance, timeliness, accrual quality, and earnings predictability. They compare the four proxies for the same firms before 2007 when they reconciled to US GAAP and after 2007 when they began reporting under IFRS (pre- and post-IFRS for US ADRs[14]. They use a sample of 204 firm-year observations; 110 firm-year observations for ADRs that switched to filing under IFRS after 2007 and 94 firm-

[14] The SEC now allows foreign firms listing in the United States to use IFRS for their financial reports without reconciliation to US GAAP. Namely, reconciliation was no longer necessary when the financial statements are prepared in accordance with IFRS.

year observations for ADRs that continued to report or reconcile to US GAAP after 2007. They find that under US GAAP value relevance, timeliness, and accrual quality of accounting numbers are not significantly different than those under IFRS. As regards earnings predictability, the two systems are comparable after 2007. Overall, the evidence does not indicate any significant differences in earnings quality between reporting under US GAAP and IFRS.

In addition to the three *sub-groups*, there are a few studies test the difference between IFRS and US GAAP from the aspects of capital market e.g., information asymmetry. For example, Leuz (2003) investigates whether firms that apply IFRS versus US GAAP, exhibit differences in information asymmetry. The sample consists of 264 firms listed in the Germany's New Market from 1999 to 2000. This study benefits from the requirement in the Germany's New Market that firms trading there have to choose between IFRS and US GAAP for the purposes of financial reporting; despite following the same regulatory environment. Therefore, other institutional factors such as enforcement of accounting standards and listing requirements are still constant. In this setting, the results show no significant differences between the two types of standards. However, the impact of US GAAP reporting on information asymmetry is less than 3% of the impact of IFRS reporting. This finding is consistent with two interpretations. Firstly, this result suggests that IFRS and US GAAP are comparable standards in terms of their impact on reducing information asymmetry. However, the second interpretation has another point of view; despite differences in the two standards, firms have the same information asymmetry as firms which face the same market forces and institutional factors, resulting in similar reporting incentives.

Finally, the summary of the results of the second group studies follows the same categories: (1) for the cross-country group, the studies conclude that earnings management, accruals quality and timely loss recognition are different between IFRS and US GAAP. However, there is no significant difference between IFRS and US GAAP in both persistence and value relevance. (2) For German firms' studies, the conclusion is that there are significant differences between IFRS and US GAAP in earning management, accruals quality and predictability. However, there is no significant difference in value relevance; this was in agreement with the results of first group. In addition, they document that US GAAP exhibit higher earnings quality than IFRS;

however, the samples comprise only German firms and, therefore, inferences from them are not generalizable to firms in other countries. (3) For reconciliations form group, they find, with the exception of value relevance, no significant difference between IFRS and US GAAP in all earnings proxies. However, there are significant differences between both accounting systems, and this is in disagreement with other groups.

Overall, there is somewhat mixed evidence on whether there are significant differences between the two standards in terms of earnings quality, and it is difficult to determine which of the two standpoints has the upper hand. Although, previous studies suggest that firms, which apply IFRS, have positive impacts on the capital market, IFRS propose more discretion and less guidance and, therefore, additional room for earnings management. Also, they are less examined and less comprehensive than US GAAP. Nevertheless, those results have to be interpreted carefully because of concerns about self-selection bias. In addition, there is no clear study examines the differences between UK firms (applying IFRS since 2005) and US firms (applying US GAAP).

## 5.7 Summary

The main objective of this chapter is to discuss the previous empirical studies that examine the association between different earnings quality proxies. More specifically, in order to determine the gap in this literature, this chapter examines accounting-based earnings quality proxies, and three aspects of capital market, namely, the cost of equity capital, information asymmetry and analysts' information environment. This chapter is classified into five sections: the first group addresses the association between earnings quality and the cost of equity capital. This is followed by a discussion of the association between earnings quality and information asymmetry and, then, the association between earnings quality and analysts' information environment. Next, it discusses the interaction between earnings quality and different aspects of capital market. Finally, it discusses the association between IFRS and the quality of earnings. According to the analyses of previous studies, the following points could be concluded:

(1) There are controversies in the literature that examine the association between earnings quality and the three aspects of capital market. (2) Most of previous studies use accruals quality as a unique proxy for earnings quality; therefore, there are few studies that use the other earnings quality proxies in the literature. (3) There are few studies, which examine

the association between earnings quality and different proxies of analysts' information environment and, consequently, a lack of relevant literature. (4) The earnings quality effect is not stronger or greater than the effect of other cost for equity capital determinants (nor would previous studies have expected it to be). (5) The weight of the existing empirical evidence also suggests that the bulk of capital market aspects effect of earnings quality appears to be associated with the component of earnings quality that is associated with the innate component; the earnings quality effects associated with the discretionary or reporting determinants are less important. (6) Most previous studies focusing on the impact of earnings quality on the aspects of capital market have been conducted in the US. This limits the generality of findings vis-à-vis contexts beyond the US. (7) As regards earning quality, there is somewhat mixed evidence on whether there are significant difference between the US GAAP and IFRS. It is difficult to select which of the two viewpoints has the upper hand. However, on balance, the researcher suggests that firms, which apply IFRS experience positive capital market effects. Also, although IFRS are less comprehensive than US GAAP, IFRS propose more discretion, which lead to more earnings management. Notwithstanding, there is a need to interpret those results carefully because of concerns about self-selection. In addition, there is no clear study examines the differences between UK firms (apply IFRS since 2005) and US firms (apply US GAAP). All of these findings point to the importance of this study. The next chapter discusses the research hypotheses and methodology.

# Chapter 6: Research Design: Hypotheses and Methods

## 6.1 Introduction

In this chapter, the researcher discusses the research hypotheses regarding the relationship between earnings quality and capital market aspects. Then, moving to the methodological issues that are engaged in order to empirically test the hypotheses of the research. Methodology section begins with the measurement of earnings quality proxies. Next, discussing the main variables of capital market aspects: the cost of equity capital; information asymmetry; and the analysts' information environment along with the measures for each one of these variables. Next, discussing the control variables of each dependent variable. Then, moving to the research sample and the criteria used to determine this sample, including the data collection sources. Finally, it discusses the regression methods that used to test the research hypotheses and the assumptions of their validity.

## 6.2 Research Hypotheses

Collis and Hussey (2014) define research hypothesis as "an idea or proposition that is developed from the theory, which you can test for against empirical evidence using statistics." (Collis and Hussey, 2014, p.51). Based on the previous theoretical and empirical literature, this study examines the association between accounting-based earnings quality proxies and three capital market aspects in the UK market.

In particular, the theoretical and empirical studies in the accounting literature, as discussed before in chapter four and five, have investigated the associations between earnings quality and both the cost of equity capital and information asymmetry. The main hypothesis is that higher earnings quality is associated with lower information asymmetry and lower cost of equity capital. This hypothesis is based on the theory that high quality accounting information reduces information risk by reducing information asymmetry between informed and uninformed investors, which in turn, is expected to lower the cost of equity capital.

Theoretically, Easley and O'hara (2004) model examines how either private or public information affects the cost of capital of a firm. In their framework, the information asymmetry's source is between informed and uninformed investors. They argue that a

higher level of private information leads to higher levels of information asymmetry which increases the risk faced by uninformed investors when compared to informed investors. This risk is non-diversifiable which leads to uninformed investors asking for higher returns. Consequently, they conclude that firms can use the quantity and precision of information available to investors in order to affect their cost of capital.

Continuing, Lambert et al. (2012) investigate how the accounting information influences the cost of capital. In this regard, they find that the pricing effect as demonstrated by Easley and O'hara (2004), is diversifiable. Nevertheless, Lambert et al. (2012) document opportunities whereby the financial information quality could impact the cost of capital. In details, Lambert et al. (2012) design a setting based on the CAPM model. They choose their sample based on the correlation and covariance of firms' cash flows and, then they add the information of accounting reports as noisy information about future cash flows. They find that the quality of accounting information has both direct and indirect effects on cash flows of firm. For the direct effect, they find that the higher quality of accounting information leads to reducing the assessed variance and covariance of the cash flows of firms. Then, they show that in large economies, the 'variance' effect is diversifiable, but the 'covariance' effect is non-diversifiable. Moving to the indirect effect, they find that the higher quality accounting information leads to unambiguous reduction of the cost of capital. Based on this result, they conclude, theoretically, that the quality of accounting information has a negative association with the cost of equity capital in the cross section, even with diversification opportunities.

In summary, both Easley and O'hara (2004) and Lambert et al. (2012) conclude that lower information quality leads to higher information risk which translates into non-diversifiable risk and leads to a higher cost of capital.

Empirically, in terms of the cost of equity capital, many studies investigate the association between the cost of equity capital and earnings quality. Most use accruals quality as a unique measure for earnings quality (e.g., Francis et al., 2005; Core et al., 2008; Ogneva, 2012; Gray et al., 2009; Kim and Qi, 2010). A few studies use another unique proxy to measure earnings quality (e.g., McInnis, 2010; Bhattacharya et al., 2011; García Lara et al., 2011; Barth et al., 2013). Some use a number of different proxies to measure earnings quality (e.g., Francis et al., 2004; Wong, 2009). In terms of the accruals quality proxy, previous studies agreed that there is a negative association between accruals quality and

the cost of equity capital except Core et al. (2008) who counter this argument. Most of the studies focus on US data except Gray et al. (2009) who focus on Australian data and Mouselli et al. (2013) who focus in the UK data. In terms of other accounting-based proxies, there are few studies that examine the association between these other proxies i.e., persistence, predictability and smoothness and the cost of equity capital with also mixed results. Therefore, the following hypothesis investigates whether there is a negative association between earnings quality and the cost of equity capital in the UK after applying IFRS; in particular, the following hypothesis is examined:

*H1: Firms with high earnings quality have lower cost of equity capital than firms with low earnings quality.*

In terms of information asymmetry, there are few empirical studies investigate the association between earnings quality and information asymmetry and those produce mixed results (e.g., Jayaraman, 2008; Bhattacharya et al., 2013; Ascioglu et al., 2012). Also, all of them use US data and focus on accruals quality as a unique proxy of earnings quality. Consequently, the following hypothesis is examined.

*H2: Firms with high earnings quality have lower information asymmetry than firms with low earnings quality.*

Moving to analysts' information environment, the hypotheses are influenced by two streams of literature. The first stream of literature examines the association between accounting information quality and the number of financial analysts following a firm. For the first stream, the accounting literature focuses mainly on the association between analysts following and firm disclosure quality. Therefore, the main hypothesis is whether firms with high disclosure quality have a large number of analysts following (Bhushan, 1989). The main question centres on whether there is an association between the number of analysts following a firm and disclosure quality. The main issue is the association between the providing of information by a firm, and the supply and demand of analysts'

services (Bhushan, 1989). This association depends on the role of financial analysts in the capital market. Here, there are two opposing view. If the analysts act as information intermediaries between firms and investors, then high quality disclosure by the firm will consequently enhance the quality of services provided by analysts. As a result, this increases the demand for the analysts' services, and leads to an increase the number of analysts following that firm (Bhushan, 1989). However, if the analysts are considered to be primary information providers in competition with firms to provide directly accounting information to users i.e. investors, therefore, any increase in disclosure quality by a firm will reduce the demands for the analysts' reports. In this case, improved corporate disclosure leads to lower number of analysts following firms (Lang and Lundholm, 1996).

Empirically, previous studies provide mixed results on the association between the quality of accounting information and analysts following. Lang and Lundholm (1996) find that firms with more informative disclosure policies have a greater number of analysts following. Also, both Healy et al. (1999) and Botosan and Stanford (2005) findings suggest a positive association between disclosure quality and analysts following. Conversely, Barth et al. (2001) and Lehavy (2009) find that poor quality of accounting information disclosed by a firm leads to larger number of analysts following that firm. This is because their reports are likely to become more valuable and in greater demand by investors. Further, in terms of earnings quality, Lobo et al. (2012) find a negative association between accruals quality and analysts following after controlling for operating uncertainty. Overall, the question of whether the quality of accounting information has a significant impact on financial analysts following is still unclear. In order to shed further light on this issue, the following hypothesis is tested:

*H3: Analysts following are higher for firms with high earnings quality than firms with low earnings quality.*

The second stream of literature examines the association between accounting information quality, and analysts' forecasts dispersion and accuracy. The direction of the association between the quality of accounting information and analysts' forecasts dispersion relies on whether the differences among analysts' forecasts are because of the differences of information available by firms or the differences in the forecasting models that analysts use (giving different weights to information) (Lang and Lundholm, 1996). If analysts use a common forecasting model and receive the same accounting information with some private information from a firm, they will give less weight to private information if the quality of accounting information is high. This leads to a lower dispersion among analysts forecasts. However, if analysts use different forecasting models and have the same public and private accounting information, in that case, higher quality in accounting information may lead to different conclusions amongst analysts; thus, a higher dispersion of analysts' forecasts (Lang and Lundholm, 1996).

Moving to analysts' forecasts accuracy, the impact of the quality of accounting information on analysts' forecasts accuracy seems to be clear, to the extent that high quality of accounting information provided by the firm will increase the informativeness about that firm (Hope, 2003a; Lang and Lundholm, 1996). Therefore, the analysts will be more reliant on the financial information in the annual report. This will help the analyst to accurately predict the future earnings. Consequently, high quality of accounting information increases the accuracy of analysts' forecasts.

Empirically, while there is an extensive literature on the dispersion and accuracy of analysts' forecasts, very few studies examine the impact of earnings quality on analysts' forecasts dispersion and accuracy (e.g., Lobo et al., 2012; Eames and Glover, 2003), with the majority focusing on the impact of disclosure quality (e.g., Lang and Lundholm, 1996; Barron et al., 1999; Hope, 2003a; Irani and Karamanou, 2003; Vanstraelen et al., 2003). In terms of earnings quality, Lobo et al. (2012) investigate the association between accruals quality and both analysts' forecasts dispersion and accuracy. They find that firms with lower accruals quality have larger analysts' forecast errors and high forecasts dispersion. However, Eames and Glover (2003) test the association between earnings predictability and analysts' forecasts error and find no significant association. Therefore, these findings provide evidence that earnings quality is a multifaceted construct and the use of different proxies of earnings quality leads to different results. Overall, there are

mixed empirical results for the association between earnings quality and financial analysts' forecasts dispersion and accuracy. Therefore, the researcher tests the following hypotheses:

*H4: The dispersion of analysts' forecasts is lower for firms with high earnings quality than firms with low earnings quality.*

*H5: The accuracy of analysts' forecasts is greater for firms with high earnings quality than firms with low earnings quality.*

The models, used to examine the association between earnings quality and the three capital market aspects, do not distinguish between the innate and discretionary components of earnings quality. The innate component reflects the uncertainty due to intrinsic economic fundamentals such as operating environment and business models of the firm. However, the discretionary component arises from the financial reporting process, which includes: the managerial decisions; the information systems quality which support the financial reporting in the firm, corporate governance activities and the financial reporting standards e.g., IFRS or US GAAP (Francis et al., 2004; Francis et al., 2005). The earnings management literature suggests a difference between the imprecision of earnings quality that arises from both components. Prior literature that isolates earnings quality into the innate and discretionary components, tests the association between these components and the cost of equity capital. For example, Francis et al. (2005) follow the lead of the earnings management literature and examine whether the innate and discretionary components of accruals have different effects on the cost of equity capital using a sample of US companies. They find that, when compared to the discretionary component, the innate component has a larger impact on the cost of equity capital. However, Gray et al. (2009) re-examine the same association in the Australian market and find that the association between total accruals quality and cost of equity capital is driven by the innate component, with no evidence that the discretionary component affects the cost of equity capital. Also, there are few studies that test the impact of these components on information asymmetry. Consequently, the following two hypotheses examine whether the effects of each earnings quality component is the same on either

information asymmetry or the cost of equity capital in the UK market, especially after the adoption of IFRS (considered to be a factor shaping the discretionary component). Specifically, the following hypotheses are tested:

*H6: Both innate and discretionary components have the same impact on the cost of equity capital.*

*H7: Both innate and discretionary components have the same impact on information asymmetry.*

Although, previous studies, e.g., Leuz et al. (2003), document that earnings management potentially plays an important role in explaining the ability of stock market participants, e.g., analysts, to forecast future earnings, there are few studies that examine the association between the components of earnings quality and analysts' information environment. To add to the literature, the researcher examines whether the impact of the innate and discretionary components are the same on analysts' information environment proxies. The following hypotheses are examined:

*H8: Both innate and discretionary components have the same impact on financial analysts following.*

*H9: Both innate and discretionary components have the same impact on financial analysts' dispersion.*

*H10: Both innate and discretionary components have the same impact on financial analysts' accuracy.*

Prior studies investigate earnings quality proxies in environment characterised by a sudden downturn brought on by a financial crisis. For example, Graham et al. (2000) investigate the association between earnings quality and market prices in Thailand in the period before and after the 1997 devaluation of the baht. They find a changing in the value relevance of firms after the crisis and this changing in associated with the volatility of

foreign exchange gains and losses by these firms. Davis-Friday et al. (2006) find that value relevance changed during the Asian financial crisis in Indonesia, Malaysia, and Thailand. Choi et al. (2011) test the effects of the Asian financial crisis in earnings quality of nine Asian countries. They indicate that the loss of investor confidence and the increased use of opportunistic earnings management by the firms are due to breakdown of the credibility of discretionary earnings component. However, the impact on the information value of the innate earnings components was insignificant. Moreover, they conclude that the strength of a country's institutional infrastructure is associated with the deterioration in the information value of the discretionary earnings component. Recently, Filip and Raffournier (2014) investigate the impact of the financial crisis in 2008 and 2009 on earnings quality of European firms by using the means of earnings management. They use a sample of 16 EU countries for the period 2006–2009. They conclude that earnings management has decreased significantly in the crisis years compared with the previous years but this trend is not the same for all the countries in the sample. Iatridis and Dimitras (2013) examine the impact of the financial crisis in 2008-2009 on earnings manipulation and value relevance of firms in five different countries, Portugal, Ireland, Italy, Spain and Greece. They find that three countries of the sample, Portugal, Italy and Greece, tend to engage more in earnings management in their effort to increase their lower profitability and liquidity, and accommodate their higher debt and growth. Ireland exhibits less evidence of earnings manipulation, whereas the findings for Spain are to some extent conflicting. Kousenidis et al. (2013) use the same countries as previous study of Iatridis and Dimitras (2013) and investigate the impact of financial crisis on seven earnings quality proxies which are earnings management, persistence, predictability, smoothness, value relevance, timeliness and conditional conservatism. They find that most of earnings quality proxies improved during the crisis. On the other hand, earnings quality reduced in the presence of incentives of earnings management.

Using the financial crisis as a natural quasi-experiment, Francis et al. (2013) test the association between conservatism and shareholder value. They find that there is a significant positive association between conservatism and shareholder value during the crisis. To sum up, based on prior studies, there are mixed results on the role of the crisis on the quality of earnings. To add to the literature, the researcher examines whether the

financial crisis affects the association between earnings quality and both information asymmetry and the cost of equity capital. The following hypotheses are examined:

*H11: Financial crisis has a significant effect on the association between earnings quality and the cost of equity capital.*

*H12: Financial crisis has a significant effect on the association between earnings quality and information asymmetry.*

### 6.3 Research Methodology

Collis and Hussey (2009, p. 55) define the research methodology as regarding "the overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data". There are two types of research methodology which are widely regarded as being essential to make distinctions; these are the qualitative versus the quantitative research methodology (Bailey, 1978). The qualitative research methodology was first developed for the social sciences studies in order to allow researchers to study social and cultural phenomena. Thereafter, the quantitative research methodology was developed primarily to study the natural phenomena in the natural sciences. Quantitative research deals with data that can be counted, frequently making use of statistical tests of numbers in order to summarise and examine the information (Locke et al., 2010). In addition to the two latter research methodology approaches, there is another methodology approach called “triangulation”. The triangulation approach refers to the use of different sources of data and different research methods to examine the same phenomenon in a research. This helps in reducing bias in data sources, and methods. For instance, the use of interviews and questionnaires methods together to test the research hypotheses (Collis and Hussey, 2009; Saunders et al., 2009).

The choice between the three approaches depends on different criteria such as the objectives of the research, the hypotheses of the research and the nature of population that is being studied (Mariampolski, 2001). The quantitative research methodology is adopted for this study in order to collect and analyse data due to the objectives, the hypotheses and the nature of the population of this study.

In chapter four, the researcher discusses the suitable paradigm and the theoretical framework of this study. To continue, the researcher divides the research methodology section into the following four additional sub-sections as follows. The first section determines the measurement of earnings quality proxies, capital market aspects and control variables. Sample selection is the second step to do analysis then data collection for the sample firms from databases then insert them into a statistical computer package. In the third section, a univariate analysis is performed in order to report the descriptive statistics for the variables used in the multivariate analysis. Descriptive statistics present the mean, median, and standard deviation values of the variables for earnings quality proxies, capital market aspects and some firms' characteristics variables. Finally, different multivariate regressions are used to empirically test the hypotheses of this research. *STATA* computer software package is used to test the different hypotheses.

### *6.3.1 Earnings quality measurement*

According to previous studies, earnings quality is a multifaceted concept and represents different angles (Francis et al., 2004; Dechow et al., 2010; Walker, 2013). The researcher focuses on four earnings quality proxies: accruals quality, earnings persistence, earnings predictability and earnings smoothness, which are namely, the accounting-based earnings quality proxies (see Francis et al., 2004). These proxies demonstrate different angles of earnings quality (Francis et al., 2004; Dechow et al., 2010; Walker, 2013). In particular, accruals quality proxy reflects to what extent working capital accruals map into last-period, current, and next-period cash flow from operations (Dechow and Dichev, 2002). Therefore, the notion of using accruals quality as a proxy of earnings quality is based on the better this mapping explains the accruals, the lower is the residual from a regression based on these cash flows and the higher is the earnings quality. Moving to earnings persistence, it reflects to what extent there are stable, sustainable and less volatile earnings that is valued by investors (Francis et al., 2004; Perotti and Wagenhofer, 2014). Therefore, the notion of using earnings persistence as a proxy of earnings quality is based on the view that more sustainable earnings are of higher earnings quality. Similar to earnings persistence, earnings predictability reflects to what extent the current earnings are used to predict future earnings. Therefore, the idea of using earnings predictability as a proxy of earnings quality is predicated on the view that an earnings number, which is likely to repeat itself is of high quality. Consequently, both earnings persistence and

predictability are viewed as desired proxies of earnings because it helps increasing the precision of earnings forecasts.

As a proxy of earnings quality, it is unclear whether earnings smoothness represents high or low earnings quality (Dechow et al., 2010; Dichev et al., 2013). The common view suggests that earnings smoothness reflects the notion that managers use their private information about future earnings to smooth out transitory fluctuations earnings. Thus, they attain a more representative (normalized) reported earnings number. Therefore, current earnings that are more representative of future earnings, are of higher quality; consequently, smoother earnings point out higher quality earnings (Francis et al., 2006; Rountree et al., 2008). The next sub-sections discuss in details the measuring of each proxy of the accounting-based earnings quality proxies.

#### *6.3.1.1 Accruals quality*

Accruals quality (AQ) is defined as "the extent to which accruals map into cash flow realizations. This notion of accruals quality operationalize as the standard deviation of the residuals from firm-specific regressions of working capital accruals on last-year, current, and one-year-ahead cash flow from operations" (Dechow and Dichev, 2002, p.53). The measure of AQ is based on the model of Francis et al. (2005). This model is based on the modification of McNichols (2002) on Dechow and Dichev (2002) approach to estimate accruals quality. Specifically, the accruals quality proxy is based on the model of Dechow and Dichev (2002), along with the addition of two key variables from the modified Jones model, i.e., change in revenues and current property, plant and equipment (*PPE*):

$$\frac{TCA_{j.t}}{Assets_{j,t}} = \alpha_j + \beta_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \beta_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \beta_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \beta_{4,j}\frac{\Delta Rev_{j,t}}{Assets_{j,t}} + \beta_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + v_{j,t} \quad \text{Equation (6-1)}$$

Where:
$TCA_{j.t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t}$= total current accruals in year *t*.
$Assets_{j,t}$= average total assets of a firm in year *t* and *t*-1.
$CFO_{j.t}$ = operating cash flow of a firm in year *t*.
$\Delta CA_{j,t}$= change in current assets of a firm between year *t*-1 and year *t*.

$\Delta CL_{j,t}$= change in current liabilities of a firm between year *t*-1 and year *t*.
$\Delta Cash_{j,t}$= change in cash of a firm between year *t*-1 and year *t*.
$\Delta STDEBT_{j,t}$= change in debt in current liabilities of a firm between year *t*-1 and year *t*.
$\Delta Rev_{j,t}$= change in revenues of a firm between year *t*-1 and year t.
$PPE_{j,t}$= gross *PPE* of a firm in year *t*.

The Equation (6-1) is estimated for each of the 14 industry sectors with at least 12 firms in year *t*. Firm- and year-specific residuals which are consider to be the foundation for the accruals quality proxy are estimated on an annual cross-sectional basis: $AQ_j = \sigma(v_{j,t})$ is the standard deviation of the residuals of a firm, computed over year *t*-4 to *t*, large standard deviations of residuals indicating low/poor accruals quality. Nevertheless, if a firm has steady high residuals for a period of time, the standard deviation of these residuals will be small; hence this firm enjoys comparatively high accruals quality as a result of low uncertainty about its accruals. Whilst the accruals of such firm has a poor mapping into cash flows, this is an expected phenomenon, and does not have to be a motive for an uncertainty problem (Francis et al., 2005).

#### *6.3.1.2 Earnings persistence*

Earnings persistence refers to the earnings sustainability. Miller and Rock (1985) define earnings persistence as the present value of the change in anticipated future earnings because of current unexpected earnings. This study follows prior literature and measures earning persistence as the slope coefficient from regressing the current earnings on previous earnings (e.g., Francis et al., 2004; Richardson et al., 2005):

$$Earn_{j,t} = \emptyset_{0,j} + \emptyset_{1,j} * Earn_{j,t-1} + v_{j,t} \qquad \text{Equation (6-2)}$$

Where:
$\text{Earn}_{\text{j,t}}$ = net income before extraordinary items of a firm in year t.
$\text{Earn}_{\text{j,t}-1}$ = net income before extraordinary items of a firm in year *t*-1.

Equation (6-2) is estimated for each firm-year by using maximum likelihood estimation and rolling ten-year windows. This measure is based on the slope coefficient estimate ($\emptyset_1$) from Equation (6-2). Firms with higher value of $\emptyset_1$ have higher earnings persistence, hence higher earnings quality, while lower value of $\emptyset_1$ have higher transitory earnings, hence lower earnings quality (Francis et al., 2004).

#### *6.3.1.3 Earnings predictability*

Lipe (1990) defines earnings predictability as the ability of preceding earnings to predict future earnings. This study measures earnings predictability as the square root of the estimated error variance from the equation of earnings persistence as do Francis et al. (2004):

$$Pred_{j,t} = \sqrt{\sigma^2(\hat{v}_{j,t})} \qquad \text{Equation (6-3)}$$

Where:
$Pred_{c,t}$= earnings predictability of a firm in year *t*, calculated as the square root of the error variance from earnings persistence Equation (6-2).
$\sigma^2(\hat{v}_{j,t})$= the error variance of a firm in year *t* calculated from the earnings persistence equation. Thus, the higher (lower) of the square root of the estimated error variance, indicates the lower (higher) of predictability and lower (higher) of earnings quality.

#### *6.3.1.4 Earnings smoothness*

Investors usually search for gradually growing earnings with low volatility; this is because their expected return in this case will be positive. This earnings pattern is called earnings smoothness. This study measures earnings smoothness as the ratio of the standard deviation of the earnings of a firm, to its standard deviation of cash flow operations, both deflated by beginning total assets (Francis et al., 2004; Leuz et al., 2003; Pincus and Rajgopal, 2002).

$$Smooth_{j,t} = \frac{\sigma(Earn_{j,t}/Total\ Assets_{j,t-1})}{\sigma(CFO_{j,t}/Total\ Assets_{j,t-1})} \qquad \text{Equation (6-4)}$$

Where:
$Smooth_{c,t}$ = earnings smoothness of a firm in year *t*.
σ = standard deviation of a firm calculated over rolling ten-year windows.
$Earn_{j,t}$ = net income before extraordinary items of a firm in year *t*.
$CFO_{j,t}$ = operating cash flows of a firm in year *t*.

According to Equation (6-4), smoothness is considered as a ratio of earnings variability to cash flow variability. Leuz et al. (2003) document that the earnings variability should be less than the cash flow variability. Hence, firms with higher values of earnings smoothness have lower earnings quality.

In order to compare coefficient estimates across earnings quality proxies, the researcher ranks each proxy each year, and forms deciles. Firms in the bottom decile (decile 10) have the largest values of the proxy, whilst firms in the top decile (decile 1) have the

lowest values of the proxy. Given the definitions of the proxy measures, this ordering places firms with the worst (best) proxy outcome in the bottom (top) deciles. Earnings persistence is re-signed to be in the same direction as other three earnings quality proxies. Using the decile rank of each proxy instead of its raw value alleviates the effects of extreme observations (Francis et al., 2004; Francis et al., 2005).

### *6.3.2 The cost of equity capital measurement*

This study uses two different approaches to measure the cost of equity capital: earnings-price ratios and the implied (*ex-ante*) measures of the cost of equity capital that are derived from the dividend valuation model.

#### *6.3.2.1 Earnings-price ratios*

Penman (2007) uses the price-earnings ratio as an inverse measure of the cost of equity capital in order to examine whether higher earnings quality leads to a higher price-earnings ratio. In particular, this study examines the association between each earnings quality proxy and industry adjusted earnings–price ratios (*IndEP*). This is because the use of earnings–price ratios helps to manage concerns about the impact of small values of earnings on the denominator (Francis et al., 2005), and the addition of industry-adjustment follows Alford (1992) who concludes that the use of industry sectors work well for choosing firms that are similar in terms of both growth and risk (Francis et al., 2005).

In order to calculate *IndEP*, it first calculates the median of earnings-price ratios for all firms in each of the 14 industry sectors[15] which merely have positive earnings in the current year. Thereafter, the $IndEP$ of each firm is calculated as the difference between the earnings-price ratio of the firm and the median earnings-price ratio of the same industry in the same year. If investors place lower multiples as a result of lower earnings quality, larger *IndEP* values of those earnings that have lower quality is expected.

[15] There is a current year requirement of five positive earnings firms in each industry sector at the current year.

#### *6.3.2.2 Implied cost of equity capital proxies*

The cost of equity capital is a forward-looking concept based on expected cash flows, so it is not directly observable (Singleton-Green, 2014). Therefore, this thesis extends the literature by computing the expected cost of equity capital through the application of recent methods of accounting and finance literature. These methods estimate the cost of equity capital as an implied rate of return of a valuation model utilising financial analysts' consensus earnings forecasts and stock prices. The researcher uses four *ex-ante* measures that are derived from the classic dividend valuation model. These are, namely: the Price Earnings Growth ratio model (*PEG*) (Easton, 2004); the *modified PEG* model (Easton, 2004); the economy-wide growth model (Ohlson and Juettner-Nauroth, 2005); and the modified economy-wide growth model (Gode and Mohanram, 2003), In addition, in order to reduce biases and measurement errors in the regression analysis (Hail and Leuz, 2006), the researcher uses the average of the former four proxies as a proxy for the cost of equity capital.

Easton (2004) introduced the *PEG* method in order to measure the cost of equity capital. The *PEG* model ($r_{PEG}$) represents the classic dividend valuation model, because it assumes that abnormal earnings growth is zero and then the expected dividends in year $t + 1$ are also zero. Easton (2004) documents that the discounted dividend model could be simplified in the following equation, Equation (6-5), which he further uses to estimate the cost of equity capital. The reason beyond using Easton (2004) model as alternative proxy of the cost of equity capital, that Botosan et al. (2011) conclude that $r_{PEG}$ dominate the other models through embedding their associations with the firm-specific risk factors. Also, after adding the future realised return model and the impact of analysts forecast bias, they find that both analyses support the validity of $r_{PEG}$, because, as predicted by theory, it has a strong association with both firm-specific risk and future realised returns. Also, Botosan and Plumlee (2005) conclude that two proxies, which they consider to be, $r_{DIV}$ and $r_{PEG}$, are consistently and predictably associated with five firm-specific risk factors i.e., market risk, leverage risk, information risk, residual risk and growth.

$$r_{PEG} = \sqrt{\frac{E(eps_{t+2}) - E(eps_{t+1})}{P_t}} \qquad \text{Equation (6-5)}$$

Where:
$eps_t$= the consensus analyst forecasts of earnings per share at the period *t;* $P_t$= price of the share at the period *t.*

Also Easton (2004) shows a modified version of the PEG proxy as follows.

$$r_{MPEG} = A + \sqrt{A^2 + (E(eps_{t+2}) - (E(eps_{t+1}))/P_t} \quad \text{Equation (6-6)}$$

Where,
$A = E(dps_1)/2P_0$
$E(dps)$ represents forecasted dividends.

Turning to the economy-wide growth model, which Ohlson and Juettner-Nauroth (2005) introduced as a proxy of the cost of equity capital, this model depends on a number of assumptions on the classic dividend valuation model. These are, namely, the market's anticipations of short-term earnings and abnormal earnings that reflect the timeframe of forecasted earnings (Artiach and Clarkson, 2011). This proxy places an emphasis on abnormal earnings growth with no clean surplus accounting; this is a common requirement by previous models (e.g., Ohlson, 1995). The $r_{OJN}$ model differs from a traditional residual income model by determining EPS, instead of book value per share (PVPS), as the main forecasting benchmark; this is much easier to apply empirically.

$$r_{OJN} = A + \sqrt{A^2 + \left(\frac{eps_{t+1}}{P_t}\right) \times \left\{\frac{\frac{eps_{t+3} - eps_{t+2}}{eps_{t+2}} + \frac{eps_{t+5} - eps_{t+4}}{eps_{t+4}}}{2} - (\gamma - 1)\right\}} \quad \text{Equation (6-7)}$$

Where:
$A = \frac{1}{2}\left(\gamma - 1 + \frac{dps_{t+1}}{P_t}\right)$ and
$eps_t$= earnings per share at the period *t.*
$dps_t$= dividends per share at the period *t.*
$\gamma$ = the risk-free rate less three percent, whilst the three percent represents economy-wide growth.

From the economy-wide growth model, Gode and Mohanram (2003) developed a new version which is as follows:

$$r_{GM} = A + \sqrt{A^2 + \left(\frac{eps_{t+1}}{P_t}\right) \times \left\{\frac{eps_{t+2} - eps_{t+1}}{eps_{t+1}} - (\gamma - 1)\right\}} \quad \text{Equation (6-8)}$$

Finally, the mean of the four proxies of the cost of equity capital as follows:

$$r_{Mean} = \text{ The average of } r_{PEG}, r_{MPEG}, r_{OJN}, r_{GM} \qquad \text{Equation (6-9)}$$

### *6.3.3 Information asymmetry measurement*

In accounting literature, information asymmetry is often measured by the bid-ask spread on the share price, which reflects the risk in holding the stocks of the firms, if other things being equal. Improved the quality of accounting information should decrease both uncertainties surrounding the firm's prospects and any advantages that insiders may have through holding private information. These changes should allow market makers to decrease their bid-ask spreads (Singleton-Green, 2014). This study follows microstructure literature in measuring information asymmetry by using the bid-ask spread proxy (Huang and Stoll, 1996). Specifically, information asymmetry is measured by using the percentage quoted spread; this is the raw spread (ask – bid) deflated by the midpoint of the bid and ask quotes:

$$Pecentage\ Quoted\ Spread = \frac{(ASK - BID)}{(ASK + BID)/2} \times 100 \qquad \text{Equation (6-10)}$$

Also, the percentage effective spread proxy is used as a sensitivity measure for information asymmetry, this is multiplying the price twice minus the midpoint of the bid-ask spread deflated by the midpoint of bid-ask spread:

$$\%effectiveSpread_{jt} = \frac{2\left|Price_{jt} - MidPointSpread_{jt}\right|}{MidPointSpread_{jt}} \times 100 \qquad \text{Equation (6-11)}$$

This study is interested in examining the impact of earnings quality on information asymmetry generally rather than of at a particular announcement date. This is because; there is no exact date during the year to examine the most impact of earnings quality on investors. Although the financial information of the annual report is issued on specific days, it is difficult to define the date on which the financial information reached the stock market and impact on the investors' decisions. Therefore, the closing-day of stock prices and bid and ask quotes are used to estimate daily percentage quoted and effective spread. Then, a monthly mean percentage quoted and effective spread are estimated by using the daily percentage and effective spread, then a yearly mean percentage quoted and effective

spread are estimated by using the twelve months of the fiscal year. These averages "annual" quoted and effective spread are used as proxies of information asymmetry.

### *6.3.4 Analysts' information environment measurement*

This study uses the number of analysts following, analysts' forecasts dispersion and the analysts' forecasts accuracy as proxies for analysts' information environment. This is because they are more direct proxies of the impact of the quality of accounting information on analysts' information environment compared to other analyst-related proxies such as stock recommendation or the frequency of analysts' forecasts (Byard et al., 2011). This study measures analysts following as the maximum number of financial analysts forecasting annual earnings for a firm during the fiscal year *t*. In terms of financial analysts' dispersion, it measures by the standard deviation of financial analysts' forecasts in the fiscal year *t* deflated by stock price. Finally, financial analysts' accuracy is measured by the negative of the absolute value of the financial analysts' forecast error, deflated by stock price. The financial analysts' forecast errors are measured as the difference between the actual earnings per share and the median of forecasts by financial analysts of a firm in year *t*. The researcher uses the stock price as a dominator in analysts' dispersion and as measurement of accuracy in order to ease the comparisons across firms. Using the negative sign of absolute analyst's error for accuracy measurement is to represent the higher value since most analysts' forecasts are accurate.

Also, following Ali et al. (1992); Easterwood and Nutt (1999); and Thomas and Zhang (2002), the outliers for financial analysts' forecasts accuracy and dispersion are winsorised. For analysts' forecasts accuracy, any observations that have forecasts error for a firm greater than the related share price are treated as outliers. For analysts' forecasts dispersion, any observations that have forecasts dispersion of a firm greater than twenty percent were also winsorised from the sample.

As mentioned in the information asymmetry measurement section, this study, also, is interested to examine the impact of earnings quality on financial analysts generally instead of at a particular announcement date. Therefore, the three dependent proxies of financial analysts are based on the annual analysts' forecasts of earnings made which are calculated as the average of the proxy over the twelve months of the specific year (Lang and Lundholm, 1996). Finally, in order to mitigate the effects of the outliers, all variables

including earnings quality proxies and control variables are winsorised to the 1 and 99 percentiles (Francis et al., 2005).

### *6.3.5 Control variables*

The control variables are classified into three groups regarding the dependent variable: the cost of equity capital, information asymmetry and the analysts' information environment.

#### *6.3.5.1 Control variables of the cost of equity capital*

The hypothesised association between earnings quality and the cost of equity capital is based on the assumption that other variables are held constant. Previous studies suggest four control variables that may affect the cost of equity capital: firm size, beta (CAPM), leverage and growth (Francis et al., 2005; Gray et al., 2009). Therefore, the researcher adds those variables to the regression model. This study measures firm size as a log of total assets in year *t*. Beta (CAPM) is calculated from 5-year rolling data acquired from firm-specific CAPM estimations using monthly data; it requires a firm to have at least 20 monthly observations. Leverage is measured as the total interest bearing debt divided by total assets in year *t*. Finally, growth is measured as a log of 1 plus the percentage change in the book value of equity over the preceding 5 years. The researcher expects positive associations between the cost of equity capital and both beta and leverage (Francis et al., 2005; Gray et al., 2009). The researcher also expects negative associations between the cost of equity capital and both firm size and growth (Francis et al., 2005; Gray et al., 2009).

#### *6.3.5.2 Control variables of information asymmetry*

For information asymmetry, the researcher adds three control variables to the regression that may affect information asymmetry according to prior literature (e.g., Leuz and Verrecchia, 2000; Cohen, 2003; Bhattacharya et al., 2013). Those variables are: firm size, Trading volume and standard deviation of stock returns. The researcher expects a negative association between information symmetry and both firm size and trading volume, and a positive association between information asymmetry and standard deviation of stock returns (Stoll, 1978; Glosten and Harris, 1988; Leuz and Verrecchia, 2000; Cohen, 2003; Leuz, 2003; Bhattacharya et al., 2013).

#### *6.3.5.3 Control variables of analysts' information environment*

For analysts following regression, the researcher adds three variables to the regression which, according to the previous studies, may affect the analysts following. Those variables are: firm size, standard deviation of ROE and firm growth. Bhushan (1989) and Lang and Lundholm (1996) find a positive association between analysts following and both firm size and standard deviation of ROE. Cohen (2003) finds a significant positive association between firm's growth and the number of analysts following such a firm. Moving to the analysts' forecasts dispersion regression, the researcher adds four control variables that may affect analysts' dispersion: the log of total number of analysts following a firm, firm size, standard deviation of ROE and earnings surprise. Previous studies suggest a negative association between analysts' forecasts dispersion and firm size, because large firms are expected to have high quality disclosure, which in turn leads to greater analysts' forecasts accuracy and less analysts' forecasts dispersion. Also, since the opinion toward a single firm can be more diverse when more analysts' follow the firm, they document a negative association between analysts' forecasts dispersion and the log of number of analysts following. Moreover, previous studies suggest a positive association between analysts' forecasts dispersion and standard deviation of ROE and earnings surprise, because more performance may be more difficult to predict; thus, less accuracy and more dispersion of analysts' forecasts (e.g., Lang and Lundholm, 1996; Cohen, 2003; Eames and Glover, 2003; Lobo et al., 2012; Jiao et al., 2012). Finally, the researcher adds four control variables for the regression of analysts' forecasts accuracy: the log of number of analysts following, firm size, standard deviation of ROE and earnings surprise. Previous studies find a positive association between the analysts' forecasts accuracy and both number of analysts following and firm size. Also, they find negative associations between analysts' forecasts accuracy and both standard deviation of ROE and earnings surprise (e.g., Lang and Lundholm, 1996; Cohen, 2003; Eames and Glover, 2003; Lobo et al., 2012; Jiao et al., 2012).

### *6.3.6 Sample and data*

Table 6-1 presents the sample construction process. The initial sample of this study covers all non-financial firms listed on the London stock exchange during the period from 2005 to 2011. Two databases are used to collect data: firstly, the *DataStream* database, which offered by Thomson Reuters, secondly, the Institutional Brokers Estimate System

(1/B/E/S). This database was developed by the Lynch, Jones and Ryan brokerage house during the 1970s and represents the most comprehensive dataset in the earnings estimates industry. It provides earnings expectation data over a 30-year period for 35,000 firms worldwide. Both databases have excellent reputations for historical data and, amongst the practitioner and academic communities, are well-known for their high quality and depth. The *DataStream* database is used for earnings quality proxies, earnings-price ratio (the cost of equity capital main proxy), information asymmetry and the number of analysts following. The *I/B/E/S* Database is used for analysts' forecasts dispersion, analysts' forecasts accuracy and the implied cost of equity capital proxies (robustness tests).

Following the literature review, this study excludes the financial institutions from the sample because their financial reporting processes are unlikely to conform to other industries. Financial institutions, as regulated industries, use industry specific accounting rules and therefore differ in their incentives to earnings quality (Peasnell et al., 2005). There is regulatory monitoring of financial institutions that is related explicitly to accounting data. A consequence of such regulations is that it creates incentives for firms to manage their income statements and balance sheet variables in ways which are of interest to regulators (Healy and Wahlen, 1999).

Despite the overall quality of the two databases, there are numbers of missing and inconsistencies observations. In addition, this sample is restricted to two restrictions: (1) each firm requires at least seven consecutive years of data because accruals quality proxy is calculated as the standard deviation of five consecutive annual residuals. In addition, there is a need for both lead and lag cash flows in the regression of accruals quality (see Equation (6-1)). (2) Further, it is required that data on all four proxies of earnings quality are available for each firm-year. In total, there are 8,175 firm-year observations representing 28% of all companies which date is available in the *DataStream*. The number of firms each year ranges between 1,074 and 1,224.

Table 6-2 represents the industry composition of the sample observations. The industry membership is defined by ICBSSN returns stating the name of the ICB industry under which the equity is classified. The FTSE Industry Classification Benchmark (ICB) hierarchy provides eighteen industries, which can be used for the identification of macroeconomic opportunities for investment and trading decisions as given by the *DataStream* Database. Four

industries are excluded, namely, Banks and Financial Services, Insurance, Real Estate and Utilities. There are still fourteen industries as shown in Table 6-2.

**Table 6-1: The sample construction process**

| | Firm-year observations | Distinct firms | Percentage |
|---|---|---|---|
| Total Population | 29,030 | 4,346 | 100% |
| Missing Observations | 20,855 | 2,641 | 71.8% |
| EQ proxies ' observations | 8,175 | 1,705 | 28.2% |

**Table 6-2: the number of firms per industry for each year**

| **Industry** | **Number of Firms** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **Total** | **%** |
| Automobiles & Parts | 9 | 9 | 10 | 8 | 7 | 7 | 6 | 56 | 0.7% |
| Basic Resources | 38 | 44 | 52 | 66 | 78 | 99 | 116 | 493 | 6.0% |
| Chemicals | 20 | 21 | 22 | 22 | 20 | 23 | 23 | 151 | 1.8% |
| Construction & Materials | 43 | 42 | 40 | 37 | 36 | 38 | 37 | 273 | 3.3% |
| Food & Beverage | 41 | 41 | 37 | 39 | 39 | 39 | 40 | 276 | 3.4% |
| Health Care | 74 | 79 | 99 | 104 | 113 | 102 | 96 | 667 | 8.2% |
| Industrial Goods & Services | 296 | 314 | 316 | 324 | 324 | 311 | 299 | 2,184 | 26.7% |
| Media | 81 | 91 | 92 | 95 | 98 | 92 | 87 | 636 | 7.8% |
| Oil & Gas | 31 | 38 | 51 | 65 | 74 | 85 | 90 | 434 | 5.3% |
| Personal & Household | 78 | 74 | 72 | 69 | 62 | 59 | 59 | 473 | 5.8% |
| Retail | 84 | 88 | 83 | 75 | 70 | 64 | 56 | 520 | 6.4% |
| Technology | 163 | 165 | 184 | 188 | 186 | 172 | 157 | 1,215 | 14.9% |
| Telecommunications | 19 | 18 | 21 | 24 | 26 | 23 | 24 | 155 | 1.9% |
| Travel & Leisure | 97 | 96 | 94 | 91 | 91 | 91 | 82 | 642 | 7.9% |
| **Total** | **1074** | **1120** | **1173** | **1207** | **1224** | **1205** | **1172** | **8175** | **100%** |

### *6.3.7 Descriptive statistics*

Table 6-3 reports, for the pooled sample, the descriptive statistics on earnings quality, the three capital market aspects and firms characteristics. Mean and median values of AQ are 0.084 and 0.059 respectively; as a benchmark, Francis et al. (2004) provide mean and median values of 0.028 and 0.020, respectively. For persistence, the mean and median are 0.316 and 0.287; as a benchmark, Francis et al. (2004) provide mean and median values of 0.482 and 0.520 respectively. For predictability, the mean and median are 0.736 and 0.074 respectively. In comparison, Francis et al. (2004) provide mean and median values of earnings predictability as 0.876 and 0.536 respectively. Finally, the mean and median of earnings smoothness are 1.23 and 1.03 respectively. However, Francis et al. (2004) provide mean and median values of earnings smoothness as 0.640 and 0.578. These results indicate that, in the UK, the quality of earnings is less than the quality of earnings in the US. This finding provides initial evidence that that US GAAP is better than IFRS in terms of earnings quality, especially for earnings smoothness. In this regard, the results

show a double average for the UK sample compared to the US sample in the study of Francis et al. (2004).

Moving to dependent variables, it reports the mean and the median of *IndEP* are 0.036 and 0.009 respectively. For information asymmetry, the mean and median are 7.22% and 4.18% respectively. Bhattacharya et al. (2011) document mean and median of bid-ask spread in the US at 29% and 17% respectively, which indicate that the spread in US are narrower than the UK which is consistent with the study of Schwartz (1991). For analysts' information environment proxies, the mean and median of number of analysts following a firm are 6 and 3 respectively. Lang et al. (2003) document that the median of analysts following in UK market is around 4, Also, Mouselli and Hussainey (2014) document that the mean (median) of analysts following in UK market are around 10 (9). One explanation for a lower median number in the sample is the downturn in the financial industry during the period covered by the sample. Also, previous studies in the US indicate mean (median) analysts following to be around 13 (9) as shown in the study of Lobo et al. (2012) or 17(16) as the study of Lang and Lundholm (1996). For analysts' forecasts dispersion, the mean and median are 0.82 and 0.36 respectively. For analysts' forecasts accuracy, the mean and median are -0.46 and -0.04 respectively. Moreover, it reports summary information on selected financial variables. The mean of total assets are about £1,400 million and the median of total assets are about £62 million; the mean revenues are about £1,000 million and the median revenues are about £53 million.

**Table 6-3: Descriptive statistics on earnings quality, capital market aspects and firm characteristics, 2005-2011**

| Variable | n | Mean | Standard Deviation | 25% | Median | 75% |
|---|---|---|---|---|---|---|
| AQ | 8175 | 0.0838 | 0.0783 | 0.0354 | 0.0586 | 0.103 |
| Persistence | 8175 | 0.316 | 0.465 | -0.0029 | 0.287 | 0.61 |
| Predictability | 8175 | 0.736 | 3.841 | 0.0302 | 0.074 | 0.188 |
| Smoothness | 8175 | 1.233 | 0.846 | 0.708 | 1.034 | 1.466 |
| *IndEP* | 5203 | 0.0357 | 0.0906 | -0.0111 | 0.0088 | 0.0463 |
| *Information Asymmetry* | 6627 | 7.219 | 8.07 | 1.003 | 4.181 | 10.13 |
| *Following* | 5008 | 6.072 | 6.655 | 1 | 3 | 9 |
| *Dispersion* | 3344 | 0.82 | 0.015 | 0.14 | 0.36 | 0.78 |
| *Accuracy* | 4701 | -0.46 | 0.0229 | -0.12 | -0.04 | -0.01 |
| Total Assets (£mils) | 6985 | 1400 | 4900 | 14 | 62 | 360 |
| Market Value (£mils) | 7906 | 748.6 | 2900 | 9.28 | 38.56 | 217.9 |
| Revenue (£mils) | 6985 | 1000 | 3200 | 10 | 53 | 370 |
| ROA | 6973 | -0.036 | 0.252 | -0.0516 | 0.0347 | 0.0798 |
| EP Ratio | 5203 | 0.0988 | 0.0934 | 0.0495 | 0.0704 | 0.111 |
| Size | 6985 | 11.27 | 2.379 | 9.575 | 11.03 | 12.8 |
| Beta | 7950 | 0.889 | 0.687 | 0.413 | 0.821 | 1.287 |
| Leverage | 6963 | 0.182 | 0.201 | 0.0071 | 0.137 | 0.277 |
| Growth | 6287 | 0.577 | 1.294 | -0.111 | 0.449 | 1.133 |
| *BTM* | 6936 | -0.514 | 0.993 | -1.079 | -0.494 | 0.0953 |
| Trading volume | 7613 | 10.21 | 2.498 | 8.68 | 10.28 | 11.9 |
| σ(Return) | 7037 | 48.02 | 29.8 | 27.86 | 39.88 | 58.67 |
| *SURP* | 6961 | 0.187 | 0.556 | 0.013 | 0.044 | 0.133 |
| NegEarn | 8175 | 3.301 | 2.988 | 0 | 3 | 6 |
| OperCycle | 5413 | 4.819 | 0.835 | 4.357 | 4.812 | 5.215 |
| σ(CFO) | 8175 | 42 | 150 | 1.2 | 3.7 | 15 |
| σ(Sales) | 8175 | 220 | 680 | 3.6 | 16 | 87 |

Sample description and variable definitions: The sample contains firms with data on all four earnings proxies in a given year *t*, the total sample = 8,175 firm-year observations over 2005-2011 (14 industries). *IndEP* is the earnings–price ratio of a firm less the median earnings–price ratio of its industry. *Information Asymmetry* = the percentage quoted spread; this is measured as the difference between the annual mean of Ask price and Bid price deflated by Spread multiplied by 100. *Following* = the maximum number of financial analysts forecasting annual earnings for a firm during the fiscal year *t*. *Dispersion* = the standard deviation of financial analysts' forecasts in the fiscal year *t* deflated by stock price multiplied by 100. *Accuracy* = the negative of the absolute value of the difference between the actual earnings per share and the median of forecasts by financial analysts, deflated by stock price of a firm in year *t* multiplied by 100. Total Assets = total assets in millions in year *t*. Revenue = net revenues in millions in year *t*. *ROA* = Return on Assets in year *t*. EP Ratio = Earnings / Price in year *t*. Size = log of total assets in year *t*; Leverage = total interest bearing debt deflated by total assets in year *t*; Growth = log of 1 plus the changing percentage in the book value of equity over the past 5 years; The 5-year rolling pre-estimated Beta obtained from firm-specific CAPM estimations using monthly data; it requires a firm to have at least 20 monthly returns for this estimation; *BTM* = Book to market ratio in year *t*. Market value = market value of equity in year *t*. σ(Return)= standard deviation of stock returns over the preceding 10 years of a firm. Trading volume: total trading volume of a firm in year *t*. *SURP* = earnings surprise which calculated as the absolute value of the difference between the earnings per share for year *t* and *t*-1, deflated by stock price at the beginning of year *t*. σ(Return) = standard deviation of stock returns over the preceding 10 years of a firm. σ(CFO) = the standard deviation of operating cash flow of a firm computed over the preceding 10 years, σ(Sales) = the standard deviation of net revenue of a firm computed over the preceding 10 years, OperCycle = the log of operating cycle of a firm in year *t*, NegEarn = the number of years that a firm reported net income < 0 out of the preceding 10 years.

Table 6-4 reports the correlations between the decile ranking of the four earnings quality proxies. The results show statistically significant positive correlations across all four earnings measures. However, whilst all correlations are significant at the 1% level, none can be considered to be particularly high, with the highest being between smoothness and predictability at 0.35, whilst accruals quality is instead most highly correlated with persistence, but only then at 0.05. This finding, indicative of the notion that the four earnings quality proxies are not substitutes for each other, is consistent with prior studies that also document similarly low correlations (Francis et al., 2004; Bowen et al., 2008; Dechow et al., 2010). Whilst such low correlations may point to noise in the measurement of earnings quality they would seem also to suggest there are some significant differences in the underlying notion of earnings quality captured by each measure (Dichev et al., 2013). However, irrespective of this, they give a reason to expect that the four earnings quality measures may differentially affect the capital market, and thus, this finding strengthens the importance of the current study.

**Table 6-4: Correlation among earnings quality proxies**

| | AQ | Persistence | Predictability | Smoothness |
|---|---|---|---|---|
| AQ | 1.00<br>*<.0001* | | | |
| Persistence | 0.05<br>*<.0001* | 1.00<br>*<.0001* | | |
| Predictability | 0.03<br>*<.0001* | 0.21<br>*<.0001* | 1.00<br>*<.0001* | |
| Smoothness | 0.02<br>*<.0001* | 0.23<br>*<.0001* | 0.35<br>*<.0001* | 1.00<br>*<.0001* |

The total sample = 8,175 firm-year observations over 2005-2011 (14 industries). Pearson correlations are used. Significance levels are shown in italics.

### *6.3.8 Multivariate analysis*

Using a univariate analysis only may not be enough especially for complex data sets. Therefore, multivariate analysis is deemed to be more robust than a univariate analysis in detecting significant relationships between the dependent and independent variables on the grounds of its ability to control for the interrelationships between the independent variables. Multivariate analysis allows not only the examination of the collective impact of such variables but, also, the determination of which variables are best at explaining variations in the dependent variable (Gujarati, 2003). A significant relationship in a multivariate regression analysis implies that a specific independent variable has a

significant relationship with the dependent variable once the impact of other variables, which affect the dependent variables are controlled in the statistical model including one dependent variable and more than one independent variable. Additional and sometimes even contradictory results may be found through using multivariate analysis. Therefore, the results of the multivariate regression are given greater consideration in this study. This study uses three different multivariate regression methods: Fama and MacBeth (1973) regression, Newey and West (1987) pooled regression and panel data with fixed and random effects regression.

#### *6.3.8.1 Fama and MacBeth regression*

Following Fama and MacBeth (1973) method, the researcher evaluates the models based on independent variables for each of the seven years in the sample, then calculates the coefficients as the mean values of yearly coefficients. The *t*-statistic is calculated as $(\bar{x} \,/(\frac{s_x}{\sqrt{n}})$, where the *x*'s are the regression coefficients for the individual year, $s_x$ is the standard deviation of the regression coefficients across the years, and *n* is the number of years. As occurred in previous studies (e.g., Francis et al., 2005), the Fama-MacBeth analysis is performed for the full sample in terms of the period from 2005 to 2011. There are two advantages of adopting this approach as follows. Firstly, from an economic standpoint, the estimation of the regression equation on an annual basis addresses the potential serial correlation problem encountered in the data. Secondly, there may be information to be gained from the time-series pattern of the coefficients. By exploring the nature and strength of the relationship over time, the researcher can depict time-related changes on a systematic basis. For comparison purposes, the models are estimated by using Newey and West (1987) pooled regressions for the entire sample in the period from 2005 to 2011.

#### *6.3.8.2 Newey and West (1987) pooled regression*

This study uses a pooled regression (constant coefficients model) over the seven-year test period (2005-2011) in order to examine the association between earnings quality and different aspects of capital market. Compared to a cross-sectional approach, the main advantage of a pooled data is that it allows the researcher far greater flexibility in modelling differences in behaviour across firms (Greene, 2012). Also, pooled data can improve the identification of significant relationships and the effects of measurement

measuring effects; basically, these cannot be observed in both pure cross-sectional or pure time-series data (Gujarati, 2003). By combining the time series of cross-section observations, pooled data increase the sample size considerably and give more informative data, more variability among cross-sections and over time, less collinearity among variables, more degrees of freedom, and more efficiency (Gujarati, 2003, p. 637).

#### *6.3.8.3 Panel data with fixed and random effects*

In the last decade, the interest in panel data analysis has increased significantly (Greene, 2012). Such interest is driven mainly by the rich environment for the development of estimation techniques and theoretical results. Panel data is used in this study as a robustness test. Panel data analysis has primary advantages and disadvantages in relative to cross-sectional and time series analysis.

The main advantage of panel data analysis compared to cross-sectional analysis, is it gives the researcher more flexibility in modelling differences in behaviour across individuals. The researcher can pool individual time series across a number of units (e.g., firms) and analyse them simultaneously, because of the nature of this data (i.e., repeated observations over the same unit over a number of periods). As a result, the researchers can develop more complicated and realistic models in relative to either a single cross-section or a single time series. In addition, panel data estimators do not clarify only why individual units behave differently but, also, it enables them to carry out analysis pertaining to why individual units behave differently during different periods. Panel datasets are normally larger than cross-sectional or time series datasets, and the explanatory variables vary over at least two dimensions (e.g., individuals and time) rather than one. Consequently, estimators based on panel data are likely to be more accurate than from other sources (Verbeek, 2012). Verbeek and Nijman (1992) do a comprehensive analysis to choose among a pure panel data, a pure cross-section and a combination of these two data sources. They suggest that, when exogenous variables are included in the model and one is interested in the parameters, which measure the effects of these variables, typically a panel dataset would yield more efficient estimators than a series of cross-sections with the same number of observations. Another advantage of panel data is that it reduces identification problems. With panel data, it is possible to control for some types of omitted variables. In the case of a fixed effects estimator, the omitted variables that differ between cases, are controlled but are constant over time. On

the other hand, a random effects model controls for variables that vary which are different in each cases and over time (Hsiao, 2003).

However, the disadvantage of panel data can be summarised into the following points. Firstly, because observing the same units over time is repeated, it is usually no longer appropriate to assume that different observations are independent. This may complicate the analysis, particularly in nonlinear and dynamic models. Secondly, panel data suffer generally from the missing observation problem. However, Verbeek and Nijman (1992, p. 681) argued that 'missing observations are a rule rather than an exception in panel datasets'.

There are two types of panel data analysis are used in this research; these are the fixed and random effects models. The fixed effects model is simply a linear regression model in which the intercept varies over the individual units (e.g., firms) but still assume that the slope coefficients are constant through units. This model is estimated by introducing dummy variables to account for the individual (firm) effect (Gujarati, 2003; Wooldridge, 2010). It allows the researcher to use the changes in variables over time to estimate the effects of the independent variables on the dependent variable. However, there may be frequent instances when the fixed effects model has too many cross-sectional units. Consequently, there is a need for many dummy variables within its specification. It is accepted that too many dummy variables may have an impact upon the number of degrees of freedom and therefore on the statistical tests. Moreover, a model with many such variables may be plagued with multicollinearity; this increases the standard errors and thereby reduces the statistical power necessary to test parameters.

A random effect model is considered to be an alternative approach to the fixed effects model; the random effects model, assumes that the constant of an individual cross-sectional unit is a random drawing from more larger population with a constant mean value (Gujarati, 2003). Then, the individual intercept is considered to be a deviation from this constant mean value. Wooldridge (2010) argues that the ideal random effects assumptions include all the fixed effects assumptions plus the additional requirement that the constant is independent of all explanatory variables. One advantage of the random effects model over the fixed effects model is that it is economical in degrees of freedom (Gujarati, 2003).

In order to determine whether a fixed or a random effects model is more appropriate, a Hausman test is performed. Fundamentally, this test investigates whether there is a correlation between constant independent variables. This is because the fixed effects model produces consistent results when constant and independent variable are correlated, but the random effects model produces inconsistent result. A statistically significant difference (i.e., the existence of a correlation between constant and dependent variable) is interpreted as evidence against the random effects model.

#### *6.3.8.4 Regression Assumptions*

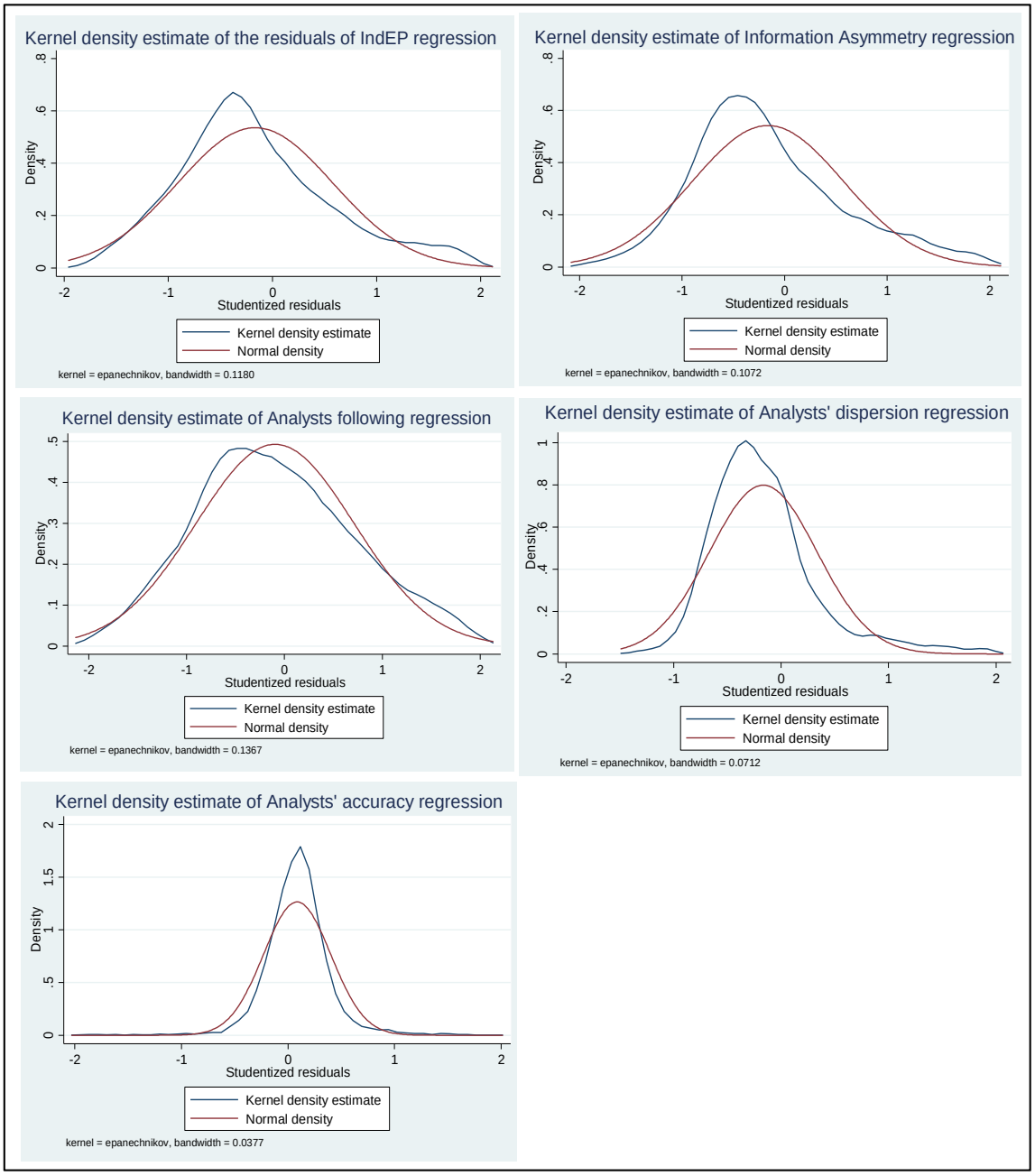
Based on earnings quality literature, the OLS regression is the most common method to test the statistical association between earnings quality and the three capital market aspects. It is important to check that the data have met the assumptions underlying OLS regression, to assure that the results are not distorted. These assumptions are normality, homogeneity of variance (homoscedasticity) linearity and no multicollinearity (Field, 2005).

##### *6.3.8.4.1 The normality of residuals*

The residuals (or error term) of the model are assumed to be normally distributed and have a mean of zero. This means that the difference between the fitted model and the observed data is close to zero. Lack of a normal distribution in the residuals does not affect coefficients or standard error of estimate (SEE), but it can affect confidence intervals and significance tests (especially for small samples). Residuals are measured by the difference between the observed value of the dependant variable and the value predicted by the regression line, and can be positive (when a case is above the line of best fit) or negative (when a case is below the line of best fit).

The researcher examines the assumption of normality using the Stata program as follows: first, the regression is conducted, then the researcher runs the predict command to generate the residuals of the regression model. Then, the researcher runs the Kdensity command to create a Kernal density plot with the normal option. Figure 6-1 shows the kernel density plot of the main regressions of this thesis. It indicates that number of regressions have a normality problem. This normality could be ignored as Gujarati (2003) and Brooks (2008) document, if the sample size is reasonably large.

**Figure 6-1: A kernel density plot**




### *6.3.8.4.2 Heteroskedasticity*

Any variance in the error term (residuals) is assumed to be constant and random for all values of the independent variables. If the variance of the residuals is non constant then the residual variance is called "heteroscedastic." The Breusch-Pagan and White tests are used to check the heteroskedasticity. The researcher uses the commands of hettest and imtest to run both tests. Table 6-5 indicates that the p-values are small, which leads to a rejection of the null hypothesis that the variance of residuals is homogenous. To solve

this problem, the researcher uses the Newey and West (1987) standard error pooled regression to control the heteroscedasticity and autocorrelation effects (Francis et al., 2005).

**Table 6-5: Heteroskedasticity tests**

| Regression | The Breusch-Pagan | | The White test | |
|---|---|---|---|---|
| | $Chi^2$ | p-value | $Chi^2$ | p-value |
| *IndEP* | 16.13 | 0.0001 | 140.21 | 0.0000 |
| *InfoAsymmetry* | 1273.44 | 0.0000 | 1434.76 | 0.0000 |
| *Following* | 875.91 | 0.0000 | 736.81 | 0.0000 |
| *Dispersion* | 1200.18 | 0.0000 | 191.98 | 0.0000 |
| *Accuracy* | 12633.68 | 0.0000 | 546.31 | 0.0000 |

#### *6.3.8.4.3 Linearity*

There is no assumption that the independent variables (IVs) in the model are normally distributed, but there is an assumption of multivariate normality, which means that the dependant variable (DV) has a linear relationship with each of the IVs in the model. This can be tested using scatterplots of the DV against each of the IVs before modelling takes place. Modelling a non-linear relationship using a linear model may lead to mis-interpretation and limit the generalizability of the model. The researcher performs *qqplot* test to check the linearity of the data and finds that the data indicates a linear relationship.

#### *6.3.8.4.4 Multicollinearity of independent variables*

While it is assumed that there will be a linear relationship between the DV and the IVs, it is assumed that there will be no perfect linear relationship between any of the IVs. Where there is a strong correlation between two independent variables, we have multicollinearity in the model. This essentially means two predictors are included that measure the same thing. Where this occurs, it cannot get a unique estimate of the regression coefficients because there are an infinite number of coefficients that may work equally as well (see Field, 2005, p. 174). This means that variables which have a significant effect on the DV may appear to be non-significant in the model because their effect is being confounded by another IV. The researcher examines the assumption of no multicollinearity of IV using the Stata programme. The Variance Inflation Factors (VIFs) is calculated to quantify the severity of multicollinearity in each regression analyses. VIFs above ten are thought to indicate severe multicollinearity problems (Field, 2005). Table 6-6 provides

the values of VIF. The results show none of the VIFs are above three, which suggests that multicollinearity does not pose a problem to the regression analyses.

**Table 6-6: The VIF values**

| Variable name | VIF values | | | | |
|---|---|---|---|---|---|
| | *IndEP* | *InfoAsymmetry* | *Following* | *Dispersion* | *Accuracy* |
| Size | 1.39 | 2.46 | 1.22 | 2.80 | 1.25 |
| Leverage | 1.20 | | | | |
| *Beta* | 1.05 | | | | |
| Growth | 1.04 | | 1.03 | | |
| Trading volume | | 1.94 | | | |
| σ(Return) | | 1.24 | | | |
| σ(ROE) | | | 1.07 | 1.03 | 1.05 |
| $Ln(Following)$ | | | | 2.09 | |
| SURP | | | | 1.03 | 1.02 |
| AQ | 1.20 | 1.29 | | 1.20 | 1.25 |

## 6.4 Summary

This chapter is classified into two main sections: firstly, to identify the different hypotheses that are test in this study. Secondly, the research methodology that follows to test these hypotheses. The research methodology section begins by giving a definition of research methodology as "The overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data" Collis and Hussey (2009, p. 55). Then, it moves on discussing the different approaches of research methodology and which approach is appropriate for this study. The quantitative approaches is used in this study, which help in dealing with data that can be counted, and make frequent use of statistical tests of numbers to summarise and examine the information (Locke et al., 2010). Then, the researcher discusses the different proxies that used to measure the main variables of the model. It begins with earnings quality proxies such as accruals quality, persistence, predictability and smoothness. Moving to the cost of equity capital which is measured by using the industry-adjusted earnings price ratio (*IndEP*) and implied cost of equity capital models (*ex-ante* measures). Also the information asymmetry proxy, which depends on the bid-ask spread proxy. Finally, it discussed the proxies that used to measure analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy.

The sample size is discussed in the chapter, which is 8,175 firm-year observations with the number of firms each year ranging from 1,074 to 1,224 per year. Then, the researcher discusses the descriptive statistics of the whole sample by giving information about

earnings quality proxies, the cost of equity capital, information asymmetry, analysts' information environment and firms' characteristics such as the total assets, market value, net revenue and ROA. Finally, it discusses the different regression models that used to test the main models, for example, Fama and MacBeth (1973) regression, Newey and West (1987) pooled regression and panel data with fixed and random effects regression. The next chapter is the start of the main empirical analysis.

# Chapter 7: Empirical Results: the Association between Earnings Quality and the Cost of Equity Capital

## 7.1 Introduction

The main objective of this chapter is to examine the impact of earnings quality on the cost of equity capital to explain the variations in economic outcomes. The main reason of using the cost of equity capital instead of the cost of debt is related to the characteristics of the UK market. The fact that the UK is considered to be a common-law country with active stock markets, a diverse base of investors, strong investor protection mechanisms, a strong reliance on equity finance more than debt finance and investor-oriented financial reporting. Therefore, the main users of accounting information in the UK are investors. Thus, the accounting information is typically geared towards meeting the needs of these users (Van Tendeloo and Vanstraelen, 2005; Dunne et al., 2008; Iatridis, 2010). Therefore, the researcher focuses on the cost of equity capital as a summary indicator of investor resource allocation decisions. In particular, it tests the extent to which what is reported to be the higher of four earnings quality proxies known as accounting-based earnings quality proxies: accruals quality, earnings persistence, earnings predictability and earnings smoothness (Francis et al., 2004), are associated with a lower cost of equity capital. In addition, it investigates the association between earnings quality and the cost of equity capital in the financial crisis period. Finally, this chapter aims to investigate the association between the cost of equity capital and the both component of earnings quality, the innate and discretionary component.

## 7.2 A univariate Analysis

A univariate analysis of the *IndEP* is conducted across quintiles sorted on the each EQ proxies from the lowest to the highest. Table 7-1, panel (A) represents information on the difference between the mean of the cost of equity capital and the low and the high earnings quality quintiles. It reports that firms with low earnings quality quintile (Q10) have a significant larger mean $IndEP$ compared to high earnings quality quintile (Q1), except the proxy of earnings smoothness which the result indicates no significant difference between the two said quintiles. In terms of accruals quality, the difference between mean $IndEP$ values of the two quintiles (Q10 and Q1) is 0.039 and significantly different from zero (t-statistic 5.66). In terms of persistence, the difference between mean $IndEP$ values

of the two said quintiles is 0.015 and is significantly different from zero (t-statistic 2.95). In terms of predictability, the difference between mean $IndEP$ values of the two said quintiles is 0.050 and is significantly different from zero (t-statistic 6.21). Finally, for smoothness, the difference between mean $IndEP$ values of the two said quintiles is -0.0064 and not significantly different from zero (t-statistic 1.20).

### *7.2.1 Correlations among variables*

Table 7-1, panel (B) reports the correlations among *IndEP*, earnings quality proxies, and control variables. The results show significant positive correlations among the four earnings quality proxies with high correlations among predictability, persistence and smoothness. For *IndEP*, the results show significant positive correlations between *IndEP* and all earnings quality proxies, beta and leverage. In addition, the results show significant negative correlation between *IndEP* and firm size which is consistent with literature (e.g., Francis et al., 2005; Gray et al., 2009). However, there is no significant correlation between *IndEP* and firm growth. The correlations among earnings quality proxies and control variables range between 0.4% and 46.5% which is an indicator that the correlations are relatively low indicating that multicollinearity is not likely to be an issue in the multivariate regressions.

**Table 7-1: Univariate analyses of *IndEP* on earnings quality proxies**

***Panel A: Mean IndEP values by each EQ quintiles***

| | High Q1 | Q3 | Q5 | Q7 | Low Q10 | Diff Q10-Q1 | t-stat |
|---|---|---|---|---|---|---|---|
| AQ *IndEP* | 0.0239 | 0.0289 | 0.0341 | 0.0392 | 0.0631 | 0.0392 | 5.66*** |
| Persistence *IndEP* | 0.0215 | 0.0346 | 0.0365 | 0.0361 | 0.0367 | 0.0152 | 2.95*** |
| Predictability *IndEP* | 0.0243 | 0.0318 | 0.0273 | 0.0316 | 0.0741 | 0.0498 | 6.21*** |
| Smoothness *IndEP* | 0.0409 | 0.0252 | 0.0325 | 0.0384 | 0.0345 | -0.0064 | 1.20 |

***Panel B: Correlation among earnings quality proxies***

| | *IndEP* | AQ | Persist | Predict | Smooth | Beta | Size | Leverage |
|---|---|---|---|---|---|---|---|---|
| *IndEP* | 1 | | | | | | | |
| AQ | 0.09 | 1 | | | | | | |
| | *<.0001* | | | | | | | |
| Persist | 0.0662 | 0.0818 | 1 | | | | | |
| | *<.0001* | *<.0001* | | | | | | |
| Predict | 0.0973 | 0.034 | 0.1084 | 1 | | | | |
| | *<.0001* | *0.0021* | *<.0001* | | | | | |
| Smooth | 0.0321 | 0.0612 | 0.193 | 0.2696 | 1 | | | |
| | *0.0206* | *<.0001* | *<.0001* | *<.0001* | | | | |
| Beta | 0.0486 | 0.0048 | -0.0051 | 0.1058 | 0.0597 | 1 | | |
| | *0.0005* | *0.6658* | *0.6462* | *<.0001* | *<.0001* | | | |
| Size | -0.0747 | -0.4656 | -0.1625 | 0.3085 | -0.1112 | 0.1585 | 1 | |
| | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | | |
| Leverage | 0.12 | -0.0394 | 0.015 | 0.1857 | 0.0374 | 0.0257 | 0.1645 | 1 |
| | *<.0001* | *0.0010* | *0.2122* | *<.0001* | *<.0001* | *0.0344* | *<.0001* | |
| Growth | 0.0206 | 0.0624 | -0.1027 | -0.1756 | -0.1561 | -0.0009 | 0.0784 | 0.1357 |
| | *0.1793* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *0.9410* | *<.0001* | *<.0001* |

The sample consists of 4,214 firm-year observations and covering the years from 2005 to 2011 (14 industries). *IndEP* is the earnings–price ratio of a firm less the median earnings–price ratio of its industry. Size = log of total assets in year *t*; Leverage = total interest bearing debt deflated by total assets in year *t*; Growth = log of 1 plus the changing percentage in the book value of equity over the past 5 years; The 5-year rolling pre-estimated Beta obtained from firm-specific CAPM estimations using monthly data; it requires a firm to have at least 20 monthly returns for this estimation.
Panel (A) shows the mean industry-adjusted earnings–price ratio (*IndEP*) for each EQ proxy quintile. The column labelled Diff (Q10-Q1) show the difference in the mean values of *IndEP* between the low/poor (Q10) and high (Q1) earnings quality quintiles, plus t-statistics test of whether the difference is zero.
Panel (B) shows the correlations among *IndEP*, earnings quality proxies and control variables.
Pearson correlations are reported. Significance levels are shown in italics.
*** p-value <0.01, ** p-value <0.05, * p-value <0.1.

## 7.3 Multivariate Analyses

Multivariate tests are performed to test the association between earnings quality and the cost of equity capital. The analyses use *IndEP* ratio as a cost of equity proxy, control variables, and four earnings quality proxies: accruals quality, persistence, predictability and smoothness. The control variables are beta, firm size, leverage and growth (e.g., Francis et al., 2005; Gray et al., 2009). The associations between the cost of equity capital and each earnings quality proxies are examined for each year *t,* in addition to control variables.

$$IndEP_{j,t} = \partial_0 + \partial_1 Beta_{j,t} + \partial_2 Size_{j,t} + \partial_3 Growth_{j,t} + \partial_4 Leverage_{j,t} + \partial_5 EQProxy_{j,t}^{k} + \delta_{j,t} \quad \text{Equation (7-1)}$$

Where:

$Beta$ is the five years rolling pre-estimated beta acquired from CAPM estimates using monthly data; it involves no less than 20 monthly returns for each firm to do this estimation;
$Size$ is log of total assets of a firm in year $t$,
$Growth$ is the log of one plus the firm's growth in book value of equity over the preceding 5 years;
$Leverage$ is interest-bearing debt of a firm deflated by total assets in year $t$;
$EQProxy_{j,t}^{k}$ is the decile rank of a firm value of the $k$th earnings quality proxy in year $t$,
$K \in \{AccrualsQuality, Persistence, Predictability, Smoothness\}$.

According to literature, a positive coefficient on the decile rank earnings quality is expected, indicating that investors attach higher risk assessments to stocks with less favourable (i.e., larger) values of each earnings quality proxy thus higher cost of equity capital. For control variables, positive coefficients for CAPM beta and leverage are expected, and negative coefficients for firm size and growth, Moreover, to alleviate concerns about cross-sectional dependencies in the sample, Equation (7-1) is estimated for each of the 7 years in the sample by using the time-series standard errors regressions which introduced by Fama and MacBeth (1973).

Table 7-2, panel (A) provides both the mean of the yearly coefficients and statistical significance as a result of estimating Equation (7-1) after adding each earnings quality proxies separately to the model. Turning first to predictability, which has the first largest effects on the cost of equity capital, the results indicate a mean coefficient estimate of 0.0035 (t-statistic =6.46). This finding suggests that firms with low earnings predictability have higher cost of equity capital compared to firms with high earnings predictability. The second largest cost of equity capital effect is observed for accruals quality, the results indicate a mean estimate of coefficient 0.0024 (t-statistic = 5.45). This finding suggests that firms with low accruals quality have higher cost of equity capital relative to firms with the high accruals quality. The third largest effect is observed for persistence, where the mean estimate of coefficient 0.0014 (t-statistic=3.19). Finally, the results indicate significant association between earnings smoothness and the cost of equity, where the mean estimate of coefficient 0.0008 (t-statistic = 2.95). Economically, the results indicate that firms with high earnings predictability enjoy a 315 (coefficient 0.0035 times 9 decile differences) basis point lower cost of equity capital compared to firms with low earnings predictability. For accruals quality, the results indicate a 216 difference basis point between firms with high and low accruals quality. For persistence, the results indicate a 126 difference basis point between firms with high and low earnings persistence. Finally for smoothness, the results indicate a 72 difference basis point between firms with high and low earnings smoothness.

These results are interpreted as an indicator that as the quality of earnings declines, the amount that investors are ready to pay for a pound of earnings is declined as well, implying a higher cost of equity capital for such firms. Thus, it supports the first hypothesis ($H_1$), Also, it supports both the capital needs theory and decision usefulness theory. In terms of control variables, the results indicate that $IndEP$ is negatively associated with both *Growth*[16] and *Size*, consistent with prior literature, firms with high growth have lower earnings–price ratios and big firms have lower cost of equity capital than the small firms because it is less risky than the small firms. Finally, the results indicate a positive association between *IndEP* and both *Beta*[17] and *Leverage* which is consistent with literature review.

Further, Newey and West (1987) standard errors pooled regression is used, which controls heteroscedasticity and autocorrelation effects, to assess the sensitivity of the previous results. Panel (B) of Table 7-2 reports the coefficient estimate and statistical significance of each earnings quality pooled-regression for the same sample. The pooled results are similar to the results of mean annual regressions of Fama and MacBeth (1973), reported in Panel (A) of Table 7-2, except the following points: (1) the association between *IndEP* and smoothness becomes not significant, which consistent with the view of Leuz et al. (2003) that earnings smoothness indicates lower earnings quality, which means that investors in the UK do not reward smoother earnings streams with reduced costs of equity capital as investors in the US according to Francis et al. (2004). (2) $R^2$ for all the four models has declined from 7.5% averagely to 2.5% averagely. (3) The associations between *IndEP* and both *Beta* and Growth become significant. (4) The effect of persistence has significant larger effect than accruals quality on the cost of equity capital.

Continuing to increase the goodness of fit of the model, the characteristics of the data during the period from 2005 to 2011 are studied, and find that the mean of cost of equity capital is suddenly increased in years 2008 and 2009. Therefore, the model is re-tested after adding the financial crisis as a control variable (see next section: the financial crisis).

---

[16] The negative relationship between *Growth* and *IndEP* is insignificant at 10% significant level except in AQ regression, which is significant at 5% significant level.

[17] The positive relationship between *Beta* and *IndEP* is insignificant at 10% significant level.

## Table 7-2: Multivariate analyses of *IndEP* on earnings quality proxies

***Panel A: Means annual regressions of IndEP on each earning quality proxy (decile rank), and control variables***

| | ***IndEP*** | ***IndEP*** | ***IndEP*** | ***IndEP*** |
|---|---|---|---|---|
| Beta | 0.019 | 0.019 | 0.018 | 0.019 |
| | *(1.16)* | *(1.18)* | *(1.11)* | *(1.19)* |
| Size | -0.0055** | -0.0061** | -0.0078*** | -0.0065** |
| | *(-2.24)* | *(-2.39)* | *(-2.83)* | *(-2.50)* |
| Growth | -0.0021** | -0.00073 | 0.00035 | -0.0010 |
| | *(-2.11)* | *(-0.84)* | *(0.37)* | *(-1.05)* |
| Leverage | 0.080*** | 0.075*** | 0.077*** | 0.078*** |
| | *(2.76)* | *(2.66)* | *(2.72)* | *(2.74)* |
| AQ | 0.0024*** | | | |
| | *(5.45)* | | | |
| Persistence | | 0.0014*** | | |
| | | *(3.19)* | | |
| Predictability | | | 0.0035*** | |
| | | | *(6.46)* | |
| Smoothness | | | | 0.00080** |
| | | | | *(2.23)* |
| Constant | 0.061** | 0.073*** | 0.081*** | 0.080*** |
| | *(2.49)* | *(2.65)* | *(2.88)* | *(2.95)* |
| *N* | 4,214 | 4,214 | 4,214 | 4,214 |
| $R^2$ | 0.076 | 0.075 | 0.087 | 0.072 |

***Panel B: Pooled regressions of IndEP on each earning quality proxy (decile rank), and control variables***

| | ***IndEP*** | ***IndEP*** | ***IndEP*** | ***IndEP*** |
|---|---|---|---|---|
| Beta | 0.011*** | 0.011*** | 0.0096*** | 0.011*** |
| | *(3.92)* | *(3.90)* | *(3.46)* | *(3.96)* |
| Size | -0.0042*** | -0.0045*** | -0.0065*** | -0.0050*** |
| | *(-6.26)* | *(-6.78)* | *(-9.60)* | *(-7.56)* |
| Growth | 0.0021 | 0.0035*** | 0.0046*** | 0.0030*** |
| | *(1.44)* | *(2.31)* | *(3.13)* | *(2.03)* |
| Leverage | 0.077*** | 0.072*** | 0.076*** | 0.076*** |
| | *(7.12)* | *(6.63)* | *(7.04)* | *(7.03)* |
| AQ | 0.0017*** | | | |
| | *(2.93)* | | | |
| Persistence | | 0.0018*** | | |
| | | *(3.82)* | | |
| Predictability | | | 0.0040*** | |
| | | | *(7.12)* | |
| Smoothness | | | | 0.00070 |
| | | | | *(1.51)* |
| Constant | 0.052*** | 0.054*** | 0.065*** | 0.065*** |
| | *(5.44)* | *(6.15)* | *(8.05)* | *(7.48)* |
| *N* | 4,214 | 4,214 | 4,214 | 4,214 |
| adj. $R^2$ | 0.026 | 0.027 | 0.036 | 0.024 |

The sample consists of 4,214 firm-year observations and covering the years from 2005 to 2011 (14 industries). *IndEP* is the earnings–price ratio of a firm less the median earnings–price ratio of its industry. Size = log of total assets in year *t*; Leverage = total interest bearing debt deflated by total assets in year *t*; Growth = log of 1 plus the changing percentage in the book value of equity over the past 5 years; The 5-year rolling pre-estimated Beta obtained from firm-specific CAPM estimations using monthly data; it requires a firm to have at least 20 monthly returns for this estimation.

Panel (A) shows the mean annual regressions of *IndEP* on the decile rank value of each EQ proxy plus control variables. *t*-statistics in parentheses and italic, and based on the time series standard errors of the seven coefficient estimates. Panel (B) shows the pooled regressions of *IndEP* on the decile rank value of each EQ proxy plus control variables. *** p-value <0.01, ** p-value <0.05, * p-value <0.1.

## 7.4 The Financial Crisis

In general terms, a financial crisis can be defined as an interruption to the normal functioning of financial markets. At the beginning of 2008, capital markets around the world suffered from a global financial crisis, following the collapse of the US sub-prime mortgage market. The crisis formulates for European firms an economic environment that is characterised by declining the GDP, reducing the industry output, less spending from the common public and a lack of liquidity for firms and individuals. The crisis had its consequences also in the UK where troubled mortgage providers or banks were rescued (Barth and Landsman, 2010; Iqbal and Kume, 2013; Iatridis and Dimitras, 2013; Bowen and Khan, 2014; Trombetta and Imperatore, 2014). Prior literature argue that these markets are now on course to recovery, although the rate of this recovery is rather slow (Kantor and Holdsworth, 2010). Therefore, the questions that motivated the researcher are whether the earnings quality deteriorated due to the crisis. Also, whether the financial crisis affects the association between earnings quality and the cost of equity capital.

Figure 7-1 represents the mean of *IndEP* each year from 2005 to 2011. It shows that the mean of *IndEP* is increased steadily from pre-crisis years (2005, 2006 and 2007) to crisis years (2008 and 2009) then it decreased in the recovery years (2010 and 2011). According to this finding, the sample period (2005-2011) is classified into three classifications: 'pre-crisis' for years 2005, 2006 and 2007, 'crisis period' for years 2008 and 2009, and 'recovery' for years 2010 and 2011, which is consistent with previous studies (e.g., Iatridis and Dimitras, 2013; Filip and Raffournier, 2014). Therefore, the impact of financial crisis on the model of the cost of equity capital is tested by adding two control variables (dummy variables) to Equation (7-1) (results reported in Table 7-3).

$$IndEP_{j,t} = \partial_0 + \partial_1 Growth_{j,t} + \partial_2 Leverage_{j,t} + \partial_3 Beta_{j,t} + \partial_4 Size_{j,t} + \partial_5 EQProxy^{k}_{j,t} + \partial_6 Crisis_{j,t} + \partial_7 Recovery_{j,t} + \delta_{j,t} \quad \text{Equation (7-2)}$$

Where:
$Crisis_{j,t}$ is a dummy variable which equals 1 if the years are 2008 and 2009 and equals zero otherwise;
$Recovery_{j,t}$ is a dummy variable which equals 1 if the years are 2010 and 2011 and equals zero otherwise.

**Figure 7-1 : The mean of *IndEP* over years 2005-2011**

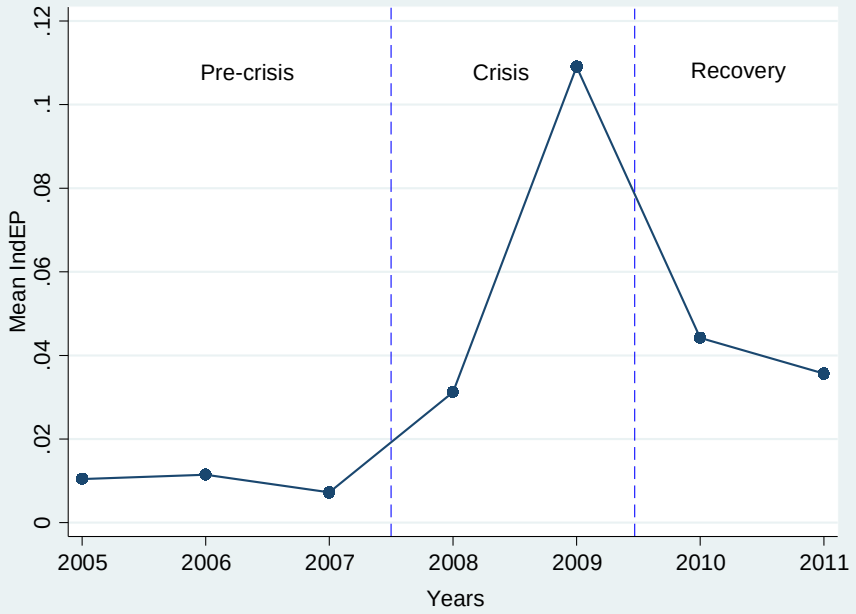



Table 7-3 reports that $R^2$ is steadily increased from 2.5% averagely to 12% averagely, which suggests the explanation power of the model becomes much better after adding the financial crisis. Also, the impact of both dummy variables of financial crisis on the cost of equity capital is strongly significant. Moreover, the association between *IndEP* and smoothness remains insignificant. Finally, the order of largest effects among earnings quality proxies still the same, which earnings predictability has the largest effect then accruals quality then persistence and finally smoothness.

**Table 7-3: Pooled regressions of *IndEP* on each earnings quality proxy (decile rank), financial crisis dummy variables and control variables**

| | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
|---|---|---|---|---|
| Beta | 0.014*** | 0.014*** | 0.013*** | 0.014*** |
| | *(5.10)* | *(5.11)* | *(4.68)* | *(5.18)* |
| Size | -0.0047*** | -0.0051*** | -0.0068*** | -0.0055*** |
| | *(-7.07)* | *(-7.74)* | *(-10.1)* | *(-8.45)* |
| Growth | -0.0017 | -0.00036 | 0.00060 | -0.00083 |
| | *(-1.18)* | *(-0.25)* | *(0.42)* | *(-0.58)* |
| Leverage | 0.078*** | 0.073*** | 0.076*** | 0.077*** |
| | *(7.48)* | *(7.01)* | *(7.36)* | *(7.39)* |
| Crisis | 0.064*** | 0.064*** | 0.063*** | 0.064*** |
| | *(18.1)* | *(18.0)* | *(17.7)* | *(18.0)* |
| Recovery | 0.028*** | 0.028*** | 0.027*** | 0.028*** |
| | *(10.2)* | *(10.1)* | *(9.61)* | *(10.1)* |
| AQ | 0.0018*** | | | |
| | *(3.24)* | | | |
| Persistence | | 0.0016*** | | |
| | | *(3.60)* | | |
| Predictability | | | 0.0033*** | |
| | | | *(6.13)* | |
| Smoothness | | | | 0.00053 |
| | | | | *(1.18)* |
| Constant | 0.030*** | 0.035*** | 0.046*** | 0.045*** |
| | *(3.32)* | *(4.24)* | *(5.97)* | *(5.49)* |
| *N* | 4214 | 4214 | 4214 | 4214 |
| adj. $R^2$ | 0.120 | 0.120 | 0.126 | 0.118 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table 7-1 for variable definitions. The sample contains 4,214 firm-year observations over *t* = 2005-2011. *Crisis* is a dummy variable which equals 1 if the years are 2008 and 2009 and the remaining years equal zero. *Recovery* is a dummy variable which equals 1 if the years are 2010 and 2011 and the remaining years equal zero.

The interaction effects between earnings quality and financial crisis on the cost of equity capital is also examined, results reported in Table 7-4. The results indicate a significant negative association between earnings quality proxies and the cost of equity capital. Also, the results indicate that in the crisis the investors give more attention to the quality of earnings compared to pre-crisis for the cost of equity capital. For example, the slope coefficient of accruals quality before the crisis is 0.0026. In the crisis, the value of this slope coefficient had risen to 0.0136 (0.0026+0.011), which means that the sensitivity of the cost of equity capital to accruals quality was considerably higher (0.011) in the crisis compared to pre-crisis. Thus, the hypothesis ($H_{11}$) is accepted.

Finally, the association between the cost of equity capital and earnings quality in the financial crisis period only (year 2008 and 2009) is examined (results reported in Table 7-5). The results indicate significant associations between *IndEP* and all earnings quality proxies except earnings smoothness, with largest effects for both earnings predictability and persistence. This finding suggest that in the financial crisis, investors give more

attention to earnings sustainability and the change in expected future earnings, compared to the attention for the association between earnings and cash flow of firms. Also, the results indicate increases in the coefficient of *Beta* compared to the pooled regression for the whole sample (2005-2011), which indicates that investors in the crisis period gives more attention to the changes in the whole stock market.

**Table 7-4: Pooled regressions of *IndEP* on each earning quality proxy (decile rank), the interaction between earnings quality and financial crisis, and control variables**

| | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
|---|---|---|---|---|
| Beta | 0.014*** | 0.013*** | 0.012*** | 0.014*** |
| | *(5.27)* | *(4.62)* | *(4.49)* | *(5.17)* |
| Size | -0.0048*** | -0.0048*** | -0.0070*** | -0.0056*** |
| | *(-7.09)* | *(-7.26)* | *(-10.3)* | *(-8.48)* |
| Growth | -0.0016 | 0.00077 | 0.0011 | -0.00046 |
| | *(-1.13)* | *(0.52)* | *(0.78)* | *(-0.32)* |
| Leverage | 0.081*** | 0.072*** | 0.075*** | 0.080*** |
| | *(7.73)* | *(6.73)* | *(7.30)* | *(7.57)* |
| AQ | 0.0026*** | | | |
| | *(4.66)* | | | |
| AQ * Crisis | 0.011*** | | | |
| | *(15.5)* | | | |
| AQ * Recovery | 0.0050*** | | | |
| | *(8.76)* | | | |
| Persistence | | 0.0051*** | | |
| | | *(11.2)* | | |
| Persist * Crisis | | 0.0078*** | | |
| | | *(15.5)* | | |
| Persist * Recovery | | 0.0033*** | | |
| | | *(9.20)* | | |
| Predictability | | | 0.0062*** | |
| | | | *(12.12)* | |
| Predict * Crisis | | | 0.0098*** | |
| | | | *(16.4)* | |
| Predict * Recovery | | | 0.0043*** | |
| | | | *(8.32)* | |
| Smoothness | | | | 0.0035*** |
| | | | | *(7.32)* |
| Smooth * Crisis | | | | 0.010*** |
| | | | | *(15.6)* |
| Smooth * Recovery | | | | 0.0042*** |
| | | | | *(8.13)* |
| Constant | 0.055*** | 0.078*** | 0.074*** | 0.071*** |
| | *(5.94)* | *(9.66)* | *(9.30)* | *(8.39)* |
| *N* | 4214 | 4214 | 4214 | 4214 |
| adj. $R^2$ | 0.110 | 0.088 | 0.117 | 0.103 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table 7-1 for variable definitions. The sample contains 4,214 firm-year observations over $t$ = 2005-2011.

**Table 7-5: Pooled regressions of *IndEP* on each earning quality proxy (decile rank) in the financial crisis, and control variables**

| | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
|---|---|---|---|---|
| Beta | 0.052*** | 0.051*** | 0.050*** | 0.051*** |
| | *(7.00)* | *(6.92)* | *(6.78)* | *(6.94)* |
| Size | -0.011*** | -0.011*** | -0.014*** | -0.012*** |
| | *(-6.59)* | *(-6.58)* | *(-8.44)* | *(-7.22)* |
| Growth | -0.0036 | -0.0014 | -0.00019 | -0.0021 |
| | *(-1.10)* | *(-0.41)* | *(-0.058)* | *(-0.65)* |
| Leverage | 0.094*** | 0.086*** | 0.091*** | 0.093*** |
| | *(3.84)* | *(3.53)* | *(3.77)* | *(3.81)* |
| AQ | 0.0024* | | | |
| | *(1.72)* | | | |
| Persistence | | 0.0028*** | | |
| | | *(2.42)* | | |
| Predictability | | | 0.0056*** | |
| | | | *(4.11)* | |
| Smoothness | | | | 0.0016 |
| | | | | *(1.43)* |
| Constant | 0.13*** | 0.13*** | 0.15*** | 0.15*** |
| | *(5.87)* | *(5.88)* | *(7.66)* | *(7.24)* |
| *N* | 1237 | 1237 | 1237 | 1237 |
| adj. $R^2$ | 0.082 | 0.084 | 0.093 | 0.081 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table 7-1 for variable definitions. The sample contains 1,237 firm-year observations over *t* = 2008-2009.

## 7.5 Innate and Discretionary Earnings Quality Effects on the Cost of Equity Capital

Following Francis et al. (2005), the two methods to disentangle between innate and discretionary earnings quality are used, those methods use summary indicators to compute the effects of operating environment and business model that represent the innate component: firm size, standard deviation of cash flows for preceding 10 years, standard deviation of revenues for preceding 10 years, length of operating cycle, and frequency of negative realised earnings for preceding 10 years. The first method uses the predicted values that estimated from regressing earnings quality proxy on these summary indicators to compute the innate portion of earnings quality proxy, and the residual from this regression represents the discretionary portion (see Equation (7-3)).

$$EQProxy_{j,t}^{k} = \lambda_{0,j} + \lambda_{1,j} Size_{j,t} + \lambda_{2,j}\sigma(CFO)_{j,t} + \lambda_{3,j}\sigma(Sales)_{j,t} + \lambda_{4,j} OperCycle_{j,t} + \lambda_{5,j} NegEarn_{j,t} + v_{j,t} \quad \text{Equation (7-3)}$$

Where: $\sigma(CFO)_{j,t}$ is the standard deviation of cash flow operations of a firm computed through the preceding 10 years,

$\sigma(Sales)_{j,t}$ is the standard deviation of firm $c$'s net revenue computed through the preceding 10 years,
$OperCycle_{j,t}$ the log of the sum of days accounts receivable and days inventory of a firm in year $t$,
$NegEarn_{j,t}$ the number of years where reported net income before extraordinary items (*NIBE)* of a firm < 0 out of the preceding 10 years,
The predicted value of $EQProxy_{j,t}^{K}$ represents innate earnings quality, and the residual ($v_{j,t}$) represents discretionary earnings quality.

The second method adds the summary indicators which represent the innate portion to the cost of equity capital tests as control variables. According to these regressions, the coefficient estimates of earnings quality is considered as the effect of discretionary portion on the cost of equity capital. Using the coefficient estimates acquired from the annual regressions of Equation (7-3), the innate earnings quality and discretionary earnings quality are calculated by using Method 1, When both innate and discretionary components are included, Table 7-6, panel (A) reports that the innate component coefficient is larger than the discretionary component coefficient by a factor of two for all earnings quality proxies and also exhibits stronger statistical significance than the discretionary coefficient. In economic terms, the largest effect overall earnings quality components is the innate accruals quality, which is increasing the cost of equity capital by 576 basis points between highest (low/poor) and lowest decile rank (high) of innate accruals quality firms, while the effect of discretionary accruals quality is 198 basis points. This finding suggests that investors assign to firms with low earnings quality that related to innate component, a higher cost of equity capital, compared to low earnings quality that related to discretionary component. Moreover, the results indicate significant association between *IndEP* and Innate portion of smoothness and an insignificant association between *IndEP* and discretionary portion of smoothness. The average goodness of fit of the means of the annual regressions is 8.8%. Under Method 2, Table 7-6, panel (B) reports that discretionary earnings quality has a positive coefficient which is less significant and smaller than the coefficient on total earnings quality. The average goodness of fit of the annual-regressions is 9.5%.

According to the results in panel (A-B) of Table 7-6, the null hypothesis ($H_6$) of no differences between the effects of innate and discretionary earnings quality components on the cost of equity capital is rejected, supporting the opinion that innate portion of each earnings quality proxies has a larger impact than the discretionary portion on the cost of

equity capital. This finding suggests that investors give greater weight to the innate component that driven from economic fundamentals, compared to the discretionary component that driven from management choices in the UK when determining the cost of equity capital of a firm. Also, this finding suggest the idea that applying IFRS in the UK increases the quality and precision of accounting information and reduces information asymmetry for both future cash flow and future earnings, thus the information risk that associated with discretionary earnings quality is reduced.

**Table 7-6: Means annual regression of *IndEP* on innate and discretionary earning quality components**

***Panel A: Means annual regressions of IndEP on innate and discretionary earning quality proxy (decile rank), and control variables (Method 1)***

| | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
|---|---|---|---|---|
| Beta | 0.020 | 0.019 | 0.019 | 0.020 |
| | *(1.20)* | *(1.16)* | *(1.14)* | *(1.19)* |
| Size | -0.0014 | -0.0053** | -0.0067*** | -0.0070*** |
| | *(-0.64)* | *(-2.17)* | *(-2.60)* | *(-2.69)* |
| Growth | -0.0020 | -0.00052 | -0.00048 | -0.00091 |
| | *(-1.57)* | *(-0.74)* | *(-0.54)* | *(-0.95)* |
| Leverage | 0.081*** | 0.069** | 0.075*** | 0.073** |
| | *(2.76)* | *(2.49)* | *(2.58)* | *(2.55)* |
| ***Method 1*** | | | | |
| AQ (*Innate*) | 0.0064*** | | | |
| | *(6.65)* | | | |
| AQ (*Disc.*) | 0.0022*** | | | |
| | *(3.67)* | | | |
| Persistence (*Innate*) | | 0.0027*** | | |
| | | *(3.92)* | | |
| Persistence (*Disc.*) | | 0.0010** | | |
| | | *(2.05)* | | |
| Predictability (*Innate*) | | | 0.0059*** | |
| | | | *(4.78)* | |
| Predictability (*Disc.*) | | | 0.0037** | |
| | | | *(2.23)* | |
| Smoothness (*Innate*) | | | | 0.0022*** |
| | | | | *(4.24)* |
| Smoothness (*Disc.*) | | | | -0.000041 |
| | | | | *(-0.082)* |
| Constant | -0.020 | 0.053** | 0.038 | 0.081*** |
| | *(-1.13)* | *(2.21)* | *(1.32)* | *(3.06)* |
| *N* | 3527 | 3527 | 3527 | 3527 |
| $R^2$ | 0.092 | 0.085 | 0.094 | 0.082 |

***Panel B: Means annual regressions of IndEP on discretionary earning quality proxy (decile rank), and control variables (Method 2)***

| | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
|---|---|---|---|---|
| Beta | 0.021 | 0.021 | 0.021 | 0.021 |
| | *(1.19)* | *(1.21)* | *(1.19)* | *(1.23)* |
| Size | -0.0069* | -0.0077* | -0.0092** | -0.0078* |
| | *(-2.07)* | *(-2.26)* | *(-2.66)* | *(-2.21)* |
| Growth | -0.0014 | -0.00015 | 0.00060 | -0.00062 |
| | *(-1.17)* | *(-0.17)* | *(0.61)* | *(-0.63)* |
| Leverage | 0.078** | 0.075** | 0.076** | 0.077** |
| | *(2.72)* | *(2.68)* | *(2.68)* | *(2.71)* |
| σ(CFO) | 0. 000027** | 0. 000031*** | 0. 000025** | 0. 000030** |
| | *(3.33)* | *(3.97)* | *(3.25)* | *(3.68)* |
| $\sigma$(Sales) | 8.4e-10 | 1.1e-09 | 1.7e-09 | 8.2e-10 |
| | *(0.38)* | *(0.49)* | *(0.82)* | *(0.39)* |
| OperCycle | -0.0041* | -0.0036* | -0.0039* | -0.0036 |
| | *(-2.03)* | *(-1.95)* | *(-2.15)* | *(-1.92)* |
| NegEarn | 0.0028*** | 0.0031*** | 0.0022** | 0.0033*** |
| | *(4.63)* | *(4.73)* | *(3.47)* | *(3.91)* |
| ***Method 2*** | | | | |
| AQ (*Disc.*) | 0.0022** | | | |
| | *(3.68)* | | | |
| Persistence (*Disc.*) | | 0.0012* | | |
| | | *(2.11)* | | |
| Predictability (*Disc.*) | | | 0.0029*** | |
| | | | *(5.93)* | |
| Smoothness (*Disc.*) | | | | 0.00014 |
| | | | | *(0.24)* |
| Constant | 0.090** | 0.10** | 0.11** | 0.11** |
| | *(2.60)* | *(2.77)* | *(2.99)* | *(2.86)* |
| *N* | 3527 | 3527 | 3527 | 3527 |
| $R^2$ | 0.099 | 0.098 | 0.104 | 0.095 |

See Table 7-1 for variable definitions.
*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
The sample contains 3,527 firm-year observations over t = 2005-2011.

## 7.6 Sensitivity Tests

The main results of this chapter are generally robust to a number of sensitivity tests, including the following: First, in addition to *IndEP*, the researcher uses five other proxies of the cost of equity capital known as *ex-ante* measures derived from dividend valuation model; the Easton (2004) model ($r_{PEG}$), the modified Easton (2004) model ($r_{MPEG}$), the Ohlson and Juettner-Nauroth (2005) model ($r_{ojn}$), the Gode and Mohanram (2003) model ($r_{GM}$), and the mean for the four proxies ($r_{PEG}, r_{MPEG}, r_{ojn}, r_{GM}$) in order to reduce biases and measurement errors in the regression analysis (Hail and Leuz, 2006). All of these proxies are used as alternatives to the *IndEP*.

Equation (7-1) is re-tested by replacing *IndEP* with the five *ex-ante* measures of the cost of equity capital (results reported in Table 7-7, panel (A-B)). The same results are found with higher $R^2$ for the five measures compared to *IndEP*, which suggests that this model

explain the variation in the cost of equity capital measured by the implied cost of equity capital models are better than *IndEP*. This result reinforces the conclusions drawn from the previous regressions.

Second, the raw values of each earnings quality proxies is also used rather than the decile rank values of earnings quality proxies and do the same tests by using IndEP as a proxy for the cost of equity capital. The researcher finds the same results with significant association between IndEP and accruals quality, persistence and predictability, however, no significant association between earnings smoothness and IndEP (results reported in Table 7-7, Panel C). Fourth, panel regressions are used with fixed and random effects for IndEP. In addition, the researcher uses the Hausman test to differentiate between the fixed effects and the random effects model. The researcher tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the coefficients estimated by the consistent fixed effects estimator. The results indicate a rejection of the null hypothesis; this suggests that fixed effects estimations are more appropriate than random effects estimations. Table 7-8 reports the results, and find significant negative associations between each earnings quality proxy and *IndEP*. The largest effect on the cost of equity capital is observed for predictability then accruals quality then persistence and smoothness.

**Table 7-7: Means annual regressions of *ex-ante* measures of the cost of equity capital on each earnings quality proxy (decile rank)**

***Panel A: Means annual regressions of Easton model and Modified Easton model on each earning quality proxy (decile rank), and control variables***

| | (1) $r_{PEG}$ | (2) $r_{PEG}$ | (3) $r_{PEG}$ | (4) $r_{PEG}$ | (1) $r_{MPEG}$ | (2) $r_{MPEG}$ | (3) $r_{MPEG}$ | (4) $r_{MPEG}$ |
|---|---|---|---|---|---|---|---|---|
| Beta | 0.0025*** | 0.0027*** | 0.0025*** | 0.0026*** | 0.0025*** | 0.0027*** | 0.0025*** | 0.0025*** |
| | (4.87) | (5.54) | (5.59) | (5.13) | (4.73) | (5.32) | (5.36) | (4.91) |
| Size | -0.0020*** | -0.0023*** | -0.0025*** | -0.0023*** | -0.0020*** | -0.0023*** | -0.0025*** | -0.0023*** |
| | (-5.87) | (-6.85) | (-6.80) | (-6.80) | (-5.94) | (-6.87) | (-6.77) | (-6.78) |
| Growth | -0.00051* | -0.00027 | -0.00018 | -0.00021 | -0.00055* | -0.00031 | -0.00022 | -0.00026 |
| | (-2.06) | (-1.01) | (-0.70) | (-0.81) | (-2.29) | (-1.16) | (-0.86) | (-1.01) |
| Leverage | 0.0096*** | 0.0090*** | 0.0092*** | 0.0094*** | 0.0094*** | 0.0088*** | 0.0090*** | 0.0092*** |
| | (4.34) | (3.97) | (4.04) | (4.01) | (4.67) | (4.29) | (4.34) | (4.30) |
| AQ | 0.00061*** | | | | 0.00061*** | | | |
| | (8.74) | | | | (10.4) | | | |
| Persistence | | 0.00023** | | | | 0.00024** | | |
| | | (2.94) | | | | (2.54) | | |
| Predictability | | | 0.00036*** | | | | 0.00037*** | |
| | | | (4.35) | | | | (4.20) | |
| Smoothness | | | | 0.00032*** | | | | 0.00029*** |
| | | | | (5.54) | | | | (6.14) |
| Constant | 0.032*** | 0.037*** | 0.039*** | 0.037*** | 0.033*** | 0.038*** | 0.040*** | 0.038*** |
| | (7.59) | (9.55) | (9.32) | (9.07) | (7.61) | (9.49) | (9.17) | (8.88) |
| *N* | 3795 | 3795 | 3795 | 3795 | 3781 | 3781 | 3781 | 3781 |
| $R^2$ | 0.152 | 0.138 | 0.140 | 0.140 | 0.152 | 0.139 | 0.140 | 0.140 |

***Panel B: Means annual regressions of the economy-wide growth model, the modified the economy-wide growth model and the mean of the four cot of equity capital proxies on each earning quality proxy (decile rank), and control variables***

| | (1) $r_{ojn}$ | (2) $r_{ojn}$ | (3) $r_{ojn}$ | (4) $r_{ojn}$ | (1) $r_{GM}$ | (2) $r_{GM}$ | (3) $r_{GM}$ | (4) $r_{GM}$ | (1) $r_{Mean}$ | (2) $r_{Mean}$ | (3) $r_{Mean}$ | (4) $r_{Mean}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beta | 0.00030 | 0.00031 | 0.00031 | 0.00030 | 0.0020*** | 0.0022*** | 0.0020*** | 0.0021*** | 0.0022*** | 0.0024*** | 0.0022*** | 0.0023*** |
| | (1.40) | (1.43) | (1.53) | (1.44) | (4.21) | (4.66) | (4.70) | (4.39) | (4.44) | (5.09) | (5.02) | (4.76) |
| Size | -0.00063*** | -0.00068*** | -0.00072*** | -0.00069*** | -0.0019*** | -0.0022*** | -0.0023*** | -0.0022*** | -0.0021*** | -0.0024*** | -0.0026*** | -0.0024*** |
| | (-4.73) | (-4.91) | (-4.57) | (-4.93) | (-5.51) | (-6.27) | (-6.09) | (-6.23) | (-6.28) | (-7.37) | (-7.10) | (-7.24) |
| Growth | 0.000047 | 0.00012* | 0.00011** | 0.00012* | -0.00051** | -0.00028 | -0.00023 | -0.00025 | -0.00051* | -0.00026 | -0.00017 | -0.00022 |
| | (1.00) | (2.44) | (2.54) | (2.35) | (-2.45) | (-1.15) | (-0.97) | (-1.10) | (-2.08) | (-0.96) | (-0.68) | (-0.86) |
| Leverage | 0.0025** | 0.0023** | 0.0024** | 0.0024** | 0.0082*** | 0.0076*** | 0.0079*** | 0.0080*** | 0.0094*** | 0.0087*** | 0.0089*** | 0.0091*** |
| | (3.38) | (3.21) | (3.29) | (3.11) | (4.64) | (4.26) | (4.32) | (4.28) | (4.29) | (4.09) | (4.12) | (4.17) |
| AQ | 0.00014*** | | | | 0.00053*** | | | | 0.00061*** | | | |
| | (5.59) | | | | (14.5) | | | | (10.4) | | | |
| Persistence | | 0.000085** | | | | 0.00023* | | | | 0.00026** | | |
| | | (2.79) | | | | (2.14) | | | | (3.04) | | |
| Predictability | | | 0.000048 | | | | 0.00031** | | | | 0.00038*** | |
| | | | (1.16) | | | | (3.02) | | | | (4.49) | |
| Smoothness | | | | 0.000070* | | | | 0.00028*** | | | | 0.00030*** |
| | | | | (1.96) | | | | (5.73) | | | | (5.43) |
| Constant | 0.027*** | 0.028*** | 0.029*** | 0.028*** | 0.044*** | 0.048*** | 0.050*** | 0.048*** | 0.039*** | 0.044*** | 0.046*** | 0.044*** |
| | (31.4) | (31.1) | (28.4) | (29.4) | (12.1) | (14.8) | (13.9) | (14.1) | (10.00) | (12.9) | (11.7) | (11.8) |
| *N* | 3519 | 3519 | 3519 | 3519 | 3843 | 3843 | 3843 | 3843 | 4010 | 4010 | 4010 | 4010 |
| $R^2$ | 0.111 | 0.106 | 0.105 | 0.106 | 0.150 | 0.139 | 0.139 | 0.140 | 0.154 | 0.140 | 0.142 | 0.141 |

***Panel C: Means annual and pooled regressions of IndEP on each earning quality proxy (Raw values), and control variables***

| | *Means annual regressions* | | | | *Pooled regressions* | | | |
|---|---|---|---|---|---|---|---|---|
| | *IndEP* | *IndEP* | *IndEP* | *IndEP* | *IndEP* | *IndEP* | *IndEP* | *IndEP* |
| Beta | 0.019 | 0.019 | 0.020 | 0.020 | 0.011*** | 0.011*** | 0.011*** | 0.011*** |
| | (1.17) | (1.17) | (1.18) | (1.18) | (3.92) | (3.89) | (4.06) | (4.00) |
| Size | -0.0058* | -0.0061* | -0.0064** | -0.0065** | -0.0043*** | -0.0044*** | -0.0049*** | -0.0050*** |
| | (-2.25) | (-2.38) | (-2.52) | (-2.52) | (-6.40) | (-6.61) | (-7.40) | (-7.60) |
| Growth | -0.0021* | -0.00074 | -0.0010 | -0.0012 | 0.0020 | 0.0036** | 0.0028* | 0.0029** |
| | (-2.43) | (-0.83) | (-1.39) | (-1.24) | (1.34) | (2.40) | (1.93) | (1.96) |
| Leverage | 0.078** | 0.075** | 0.075** | 0.078** | 0.077*** | 0.071*** | 0.075*** | 0.076*** |
| | (2.78) | (2.66) | (2.76) | (2.75) | (7.11) | (6.55) | (6.91) | (7.03) |
| AQ | 0.095*** | | | | 0.087*** | | | |
| | (6.13) | | | | (2.72) | | | |
| Persistence | | -0.0089** | | | | -0.014*** | | |
| | | (-2.91) | | | | (-4.57) | | |
| Predictability | | | 0.0046** | | | | 0.0022** | |
| | | | (2.73) | | | | (2.27) | |
| Smoothness | | | | 0.0014 | | | | 0.0020 |
| | | | | (1.61) | | | | (1.21) |
| Constant | 0.070** | 0.083** | 0.082** | 0.082** | 0.055*** | 0.067*** | 0.066*** | 0.066*** |
| | (2.56) | (3.00) | (3.03) | (2.90) | (6.13) | (8.35) | (8.24) | (7.75) |
| *N* | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 |
| $R^2$ | 0.076 | 0.076 | 0.082 | 0.071 | 0.026 | 0.029 | 0.027 | 0.024 |

See Table 7-1 for variable definitions.

*** P-value <0.01, ** p-value <0.05, * p-value <0.1. t-statistics in parentheses and italic.

The sample ranges between 3,519 and 4214 firm-year observations over $t$ = 2005-2011.

**Table 7-8: Fixed-random panel regressions of *IndEP* on each earning quality proxy (decile rank), and control variables**

| | *IndEP Fixed* | *IndEP Random* | *IndEP Fixed* | *IndEP Random* | *IndEP Fixed* | *IndEP Random* | *IndEP Fixed* | *IndEP Random* |
|---|---|---|---|---|---|---|---|---|
| Beta | 0.014*** | 0.0095*** | 0.013*** | 0.0093*** | 0.012*** | 0.0078*** | 0.013*** | 0.0093*** |
| | *(3.97)* | *(3.69)* | *(3.82)* | *(3.63)* | *(3.41)* | *(3.07)* | *(3.87)* | *(3.64)* |
| Size | 0.018*** | -0.0037*** | 0.020*** | -0.0036*** | 0.013*** | -0.0061*** | 0.019*** | -0.0040*** |
| | *(3.96)* | *(-3.35)* | *(4.31)* | *(-3.39)* | *(2.75)* | *(-5.68)* | *(4.26)* | *(-3.77)* |
| Growth | -0.0044** | 0.0017 | -0.0042** | 0.0025* | -0.0023 | 0.0038*** | -0.0042** | 0.0022 |
| | *(-2.07)* | *(1.24)* | *(-2.00)* | *(1.77)* | *(-1.09)* | *(2.72)* | *(-2.01)* | *(1.60)* |
| Leverage | 0.017 | 0.065*** | 0.013 | 0.062*** | 0.022 | 0.065*** | 0.014 | 0.065*** |
| | *(0.80)* | *(5.14)* | *(0.60)* | *(4.86)* | *(1.01)* | *(5.14)* | *(0.67)* | *(5.11)* |
| AQ | 0.0018* | 0.0007 | | | | | | |
| | *(1.93)* | *(1.08)* | | | | | | |
| Persistence | | | 0.0015* | 0.0018*** | | | | |
| | | | *(1.91)* | *(3.10)* | | | | |
| Predictability | | | | | 0.0070*** | 0.0051*** | | |
| | | | | | *(5.40)* | *(7.11)* | | |
| Smoothness | | | | | | | 0.0018** | 0.0010* |
| | | | | | | | *(1.99)* | *(1.72)* |
| Constant | -0.19*** | 0.055*** | -0.22*** | 0.048*** | -0.17*** | 0.059*** | -0.22*** | 0.057*** |
| | *(-3.49)* | *(4.02)* | *(-4.08)* | *(3.85)* | *(-3.20)* | *(5.08)* | *(-4.06)* | *(4.60)* |
| *N* | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 | 4214 |
| *Hausman* | | 0.0000 | | 0.0000 | | 0.0000 | | 0.0000 |

See Table 7-1 for variable definitions.

*** P-value <0.01, ** p-value <0.05, * p-value <0.1. t-statistics in parentheses and italic.

The sample contains 4,214 firm-year observations for $t$ = 2005 to 2011.

## 7.7 Comparison with Francis et al. (2004)

The current study shares a number of common features with Francis et al (2004) who use US data: (1) both studies sort firms into quintiles based on each earnings quality proxy and regress cost of equity capital measure on these quintiles. (2) Both studies use the same measures of persistence, predictability and smoothness. (3) Both studies use *ex-ante* measures as robustness measures for the cost of equity capital. However, there are number of differences in some others: (1) the current study uses accounting-based earnings quality proxies (four proxies) instead of the all proxies (seven proxies) that Francis et al (2004) used. (2) A different measure of accruals quality is used, which is the McNichols' (2002) modification of Dechow and Dichev's (2002) model, which includes two additional elements (*PPE* and change in revenues) and estimated cross-sectionally by industry rather than by using Dechow and Dichev (2002) model. (3) The current study uses different proxies to measure the cost of equity capital, realised return (*IndEP*) as a main measure of the cost of equity capital rather than *ex-ante* cost of equity capital measures that derived from value line analyst information.

(4) The current study applies in different country (the UK) not the US. (5) The current study uses two additional control variables which are leverage and growth. Also, the control variable, size, is redefined (log of total assets, instead of log of market value). For accruals quality, the time period over which the rolling window variables are constructed are shortened from ten to five years, which is possible because the model is estimated cross-sectionally by industry, instead of using a firm-specific regression (Francis et al., 2005). (6) Different results, the current study finds among the four proxies that predictability has the strongest effects on the cost of equity capital then accruals quality then persistence and finally smoothness (least consistent associations), while Francis et al. (2004) find no significant association between predictability and the cost of equity capital. Also, they find a significantly strong association between earnings smoothness and the cost of equity capital. (7) The current study adds financial crisis to the model and find steadily increasing in the explanation power ($R^2$) of the model, with a significantly strong association between the financial crisis and the cost of equity capital. (8) The current study re-investigates the association between earnings quality and the cost of capital in the financial crisis period only, and finds that both earnings persistence and

predictability have largest impact on the cost of equity capital compared to accruals quality and smoothness.

## 7.8 Summary

The empirical results are consistent across estimation methods (annual regression and pooled regression), specifications of the four earnings quality proxies (decile and raw data), and proxies of the cost of equity capital (*IndEP* and the *ex-ante* measures). This study generally finds a statistically significant association between each earnings quality proxy considered separately and the cost of equity capital. Therefore, the first hypothesis ($H_1$) is accepted, which suggests a negative association between earnings quality and the cost of equity capital. This finding supports the capital needs theory and decision usefulness theory.

Moreover, the results show that predictability proxy explains more of the variation in estimates of the cost of equity, followed by accruals quality then persistence and finally smoothness, these results suggest that there are differences between IFRS and US GAAP in sense of the relative impact of earnings quality proxies on the cost of equity capital, especially, for earnings predictability which the current study finds a strong impact of earnings predictability on the cost of equity capital, however, Francis et al. (2004) do not find any significant impact of earnings predictability on the cost of equity capital. This finding is consistent with the study of Folsom et al. (2013), who find the principles-based standards i.e., IFRS are more informative, persistent and predictive of future earnings and cash flows than rules-based standards i.e., US GAAP. Another difference is the impact of earnings smoothness on the cost of equity capital. Results reported by Francis et al. (2004) suggest that capital market participants' investors reward smoother earnings streams with reduced costs of equity capital, this finding is consistent with a view that earnings smoothness is desirable (at least in the eyes of investors) because it reflects higher quality financial reporting decisions. The current study's findings, however, do not consistent with this notion, because there is no a significantly strong impact to earnings smoothness on the cost of equity capital, which may suggest the idea of Leuz et al. (2003) who document that earnings smoothness reflects the extent to which accounting standards and legal system allow managers to artificially reduce variability in earnings, presumably to obtain some capital market benefits associated with a smooth earnings stream. Under this view, smoother earnings would indicate lower earnings quality in the UK market. Also,

the results of earnings smoothness are consistent with the study of Jayaraman (2008) who conclude that earnings that are smoother than cash flow distort information and attract more informed investors which may lead to higher cost of equity capital. In addition, this conclusion become stronger in the financial crisis period, which the results indicate no significant association between earnings smoothness and the cost of equity capital.

The interaction effects between earnings quality and financial crisis on the cost of equity capital is also examined. The results indicate that in the crisis the investors give more attention to the quality of earnings compared to pre-crisis in determining the price of cost of equity capital of firms. The association between the cost of equity capital and earnings quality through the financial crisis period (2008 and 2009 only) are examined, and finds a stronger significant impact to earnings persistence and predictability compared to the impact of accruals quality and smoothness. Also, it finds higher significant impact to *Beta* on the cost of equity capital in relative to the whole period regressions. These findings shed light about the influence of economic consequences on the association between accounting information and its users i.e., investors. The results suggest that the investors give more attention to sustainability of earnings rather than the association between earnings and cash flow. These results also, indicate the information that matter to the investor through the financial crisis in determining the price of cost of equity capital.

Explaining this finding could be that when the economy is stable, because investment opportunities are numerous, investors are perhaps pay less attention to the quality of accounting information (Mitton, 2002). Conversely, a crisis could force investors to identify the weakness in the quality of accounting information that existed all along. This identification may lead to a ‘‘flight-to-quality’’ syndrome (e.g., Goh et al., 2015; Francis et al., 2012). Therefore, that will lead investors to either withdraw from the stock market completely, or move their investments to what they considers as firms with high quality accounting information (Francis et al., 2013; Francis et al., 2012).

The current study also examines the separate impact of innate and discretionary earnings quality components on the cost of equity capital by using two different methods. The result suggests that the innate component of each earnings quality proxy has a larger impact on the cost of equity capital than the discretionary component. This result is consistent with the notion that information uncertainty that results from innate component is fundamental, compared to reporting uncertainty, which can easily shift from period to

another. Therefore, the hypothesis ($H_6$) is rejected, which suggests that the innate and discretionary components have the same impact on the cost of equity capital. Moreover, the results suggest that the innate component of earnings smoothness has a significant impact on the cost of equity capital. However, the discretionary component has no significant impact on the cost of equity capital. This finding suggests that investors reward innate component by reducing the cost of equity capital. However, they do not reward the high discretionary component of earnings smoothness by reducing the cost of equity capital, they consider it as a type of earnings management. This finding consistent with the view of Ahrens (2009) who argue that earnings smoothness should be disentangle into two portions, first portion is the natural smoothness, which happens naturally from the effect of some production processes on earnings streams (the innate component), The second portion is intentional smoothness, which happens when some firms smooth earnings intentionally to benefit from the advantages of such an earnings stream (the discretionary component).

To sum up, the findings of the current study support the importance of accounting information and financial reporting to the capital market participants, i.e., investors, and it has a capital market consequence i.e., the cost of equity capital.

# Chapter 8: Empirical Results: the Association between Earnings Quality and Information Asymmetry

## 8.1 Introduction

The main objective of this chapter is to examine the impact of earnings quality on information asymmetry. Particularly, it tests the extent to which what is reported to be the higher of four earnings quality proxies known as accounting-based earnings quality proxies - accruals quality, earnings persistence, earnings predictability and earnings smoothness (Francis et al., 2004) - are associated with a lower information asymmetry measured by the bid-ask spread. In addition, during the period of crisis, it tests this association in order to determine whether the crisis has an impact on this association. Finally, this chapter aims to investigate the association between information asymmetry and the both component of earnings quality, the innate and discretionary component.

## 8.2 A univariate Analysis

The researcher conducted a univariate analysis of information asymmetry across quintiles and these were sorted on the each earnings quality proxies from the lowest to the highest. Table 8-1, panel (A) provides evidence of the association between information asymmetry and earnings quality proxies. These results indicate that the worst earnings quality firms have the highest information asymmetry, and, for the worst earnings quality quintile (Q10), the mean information asymmetry is significantly larger than the mean for the best earnings quality quintile (Q1). In terms of accruals quality, the difference in mean values between Q10 and Q1 is 9.24 and is significantly different from zero (t-statistic 14.39). In terms of persistence, the difference in mean values between Q10 and Q1 is 5.39 and is significantly different from zero (t-statistic 10.02). For smoothness, the difference in mean values between Q10 and Q1 is 2.78 and is significantly different from zero (t-statistic 5.24). Finally, in terms of predictability, the difference in mean values between Q10 and Q1 is 2.14 and is significantly different from zero (t-statistic 3.59).

### *8.2.1 Correlations among variables*

Table 8-1 Panel (B) reports the correlations amongst the three aspects of variables: namely, information asymmetry; earnings quality proxies; and control variables. The first aspect represents the correlations between information asymmetry and earnings quality

proxies. In this respect, the results indicate that, among other earnings quality proxies, accruals quality has the strongest significant correlation with information asymmetry (31%) followed by persistence (15%), then predictability (12%) and, finally, smoothness (11%).

Moving to the second aspect which represents the correlations between information asymmetry and control variables, the results indicate a strong negative correlation between information asymmetry and trading volume (-49%). Also, the results indicate a strong negative correlation between information asymmetry and firm size (-67%). However, the results indicate a significant positive correlation between information asymmetry and standard deviation of return (37%); these are consistent with previous studies (e.g., Bhattacharya et al., 2013; Ascioglu et al., 2012). Moving to the third aspect which represents the correlation between earnings quality proxies and control variables, the results indicate that correlations between earnings quality and control variables range between 0.26% and 62%. This suggests that mutlicollinearity is perhaps insignificant between the control variables and earnings quality proxies. In addition, the results indicate that the strongest positive correlation is between firm size and trading volume (62%); this indicates that larger sized firms have higher volumes of trade.

**Table 8-1: Univariate analyses of information asymmetry on earnings quality proxies**

***Panel A: Mean Values of information asymmetry by each EQ Quintiles***

| | High Q1 | Q3 | Q5 | Q7 | Low Q10 | Diff Q10-Q1 | t-stat |
|---|---|---|---|---|---|---|---|
| AQ *InfoAsymmetry* | 4.11 | 4.84 | 6.21 | 7.92 | 12.25 | 9.24 | 14.39*** |
| Persistence *InfoAsymmetry* | 3.86 | 7.19 | 7.91 | 7.92 | 8.69 | 5.39 | 10.02*** |
| Predictability *InfoAsymmetry* | 8.72 | 8.64 | 5.75 | 4.40 | 10.37 | 2.14 | 3.59*** |
| Smoothness *InfoAsymmetry* | 5.90 | 6.58 | 6.79 | 8.51 | 8.19 | 2.78 | 5.24*** |

***Panel B: The correlation among information asymmetry, earnings quality proxies and control variables***

| | Info Asymmetry | AQ | Persist | Predict | Smooth | Trading Volume | Size |
|---|---|---|---|---|---|---|---|
| AQ | 0.31 | | | | | | |
| | *<.0001* | | | | | | |
| Persistence | 0.15 | 0.082 | | | | | |
| | *<.0001* | *<.0001* | | | | | |
| Predictability | 0.12 | 0.034 | 0.108 | | | | |
| | *<.0001* | *0.0021* | *<.0001* | | | | |
| Smoothness | 0.11 | 0.061 | 0.193 | 0.27 | | | |
| | *<.0001* | *<.0001* | *<.0001* | *<.0001* | | | |
| Trading Volume | -0.49 | -0.147 | -0.072 | -0.031 | 0.088 | | |
| | *<.0001* | *<.0001* | *<.0001* | *0.0066* | *<.0001* | | |
| Size | -0.67 | -0.466 | -0.163 | 0.309 | -0.111 | 0.622 | |
| | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | |
| σ(Return) | 0.37 | 0.224 | 0.121 | -0.068 | 0.142 | 0.026 | -0.351 |
| | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *<.0001* | *0.0285* | *<.0001* |

The sample consists of 6,397 firm-year observations over the period 2005-2011 (14 industries). In panel (B), the reported data are as follows. $InfoAsymmetry$ is measured by using the percentage quoted spread; this is the raw spread (ask – bid) deflated by the midpoint of the bid and ask quotes. Trading volume is the total trading volume of a firm in year *t*. Size is the log of total assets in year *t*. σ(Return) is the standard deviation of stock returns over a firm's preceding 10 years.
Pearson correlations are reported in panel (B). The p-value is listed in italics below each correlation.

## 8.3 Multivariate Analyses

Multivariate tests are carried out in order to examine the association among the information asymmetry, control variables and each earnings quality proxies: namely, accruals quality, persistence, predictability and smoothness. The control variables are firm size, trading volume and standard deviation of return.

$$InfoAsym_{j,t} = \alpha + \beta_1 TradingVolume_{j,t} + \beta_2 Size_{j,t} + \beta_3 \sigma(Return)_{j,t} + \beta_4 EQProxy^{k}_{j,t} + \varepsilon_{j,t} \quad \text{Equation (8-1)}$$

Where:
$InfoAsym$ is measured by using the percentage quoted spread, which is the raw spread (ask – bid) deflated by the midpoint of the bid and ask quotes.
$TradingVolume$ is trading volume of a firm in year *t*;
$Size$ is a log of total assets of a firm for year *t*
$\sigma(Return)$ is the standard deviation of stock return calculated over the preceding 10 years.
$EQProxy^{k}_{j,t}$ is the decile rank of firm's value of the *k*th earnings quality proxy in year *t*, $K \in \{AccrualsQuality, Persistence, Predictability, Smoothness\}$.

According to the literature, there is an expectation of a positive coefficient on the each decile rank earnings quality. This indicates higher bid-ask spread for firms with less

favourable (i.e., larger) values of each earnings quality proxy and, thus, higher information asymmetry for such firms. For control variables, there is an expectation of negative coefficients for size and trading volume, and a positive coefficient for standard deviation of return. Moreover, in order to alleviate concerns about cross-sectional dependencies in the sample, the researcher used Equation (8-1) to estimate each of the 7 years in the sample. This equation used the time-series standard errors regressions introduced by Fama and MacBeth (1973).

Table 8-2, panel (A) provides both the coefficients estimates and t-statistics as a result of estimating Equation (8-1) and after adding separately each earnings quality proxies to the model. The results indicate a significant positive association between earnings quality proxies and information asymmetry; this association indicates that, compared to firms with high earnings quality, firms, with low earnings quality, have a higher information asymmetry. By comparing the coefficients of earnings quality proxies, the results indicate that earnings smoothness has the largest impact on information asymmetry followed by persistence, then earnings predictability and, finally, accruals quality. This finding is contrary to the finding of the study of Jayaraman (2008) in which he found that earnings smoothness was associated with higher rather than lower bid-ask spreads. For control variables, the results indicate a significant positive association between information asymmetry and standard deviation of return. Also, the results indicate a negative association between information asymmetry and both trading volume and firm size; these are consistent with previous literature (Bhattacharya et al., 2013; Cohen, 2008). Finally, 52% is the average of four models' explanatory power of regressions.

In order to control the effects of heteroscedasticity and autocorrelation, the researcher used, also, Newey and West (1987) standard errors pooled regression. Table 8-2, panel (B) provides the results; these are consistent with the time-series standard errors regression. Also, the order between earnings proxies still remains. Those findings are interpreted as investors paying attention to the quality of firms' earnings before trading in such firms. Therefore, the hypothesis ($H_2$) is accepted and suggests a negative association between the firm's reported quality of earnings and that firm's information asymmetry; this is consistent with theoretical framework of Easley and O'hara (2004) and signalling theory.

**Table 8-2: Multivariate analyses of information asymmetry on earnings quality proxies**

***Panel A: Mean-annual regression of information asymmetry on each earning quality proxy (Decile rank), and control variables***

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.72*** | -0.71*** | -0.68*** | -0.74*** |
| | (-8.47) | (-8.54) | (-9.21) | (-8.69) |
| Size | -1.48*** | -1.48*** | -1.55*** | -1.46*** |
| | (-8.32) | (-8.99) | (-8.35) | (-8.87) |
| σ(Return) | 0.077*** | 0.076*** | 0.076*** | 0.076*** |
| | (5.61) | (5.55) | (5.40) | (5.52) |
| AQ | 0.059** | | | |
| | (2.39) | | | |
| Persistence | | 0.097*** | | |
| | | (3.01) | | |
| Predictability | | | 0.061** | |
| | | | (2.41) | |
| Smoothness | | | | 0.13*** |
| | | | | (8.16) |
| Constant | 27.3*** | 27.0*** | 27.7*** | 27.0*** |
| | (9.04) | (9.53) | (9.40) | (9.38) |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.523 | 0.524 | 0.523 | 0.524 |

***Panel B: Pooled regressions of information asymmetry on each earning quality proxy (Decile rank), and control variables***

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.70*** | -0.69*** | -0.66*** | -0.73*** |
| | (-15.1) | (-15.1) | (-13.9) | (-15.6) |
| Size | -1.56*** | -1.58*** | -1.65*** | -1.56*** |
| | (-28.1) | (-30.5) | (-29.1) | (-29.8) |
| σ(Return) | 0.060*** | 0.060*** | 0.059*** | 0.060*** |
| | (17.4) | (17.3) | (17.1) | (17.4) |
| AQ | 0.054* | | | |
| | (1.83) | | | |
| Persistence | | 0.095*** | | |
| | | (3.94) | | |
| Predictability | | | 0.072** | |
| | | | (2.49) | |
| Smoothness | | | | 0.13*** |
| | | | | (5.34) |
| Constant | 28.5*** | 28.5*** | 29.0*** | 28.4*** |
| | (49.8) | (55.9) | (59.9) | (56.4) |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.494 | 0.495 | 0.495 | 0.496 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
See Table (8-1) for variable definitions. The sample consists of 6,397 firm-year observations and covering the years from 2005 to 2011.

### *8.3.1 The financial crisis*

Figure 8-1 presents the mean of information asymmetry in each year from 2005 to 2011. The figure shows that the mean of information asymmetry increased sharply from the pre-crisis years (2005, 2006 and 2007) to the first year of the period of crisis (2008), and then levelled off. There was a dip by the end of the crisis period, and then a further reduction at the beginning of the recovery years (2010). In 2009, there was a slight fall in average levels of information asymmetry. According to this finding, the research separates the sample period (2005-2011) into three classifications: 'pre-crisis' for the years 2005, 2006, 2007, 'crisis period' for years 2008, 2009 and "recovery" for the years 2010 and 2011. Therefore, the researcher tests the impact of financial crisis on the model of information asymmetry by using two methods. Firstly, two control variables (dummy variables) for the crisis are added to Equation (8-1) (results reported in Table 8-3).

$$InfoAsym_{j,t} = \alpha + \beta_1 TradingVolume_{j,t} + \beta_2 Size_{j,t} + \beta_3 StdRet_{j,t} + \beta_4 EQProxy_{j,t}^{k} + \beta_5 Crisis_{j,t} + \beta_5 Recovery_{j,t} + \varepsilon_{j,t} \quad \text{Equation (8-2)}$$

Where:
$Crisis_{j,t}$ is a dummy variable which equals 1 if the years are 2008 and 2009 and equals zero otherwise.
$Recovery_{j,t}$ is a dummy variable which equals 1 if the years are 2010 and 2011 and equals zero otherwise.

**Figure 8-1 : The mean of information asymmetry over years 2005-2011**

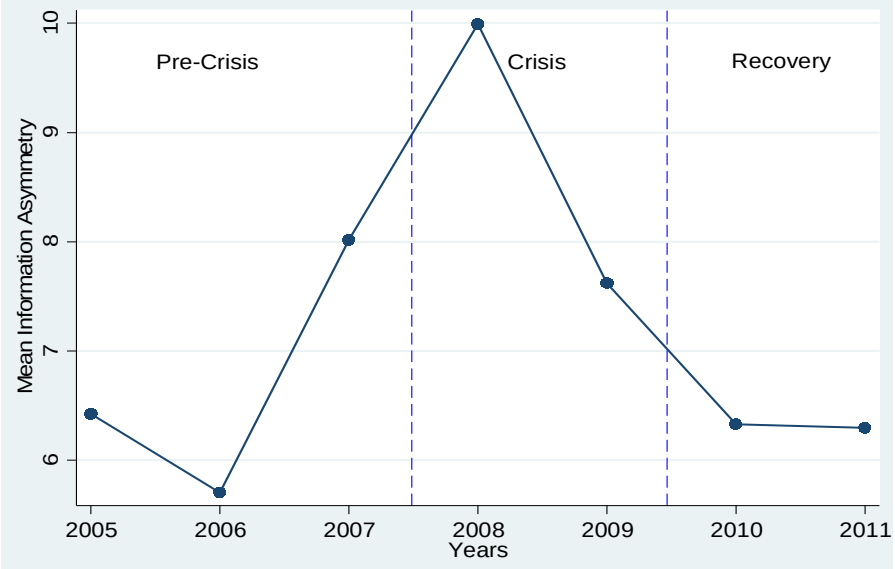


**Table 8-3: Pooled regressions of information asymmetry on each earnings quality proxy (decile rank), financial crisis dummy variables and control variables**

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.69*** | -0.68*** | -0.64*** | -0.72*** |
| | (-14.7) | (-14.7) | (-13.4) | (-15.2) |
| Size | -1.57*** | -1.60*** | -1.67*** | -1.57*** |
| | (-27.7) | (-29.9) | (-28.5) | (-29.3) |
| σ(Return) | 0.057*** | 0.056*** | 0.056*** | 0.056*** |
| | (14.8) | (14.6) | (14.3) | (14.7) |
| Crisis | 0.49** | 0.50** | 0.52** | 0.51** |
| | (2.42) | (2.51) | (2.57) | (2.52) |
| Recovery | -0.82*** | -0.82*** | -0.80*** | -0.81*** |
| | (-5.00) | (-4.96) | (-4.86) | (-4.96) |
| AQ | 0.058** | | | |
| | (1.97) | | | |
| Persistence | | 0.098*** | | |
| | | (4.08) | | |
| Predictability | | | 0.076*** | |
| | | | (2.61) | |
| Smoothness | | | | 0.13*** |
| | | | | (5.46) |
| Constant | 28.8*** | 28.7*** | 29.3*** | 28.7*** |
| | (50.1) | (56.2) | (60.1) | (56.6) |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.498 | 0.499 | 0.498 | 0.500 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table (8-1) for variable definitions. The sample contains 6,397 firm-year observations over t = 2005-2011. *Crisis* is a dummy variable which equals 1 if the years are 2008 and 2009 and the remaining years equal zero. *Recovery* is a dummy variable which equals 1 if the years are 2010 and 2011 and the remaining years equal zero.

According to Table 8-3, the results indicate a significant positive association between information asymmetry and financial crisis. This indicates, also, a high bid-ask spread throughout the financial crisis when compared to the "pre-crisis" period (2005, 2006 and 2007). Also there is a significant positive association between each earnings quality proxy and information asymmetry; this is consistent with the main pooled regression reported in Table 8-2 panel (B). Finally, the order of largest effect between earnings quality proxies on information asymmetry still remains.

Secondly, the interaction effects between the financial crisis and earnings quality proxies are added to the Equation (8-1) in order to determine the impact of the financial crisis on the association between earnings quality and information asymmetry in the UK. Table 8-4 reports the results which indicate that within the crisis period, the association between earnings quality and information asymmetry was stronger than before the crisis. However, in the recovery period (2010 and 2011) and compared with the pre-crisis period, there was a less significant association between earnings quality proxies and information

asymmetry. This finding suggests that, in the financial crisis, investors paid more attention to quality of earnings; this finding is consistent with the results of the previous empirical chapter. Therefore, the hypothesis ($H_{12}$) is accepted.

**Table 8-4: Pooled regressions of information asymmetry on each earning quality proxy (decile rank), the interaction between earnings quality and crisis, and control variables**

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.68*** | -0.68*** | -0.65*** | -0.72*** |
| | *(-14.7)* | *(-14.6)* | *(-13.4)* | *(-15.3)* |
| Size | -1.58*** | -1.60*** | -1.67*** | -1.57*** |
| | *(-28.2)* | *(-30.1)* | *(-28.2)* | *(-29.3)* |
| σ(Return) | 0.057*** | 0.057*** | 0.056*** | 0.058*** |
| | *(15.2)* | *(15.0)* | *(14.5)* | *(15.3)* |
| AQ | 0.070** | | | |
| | *(2.14)* | | | |
| AQ * Crisis | 0.083** | | | |
| | *(2.43)* | | | |
| AQ * Recovery | -0.14*** | | | |
| | *(-4.98)* | | | |
| Persistence | | 0.11*** | | |
| | | *(3.91)* | | |
| Persist * Crisis | | 0.077** | | |
| | | *(2.29)* | | |
| Persist * Recovery | | -0.15*** | | |
| | | *(-5.36)* | | |
| Predictability | | | 0.070** | |
| | | | *(2.29)* | |
| Predict * Crisis | | | 0.083*** | |
| | | | *(2.63)* | |
| Predict * Recovery | | | -0.068*** | |
| | | | *(-2.60)* | |
| Smoothness | | | | 0.15*** |
| | | | | *(5.42)* |
| Smooth * Crisis | | | | 0.063* |
| | | | | *(1.90)* |
| Smooth * Recovery | | | | -0.14*** |
| | | | | *(-5.19)* |
| Constant | 28.7*** | 28.7*** | 29.2*** | 28.5*** |
| | *(49.4)* | *(54.8)* | *(57.5)* | *(54.9)* |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.499 | 0.499 | 0.496 | 0.500 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table (8-1) for variable definitions. The sample contains 6,397 firm-year observations over t = 2005-2011

Finally, the association between information asymmetry and earnings quality only in the period of the financial crisis (year 2008 and 2009) is examined. Table 8-5 reports, with the exception of accruals quality, significant associations between information asymmetry and earnings quality proxies.

**Table 8-5: Means annual regressions of information asymmetry on each earning quality proxy (decile rank) in the financial crisis, and control variables**

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.78*** | -0.76*** | -0.70*** | -0.82*** |
| | (-8.68) | (-8.61) | (-7.49) | (-9.08) |
| Size | -1.98*** | -2.00*** | -2.14*** | -1.96*** |
| | (-18.1) | (-19.9) | (-19.1) | (-19.4) |
| σ(Return) | 0.036*** | 0.035*** | 0.034*** | 0.036*** |
| | (6.87) | (6.55) | (6.33) | (6.75) |
| AQ | 0.047 | | | |
| | (0.76) | | | |
| Persistence | | 0.15*** | | |
| | | (3.00) | | |
| Predictability | | | 0.17*** | |
| | | | (2.81) | |
| Smoothness | | | | 0.17*** |
| | | | | (3.43) |
| Constant | 36.1*** | 35.6*** | 36.6*** | 35.7*** |
| | (33.0) | (39.2) | (42.2) | (39.6) |
| *N* | 1873 | 1873 | 1873 | 1873 |
| adj. $R^2$ | 0.527 | 0.529 | 0.529 | 0.529 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italic.
See Table (8-1) for variable definitions. The sample consists of 1,873 firm-year observations over *t* = 2008-2009.

### *8.3.2 Innate versus discretionary earnings quality*

As per the previous chapter, the researcher uses two methods to disentangle the innate and the discretionary earnings quality components and in order to investigate the impact of both components on information asymmetry. Table 8-6 reports a significant positive association between information asymmetry and the innate component of each earnings quality proxy. However, there is no significant association between the discretionary component of each earnings quality proxy and information asymmetry. Moreover, on the one hand, the coefficients of innate component are larger than the coefficients of the discretionary component of earnings quality proxies. In economic terms, the largest effect of innate earnings predictability reduces information asymmetry by 540 basis points (60 by 9 difference decile rank) between the highest and lowest decile rank of innate accruals quality firms. On the other hand, the effect of discretionary accruals quality is 55 basis

points. This finding suggests that, when compared to low earnings quality related to the discretionary component, investors assign a higher information asymmetry to firms with low earnings quality related to the innate component. This result may explain, also, the reason why, compared to other proxies, the association between total accruals quality and information asymmetry appears weak in the main tests (significant at 5% and10%). The four regressions' average goodness of fit is 53%.

Under Method 2, Table 8-6 panel (B) reports that, with the exception of accruals quality, discretionary earnings quality has positive coefficients for the four regressions. However, these coefficients are insignificant and smaller than the coefficients of total earnings quality. The four regressions' average goodness of fit is 56%.

According to the results in Table 8-6 panels A and B, the null hypothesis ($H_7$) of there being no differences between the effects of innate and discretionary earnings quality components on information asymmetry is rejected. This supports the opinion that the innate component of each earnings quality proxies has a significantly larger impact than the discretionary component on information asymmetry. This result suggests that, in the UK and when compared to the discretionary component driven by management choices, investors attach greater weight to the innate component driven by economic fundamentals.

**Table 8-6: The mean-annuals regression regressions of information asymmetry on both innate and discretionary components of each earning quality proxy**

***Panel A: Mean-annuals regression regressions of information asymmetry on both innate and discretionary components of each earning quality proxy, and control variables (Method1)***

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.77*** | -0.67*** | -0.81*** | -0.76*** |
| | (-9.93) | (-10.6) | (-12.9) | (-11.2) |
| Size | -0.73*** | -1.40*** | -1.15*** | -1.33*** |
| | (-6.00) | (-8.10) | (-7.44) | (-8.20) |
| σ(Return) | 0.074*** | 0.081*** | 0.073*** | 0.077*** |
| | (5.23) | (5.75) | (5.11) | (5.60) |
| AQ (*Innate*) | 0.60*** | | | |
| | (8.85) | | | |
| AQ (*Disc.*) | 0.062 | | | |
| | (1.69) | | | |
| Persistence (*Innate*) | | 0.12*** | | |
| | | (4.31) | | |
| Persistence (*Disc.*) | | 0.039 | | |
| | | (1.40) | | |
| Predictability (*Innate*) | | | 0.32*** | |
| | | | (7.26) | |
| Predictability (*Disc.*) | | | -0.020 | |
| | | | (-0.56) | |
| Smoothness (Innate) | | | | 0.19*** |
| | | | | (7.23) |
| Smoothness (*Disc.*) | | | | 0.10*** |
| | | | | (7.46) |
| Constant | 15.9*** | 25.2*** | 23.4*** | 24.9*** |
| | (7.23) | (9.03) | (9.43) | (9.09) |
| *N* | 4960 | 4960 | 4960 | 4960 |
| adj. $R^2$ | 0.534 | 0.525 | 0.533 | 0.528 |

***Panel B Mean-annual regressions of information asymmetry on discretionary earning quality, and control variables (Method2)***

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.76*** | -0.76*** | -0.78*** | -0.78*** |
| | (-10.3) | (-10.9) | (-11.9) | (-11.0) |
| Size | -1.67*** | -1.68*** | -1.65*** | -1.68*** |
| | (-8.95) | (-8.68) | (-7.86) | (-8.91) |
| σ(Return) | 0.075*** | 0.074*** | 0.075*** | 0.075*** |
| | (5.94) | (5.94) | (5.92) | (5.96) |
| σ(CFO) | 0.0040*** | 0.0043*** | 0.0040*** | 0.0041*** |
| | (5.46) | (5.32) | (5.72) | (5.39) |
| σ(Sales) | 0.0014*** | 0.0014*** | 0.0014*** | 0.0014*** |
| | (17.1) | (18.8) | (17.5) | (18.3) |
| OperCycle | -0.22 | -0.23 | -0.23 | -0.22 |
| | (-1.47) | (-1.52) | (-1.52) | (-1.40) |
| NegEarn | 0.20*** | 0.17*** | 0.21*** | 0.15*** |
| | (5.04) | (4.62) | (5.40) | (3.79) |
| AQ (*Disc.*) | -0.0083 | | | |
| | (-0.20) | | | |
| Persistence (*Disc.*) | | 0.041 | | |
| | | (1.41) | | |
| Predictability (*Disc.*) | | | -0.018 | |
| | | | (-0.83) | |
| Smoothness (*Disc.*) | | | | 0.11*** |
| | | | | (8.42) |
| Constant | 30.5*** | 29.9*** | 30.4*** | 30.2*** |
| | (9.17) | (8.76) | (8.72) | (8.76) |
| *N* | 4960 | 4960 | 4960 | 4960 |
| adj. $R^2$ | 0.559 | 0.561 | 0.559 | 0.560 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 4,960 firm-year observations and covering the years from 2005 to 2011.
σ(CFO) = the standard deviation of operating cash flow of a firm computed over the preceding 10 years; σ(Sales) = the standard deviation of net revenue of a firm computed over the preceding 10 years; OperCycle = the log of operating cycle of a firm in year *t*; NegEarn = the number of years that a firm reported net income < 0 out of the preceding 10 years.

## 8.4 Sensitivity Tests

A number of sensitivity tests are examined: Firstly, in addition to the percentage quoted spread, the researcher uses the percentage effective spread as a second measure for the information asymmetry and reinvestigate the association between information asymmetry and earnings quality proxies (Table 8-7, panel A and B report the results). The results indicate a significantly negative association between information asymmetry and each earnings quality proxy; this indicates that with the exception of earning persistence, firms with high earnings quality have lower percentage effective spreads than firms with low earnings quality. However, the average of $R^2$ declined by 8%. Secondly, the decile rank of earnings quality is replaced with the raw values of earnings quality proxies (Table 8-8

reports the results). The results indicate a significant association between each earnings quality proxy and information asymmetry.

Thirdly, although the researcher uses standard specifications from the market microstructure literature, there is a concern regarding whether those used regressions control properly the differences in the firm's characteristics. One suggestion could be the addition of industry effects as control variables since, perhaps, firms in the same industry exhibit similar firm characteristics. Therefore, the researcher creates fourteen industry dummies based on the industry classification in Table 6-2. The addition of those dummies to the main models does not change materially the relative coefficients or the *t*-statistics of the information asymmetry main regressions. The results indicate a significant positive association between each earnings quality proxy and information asymmetry (Table 8-9 reports the results).

Fourthly, the fixed and random effects panel data models are used (Table 8-10 reports the results). According to the fixed-effects, the results indicate significant associations between information asymmetry and all earnings quality proxies except earnings persistence. According to the random-effects, the results indicate significant associations between information asymmetry and both earnings predictability and earnings smoothness. Based on the Hausman test, the fixed effects estimations are more appropriate than random effects estimations.

## 8.5 Summary

Although few studies examine the associations between information asymmetry and earnings quality, empirical evidence on this issue is controversial. From a broad sample of UK listed firms, the researcher documents that an important adverse consequence of low earnings quality is higher information asymmetry as measured by bid-ask spread. This is consistent with the theoretical framework of Easley and O'hara (2004). The results indicate, also, that earnings smoothness has the largest negative impact across all earnings quality proxies on information asymmetry, This finding is contrary to the finding of the study of Jayaraman (2008) as he finds a significant positive association between earnings smoothness and bid-ask spreads.

As for the financial crisis, this study tests the association between information asymmetry and earnings quality proxy during only the period of crisis (2008 and 2009). With the

exception of accruals quality, the researcher finds significant associations between information asymmetry and all earnings quality proxies. Also, the researcher tests the interaction effects of the financial crisis and earnings quality on information asymmetry. The results indicate that, within the crisis period and when compared to the pre-crisis period, there is a stronger association between earnings quality and information asymmetry. However, during the period of recovery, there is a less significant association.

Furthermore, this study divides earnings quality into two components, namely the innate and discretionary components, and tests whether each component has the same impact on information asymmetry. The results indicate that the innate component has a stronger impact on information asymmetry than the discretionary component. This finding suggests that investors attach greater weight to the innate component driven by economic fundamentals, compared to the discretionary component driven by management choices in the UK. These results are robust to alternative model specifications.

**Table 8-7: The regressions of information asymmetry (percentage effective spread) on earning quality proxies, and control variables**

***Panel A: Mean-annual regressions of information asymmetry (percentage effective spread) on earning quality proxies, and control variables***

| | %Effective Spread | %Effective Spread | %Effective Spread | %Effective Spread |
|---|---|---|---|---|
| Trading Volume | -1.28*** | -1.22*** | -0.83*** | -1.27*** |
| | (-6.39) | (-6.18) | (-5.44) | (-6.08) |
| Size | 1.51*** | 1.31*** | 0.67** | 1.35*** |
| | (4.56) | (4.43) | (2.93) | (4.40) |
| σ(Return) | 0.14*** | 0.14*** | 0.13*** | 0.14*** |
| | (5.69) | (5.55) | (5.63) | (5.65) |
| AQ | 0.32*** | | | |
| | (4.88) | | | |
| Persistence | | 0.065 | | |
| | | (1.04) | | |
| Predictability | | | 0.84*** | |
| | | | (6.58) | |
| Smoothness | | | | 0.16** |
| | | | | (3.39) |
| Constant | -6.07** | -3.08 | -3.57 | -3.55* |
| | (-2.81) | (-1.85) | (-1.88) | (-2.13) |
| *N* | 6396 | 6396 | 6396 | 6396 |
| adj. $R^2$ | 0.071 | 0.069 | 0.094 | 0.069 |

***Panel B: Pooled regressions of information asymmetry (percentage effective spread) on earning quality proxies, and control variables***

| | %Effective Spread | %Effective Spread | %Effective Spread | %Effective Spread |
|---|---|---|---|---|
| Trading Volume | -0.94*** | -0.88*** | -0.45*** | -0.93*** |
| | (-8.23) | (-7.85) | (-4.25) | (-8.06) |
| Size | 1.03*** | 0.81*** | 0.088 | 0.85*** |
| | (8.27) | (7.14) | (0.70) | (7.37) |
| σ(Return) | 0.086*** | 0.087*** | 0.075*** | 0.087*** |
| | (9.66) | (9.77) | (8.90) | (9.78) |
| AQ | 0.36*** | | | |
| | (5.11) | | | |
| Persistence | | 0.098 | | |
| | | (1.63) | | |
| Predictability | | | 0.94*** | |
| | | | (11.7) | |
| Smoothness | | | | 0.18*** |
| | | | | (2.87) |
| Constant | -2.20* | 0.96 | 0.68 | 0.63 |
| | (-1.79) | (0.83) | (0.65) | (0.57) |
| *N* | 6396 | 6396 | 6396 | 6396 |
| adj. $R^2$ | 0.035 | 0.031 | 0.062 | 0.032 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 6,396 firm-year observations and covering the years from 2005 to 2011.

**Table 8-8: Pooled regressions of information asymmetry on each earning quality proxy (raw data), and control variables**

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.71*** | -0.69*** | -0.66*** | -0.72*** |
| | (-15.4) | (-15.1) | (-14.3) | (-15.5) |
| Size | -1.53*** | -1.58*** | -1.61*** | -1.57*** |
| | (-27.5) | (-30.5) | (-31.1) | (-30.3) |
| σ(Return) | 0.059*** | 0.060*** | 0.059*** | 0.059*** |
| | (17.2) | (17.3) | (16.9) | (17.3) |
| AQ | 4.01*** | | | |
| | (3.10) | | | |
| Persistence | | -0.52*** | | |
| | | (-3.46) | | |
| Predictability | | | 0.11*** | |
| | | | (3.43) | |
| Smoothness | | | | 0.48*** |
| | | | | (4.92) |
| Constant | 28.3*** | 29.1*** | 29.0*** | 28.6*** |
| | (52.2) | (59.7) | (59.4) | (57.8) |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.495 | 0.495 | 0.496 | 0.496 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 6,397 firm-year observations and covering the years from 2005 to 2011.

**Table 8-9: Pooled regressions of information asymmetry on earning quality proxies, plus industry dummy variables and control variables**

| | Information Asymmetry | Information Asymmetry | Information Asymmetry | Information Asymmetry |
|---|---|---|---|---|
| Trading Volume | -0.60*** | -0.59*** | -0.57*** | -0.63*** |
| | (-12.6) | (-12.6) | (-11.6) | (-13.1) |
| Size | -1.66*** | -1.67*** | -1.73*** | -1.65*** |
| | (-28.7) | (-30.2) | (-28.8) | (-29.9) |
| σ(Return) | 0.062*** | 0.062*** | 0.062*** | 0.062*** |
| | (18.1) | (18.1) | (17.8) | (18.1) |
| 2.industry | -2.34** | -2.22** | -2.25** | -2.13** |
| | (-2.29) | (-2.18) | (-2.20) | (-2.09) |
| 3.industry | -1.67 | -1.51 | -1.53 | -1.43 |
| | (-1.56) | (-1.42) | (-1.43) | (-1.34) |
| 4.industry | 0.65 | 0.83 | 0.76 | 0.95 |
| | (0.61) | (0.79) | (0.72) | (0.90) |
| 5.industry | -0.77 | -0.64 | -0.69 | -0.56 |
| | (-0.73) | (-0.61) | (-0.65) | (-0.53) |
| 6.industry | -1.82* | -1.60 | -1.70* | -1.60 |
| | (-1.77) | (-1.56) | (-1.66) | (-1.56) |
| 7.industry | -0.96 | -0.78 | -0.88 | -0.72 |
| | (-0.96) | (-0.79) | (-0.88) | (-0.72) |
| 8.industry | 1.08 | 1.24 | 1.19 | 1.23 |
| | (1.05) | (1.21) | (1.15) | (1.20) |
| 9.industry | -2.30** | -2.15** | -2.18** | -2.02** |
| | (-2.23) | (-2.10) | (-2.13) | (-1.97) |
| 10.industry | 0.096 | 0.32 | 0.19 | 0.44 |
| | (0.092) | (0.31) | (0.18) | (0.42) |
| 11.industry | -0.98 | -0.75 | -0.86 | -0.64 |
| | (-0.96) | (-0.73) | (-0.84) | (-0.63) |
| 12.industry | -1.58 | -1.33 | -1.46 | -1.33 |
| | (-1.56) | (-1.32) | (-1.45) | (-1.33) |
| 13.industry | 0.95 | 1.20 | 1.09 | 1.28 |
| | (0.79) | (1.01) | (0.91) | (1.08) |
| 14.industry | 0.052 | 0.21 | 0.15 | 0.25 |
| | (0.051) | (0.20) | (0.15) | (0.24) |
| AQ | 0.039* | | | |
| | (1.61) | | | |
| Persistence | | 0.087*** | | |
| | | (3.61) | | |
| Predictability | | | 0.057** | |
| | | | (1.97) | |
| Smoothness | | | | 0.12*** |
| | | | | (4.88) |
| Constant | 29.4*** | 29.1*** | 29.7*** | 29.0*** |
| | (26.2) | (25.8) | (26.9) | (26.0) |
| *N* | 6397 | 6397 | 6397 | 6397 |
| adj. $R^2$ | 0.508 | 0.509 | 0.508 | 0.510 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 6,397 firm-year observations and covering the years from 2005 to 2011.

**Table 8-10: Fixed-random panel regressions of information asymmetry on each earning quality proxy (decile rank), and control variables.**

| | Information Asymmetry Fixed | Information Asymmetry Random | Information Asymmetry Fixed | Information Asymmetry Random | Information Asymmetry Fixed | Information Asymmetry Random | Information Asymmetry Fixed | Information Asymmetry Random |
|---|---|---|---|---|---|---|---|---|
| Trading Volume | -0.53*** | -0.60*** | -0.53*** | -0.60*** | -0.52*** | -0.57*** | -0.54*** | -0.63*** |
| | (-7.30) | (-11.7) | (-7.34) | (-11.8) | (-7.18) | (-11.0) | (-7.44) | (-12.2) |
| Size | -0.87*** | -1.74*** | -0.85*** | -1.73*** | -0.92*** | -1.81*** | -0.82*** | -1.70*** |
| | (-6.81) | (-26.4) | (-6.66) | (-27.1) | (-7.26) | (-27.3) | (-6.44) | (-26.7) |
| σ(Return) | 0.019*** | 0.030*** | 0.019*** | 0.030*** | 0.017*** | 0.029*** | 0.019*** | 0.029*** |
| | (7.63) | (12.7) | (7.68) | (12.6) | (6.79) | (12.2) | (7.47) | (12.4) |
| AQ | 0.076** | 0.013 | | | | | | |
| | (2.21) | (0.43) | | | | | | |
| Persistence | | | 0.018 | 0.014 | | | | |
| | | | (0.61) | (0.52) | | | | |
| Predictability | | | | | 0.32*** | 0.16*** | | |
| | | | | | (6.17) | (4.30) | | |
| Smoothness | | | | | | | 0.100*** | 0.12*** |
| | | | | | | | (2.68) | (3.85) |
| Constant | 21.6*** | 31.4*** | 21.1*** | 31.2*** | 20.1*** | 31.1*** | 20.2*** | 30.6*** |
| | (13.9) | (41.3) | (13.6) | (43.6) | (13.1) | (45.1) | (13.0) | (43.3) |
| *N* | 6397 | 6397 | 6397 | 6397 | 6397 | 6397 | 6397 | 6397 |
| *Overall* $R^2$ | 0.4741 | 0.4845 | 0.4782 | 0.4851 | 0.4432 | 0.4848 | 0.4829 | 0.4870 |
| *Hausman* | | 0.0000 | | 0.0000 | | 0.0000 | | 0.0000 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 6,397 firm-year observations and covering the years from 2005 to 2011.

# Chapter 9: Empirical Results: the Association between Earnings Quality and Analysts' Information Environment

## 9.1 Introduction

Financial analysts have been widely studied in the literature. They are considered as a primary participant in the capital markets (e.g., Schipper, 1991; Fogarty and Rogers, 2005; Matsumoto et al., 2011). Their reports are widely used by other capital market participants (Lys and Sohn, 1990; Womack, 1996; Cox and Kleiman, 2002). Prior studies suggest that analysts play an important role in enhancing the usefulness and informativeness of accounting information by providing analyses of this information to users i.e., investors. From the other side, high financial information quality is supposed to develop the capital market efficiency and financial analysts should be interested in high accounting information quality (Ewert and Wagenhofer, 2012b). Also, analysts' information environment is a more direct proxy of the usefulness of earnings information, which is an important qualitative characteristic of the quality of accounting information. Investor responsiveness studies, however, suffer from the limitation that they infer earnings quality from share price movements, which also reflect other information than earnings. Analysts' information environment, on the contrary, are related to the use of reported earnings information without confounding the use of this information with following trading decisions (Jiao et al., 2012). Therefore, this chapter aims to examine the association between four earnings quality proxies known as accounting-based earnings quality proxies and three proxies of analysts' information environment which are analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy to test the impact of the quality of accounting information on decision usefulness of sophisticated users.

## 9.2 A univariate Analysis

A univariate analysis of information asymmetry across quintiles is conducted and is sorted on the each earnings quality proxies from the lowest to the highest. Evidences on the association between the three proxies of analysts' information environment and each earnings quality proxy are provided in Table 8-1. These evidences are classified into three categories. First, financial analysts following, the result indicates that the high earnings

quality firms have the highest number of analysts following, and the mean of analysts following for the worst earnings quality quintile (Q10) is significantly smaller than the mean for the best earnings quality quintile (Q1), except earnings smoothness. In terms of accruals quality, the difference in mean values between Q10 and Q1 is -7.84 and is significantly different from zero (t-statistic 17.10). In terms of persistence, the difference in mean values between Q10 and Q1 is -3.96 and is significantly different from zero (t-statistic 9.33). For predictability, the difference in mean values between Q10 and Q1 is -3.56 and is significantly different from zero (t-statistic 8.58). However, In terms of smoothness, the difference in mean values between Q10 and Q1 is -0.08 and is not significantly different from zero (t-statistic 0.20).

Second, the analysts' forecasts dispersion, the result indicates that the high earnings quality firms have the lowest dispersion across analysts' forecasts, and the mean of analysts' forecasts dispersion for the worst earnings quality quintile (Q10) is significantly larger than the mean for the best earnings quality quintile (Q1), except earnings predictability. In terms of accruals quality, the difference in mean values between Q10 and Q1 is 0.90 and is significantly different from zero (t-statistic 5.60). In terms of persistence, the difference in mean values between Q10 and Q1 is 0.39 and is significantly different from zero (t-statistic 4.25). For smoothness, the difference in mean values between Q10 and Q1 is 0.52 and is significantly different from zero (t-statistic 4.77). However, In terms of predictability, the difference in mean values between Q10 and Q1 is -0.04 and is not significantly different from zero (t-statistic -0.18).

Third, the analysts' forecasts accuracy, the result indicates that the high earnings quality firms have more accurate analysts' forecasts than firms with low earnings quality, and the mean of analysts' forecasts accuracy for the worst earnings quality quintile (Q10) is significantly smaller than the mean for the best earnings quality quintile (Q1), except earnings persistence. In terms of accruals quality, the difference in mean values between Q10 and Q1 is -0.76 and is significantly different from zero (t-statistic 4.85). In terms of predictability, the difference in mean values between Q10 and Q1 is -3.41 and is significantly different from zero (t-statistic 9.41). For smoothness, the difference in mean values between Q10 and Q1 is -0.56 and is significantly different from zero (t-statistic 3.42). However, In terms of persistence, the difference in mean values between Q10 and Q1 is -0.12 and is not significantly different from zero (t-statistic 0.92).

**Table 9-1: Mean Values of analysts' information environment proxies by each EQ proxies Quintiles**

| | **High** Q1 | Q3 | Q5 | Q7 | **Low** Q10 | **Diff** Q10-Q1 | **t-stat** |
|---|---|---|---|---|---|---|---|
| AQ ***following*** | 10.03 | 8.00 | 6.59 | 4.43 | 2.19 | -7.84 | -17.10*** |
| Persistence ***following*** | 8.95 | 5.93 | 6.19 | 5.00 | 4.99 | - 3.96 | -9.33*** |
| Predictability ***following*** | 3.06 | 4.16 | 6.08 | 7.71 | 6.61 | -3.56 | -8.58*** |
| Smoothness ***following*** | 5.59 | 6.89 | 6.39 | 5.39 | 5.67 | 0.08 | 0.20 |
| AQ ***Dispersion*** | 0.55 | 0.67 | 0.76 | 0.92 | 1.45 | 0.90 | 5.60*** |
| Persistence ***Dispersion*** | 0.48 | 0.90 | 0.83 | 0.96 | 0.88 | 0.39 | 4.25*** |
| Predictability ***Dispersion*** | 1.23 | 0.83 | 0.67 | 0.66 | 1.19 | -0.04 | -0.18 |
| Smoothness ***Dispersion*** | 0.57 | 0.66 | 0.84 | 0.84 | 1.09 | 0.52 | 4.77*** |
| AQ ***Accuracy*** | -0.13 | -0.30 | -0.26 | -0.60 | -0.89 | -0.76 | -4.85*** |
| Persistence ***Accuracy*** | -0.39 | -0.28 | -0.44 | -0.61 | -0.51 | -0.12 | -0.92 |
| Predictability ***Accuracy*** | -0.25 | -0.17 | -0.14 | -0.19 | -3.66 | -3.41 | -9.41*** |
| Smoothness ***Accuracy*** | -0.27 | -0.25 | -0.43 | -0.75 | -0.84 | -0.56 | -3.42*** |

The sample size ranges between 3,267 and 4,637 firm-year observations over the period 2005-2011 (14 industries).

### *9.2.1 Correlations among variables*

Table 9-2 reports the correlations among the three aspects of variables: dependent variables, independent variables and control variables. For the first aspect that represent the correlations among the dependent variables show higher negative correlation between number of analysts following and analysts' forecasts dispersion than the correlation between analysts following and analysts' forecasts accuracy. Moving to the second aspect that represents the correlations among the earnings quality proxies, the results indicate correlations among the earnings quality are less than 1 which suggest the notion that the four earnings proxies measure different aspects of earnings quality. Moreover, the correlations among dependent variables and earnings quality proxies indicate that there are significant correlations range between 4% and 31% among them. For the third aspect, the table reports that the correlations among the control variables are ranging between 5% and 22%. Also, correlations among earnings quality and control variables are ranging between 3% and 45%, which suggest that mutlicollinearity is perhaps not significant among the control variables and earnings quality proxies. Finally, the closest correlation is between analysts following and firm size (80%).

**Table 9-2: The correlation among earnings quality proxies and analysts' information environment proxies**

| | Following | Dispersion | Accuracy | AQ | Persistence | Predictability | Smoothness | Size | Growth | σ(ROE) |
|---|---|---|---|---|---|---|---|---|---|---|
| Following | | | | | | | | | | |
| Dispersion | -0.175 | | | | | | | | | |
| | *0.0000* | | | | | | | | | |
| Accuracy | 0.0919 | -0.0778 | | | | | | | | |
| | *0.0000* | *0.0000* | | | | | | | | |
| AQ | -0.3115 | 0.1503 | -0.1183 | | | | | | | |
| | *0.0000* | *0.0000* | *0.0000* | | | | | | | |
| Persistence | -0.177 | 0.058 | -0.0448 | 0.0721 | | | | | | |
| | *0.0000* | *0.0008* | *0.0021* | *0.0000* | | | | | | |
| Predictability | -0.2602 | 0.0145 | -0.1772 | 0.0342 | 0.1155 | | | | | |
| | *0.0000* | *0.0000* | *0.0000* | *0.002* | *0.0000* | | | | | |
| Smoothness | -0.0412 | 0.1013 | -0.0725 | 0.0682 | 0.1859 | 0.2672 | | | | |
| | *0.0035* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | | | | |
| Size | 0.8057 | -0.2484 | 0.1199 | -0.4538 | -0.1577 | 0.3146 | -0.1127 | | | |
| | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | | | |
| Growth | -0.0472 | -0.0529 | 0.0538 | 0.0593 | -0.1008 | -0.1719 | -0.1545 | 0.0784 | | |
| | *0.0015* | *0.0033* | *0.0004* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | | |
| σ(ROE) | -0.1004 | 0.0917 | -0.0651 | 0.2366 | 0.0686 | 0.0658 | 0.1669 | -0.2231 | 0.1013 | |
| | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | |
| SURP | 0.0776 | 0.0324 | -0.5207 | 0.0297 | 0.0541 | 0.3505 | 0.0826 | 0.0387 | -0.0159 | 0.0529 |
| | *0.0000* | *0.0628* | *0.0000* | *0.0132* | *0.0000* | *0.0000* | *0.0000* | *0.0012* | *0.2074* | *0.0000* |

The sample size ranges between 3,267 and 4,637 firm-year observations over the period 2005-2011 (14 industries). Pearson correlations are used. The p-value is listed in italics below each correlation. Size = log of total assets in year *t*; Growth = log of 1 plus the changing percentage in the book value of equity over the past 5 years. SURP = earnings surprise which calculated as the absolute value of the difference between the earnings per share for year *t* and *t*-1, deflated by stock price at the beginning of year *t*. σ(ROE) = standard deviation of returns on equity calculated over the preceding 10 years of a firm.

## 9.3 Multivariate analyses

### *9.3.1 Earnings quality and analysts following*

In this section, the researcher discusses the results of the main tests that investigate the associations between number of analysts following and four earnings quality proxies considered individually: accruals quality, earnings persistence, earnings predictability and earnings smoothness. The control variables are firm size, growth and standard deviation of ROE, which represents performance variability of firms. The associations between financial analysts following and each earnings quality proxy are examined, in addition to control variables for the period 2005-2011 by using the following model.

$$Following_{j,t} = \alpha + \beta_1 Size_{j,t} + \beta_2 Std\ ROE_{j,t} + \beta_3 Growth_{j,t} + \beta_4 EQProxy^{k}_{j,t} + \varepsilon_{j,t} \quad \text{Equation (9-1)}$$

Where:
$Following$ is the number of analysts following a firm in year $t$, $Size$ is log of total assets of a firm for year $t$; $StdROE$ is the standard deviation of returns on equity (ROE) calculated over the preceding 10 years; $Growth$ is the log of one plus the firm's growth in book value of equity over the preceding 5 years; $EQProxy^{k}_{j,t}$ is the decile rank of firm's value of the $k$th earnings quality proxy in year $t$, $K \in \{AccrualsQuality, Persistence, Predictability, Smoothness\}$.

Newey and West (1987) standard errors pooled regression is used, which controls for heteroscedasticity and autocorrelation effects. A negative coefficient on the earnings quality decile rank is expected, indicating that firms with higher earnings quality have a larger number of analysts following. Table 9-3 provides both the coefficients estimates and statistical significance as a result of estimating Equation (9-1) after adding each earnings quality proxy separately to the model. The results indicate a significant negative association between financial analysts following and all earnings quality proxies except earnings smoothness which inconsistent with the study of Previts et al. (1994) who document that analysts prefer to follow firms with smooth earnings. These results therefore indicate that firms with high earnings quality have a larger number of analysts following.

Comparing the coefficients of earnings quality proxies, the researcher finds that predictability has the largest impact on the analysts following followed by persistence, accruals quality and finally smoothness which is consistent with previous evidence that

financial analysts are primarily concerned with sustainable and predictable earnings (Barker and Imam, 2008). This suggests that financial analysts play an important role as intermediaries among firms and investors rather than as primary information providers competing the firms to introduce information directly to investors; thus, the researcher finds an evidence to accept the ($H_3$) hypothesis and suggests a positive association between the quality of earnings reported by a firm and the number of analysts following that firm. This finding supports the theory of decision usefulness.

For the control variables, the results indicate a significant positive association between analysts following and firm size, which is consistent with the literature that reported upon by Bhushan (1989) and Lang and Lundholm (1996), who provide evidence that analysts perhaps follow the larger firms. On the other hand, there is a significant positive association between analysts following and the standard deviation of ROE which runs counter to the results of Bhushan (1989) who suggests that analysts follow firms with low variability in their performance. Moreover, there is a significant negative association between the number of analysts following and growth. Finally, the average of the explanatory powers of the four models of regression is around 66%, which is higher than previous studies, e.g., Lang and Lundholm (1996) documents an average $R^2$ around 38%.

**Table 9-3: Pooled regressions of financial analysts following on each earning quality proxy, and control variables**

| | *Following* | *Following* | *Following* | *Following* |
|---|---|---|---|---|
| *Size* | 2.54*** | 2.48*** | 2.63*** | 2.52*** |
| | *(68.5)* | *(71.2)* | *(69.0)* | *(71.7)* |
| σ(ROE) | 0.0033*** | 0.0039*** | 0.0047*** | 0.0037*** |
| | *(5.28)* | *(6.17)* | *(7.45)* | *(5.73)* |
| Growth | -0.23*** | -0.28*** | -0.33*** | -0.23*** |
| | *(-5.33)* | *(-6.53)* | *(-7.32)* | *(-5.23)* |
| AQ | -0.053** | | | |
| | *(2.29)* | | | |
| Persistence | | -0.20*** | | |
| | | *(-9.48)* | | |
| Predictability | | | -0.23*** | |
| | | | *(-9.63)* | |
| Smoothness | | | | -0.028 |
| | | | | *(-1.33)* |
| Constant | -24.6*** | -22.5*** | -24.2*** | -23.8*** |
| | *(-51.5)* | *(-53.7)* | *(-60.3)* | *(-57.0)* |
| *N* | 4537 | 4537 | 4537 | 4537 |
| adj. $R^2$ | 0.659 | 0.666 | 0.665 | 0.659 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 4,537 firm-year observations and covering the years from 2005 to 2011.

### *9.3.2 Earnings quality and analysts' forecasts dispersion*

In the second test, the association between earnings quality and dispersion of analysts' forecasts is examined. Analysts following, firm size, standard deviation of ROE and earnings surprise are used as control variables. The researcher examines the associations between the dispersion of analysts' forecasts and each earnings quality proxy by using the Newey and West (1987) standard errors pooled regression as used in Equation (9-1).

$$Disperion_{j,t} = \alpha + \beta_1 Ln(Following)_{j,t} + \beta_2 Size_{j,t} + \beta_3 \sigma(ROE)_{j,t} + \beta_4 SURP_{j,t} + \beta_5 EQProxy^{k}_{j,t} + \varepsilon_{j,t} \quad \text{Equation (9-2)}$$

Where:
$Dispersion$ is the standard deviation of financial analysts' forecasts in the fiscal year *t*, deflated by stock price multiplied by 100.
$Ln(Following)$ is log of total number of analysts following a firm in year *t*.
$Size$ is log of total assets of a firm for year *t*.
σ(ROE) is the standard deviation of ROE calculated over the preceding 10 years.
$SURP$ is the absolute value of the difference between the earnings per share for year t and *t*-1, deflated by stock price at the beginning of year *t*.
$EQProxy^{k}_{j,t}$ is the decile rank of firm's value of the *k*th earnings quality proxy in year *t*, $K \in \{AccrualsQuality, Persistence, Predictibility, Smoothness\}$.

Table 9-4 reports the results of the test indicate a significant positive association between dispersion of analysts' forecasts and all earnings quality proxies, indicating that firms with higher earnings quality have lower analysts' forecasts dispersion among analysts' (higher analysts' consensus) compared to firms with low earnings quality. Analysts' forecasts dispersion reflects the uncertainty among analysts; it also reflects to what extent the analysts depend on private or public information in their valuation models. Therefore, this finding suggests that analysts depend more on public information than private information for firms with high earnings quality. Thus, hypothesis ($H_4$) is accepted. Also, it supports the theory of decision usefulness.

Comparing the coefficients of earnings quality proxies, it finds that earnings smoothness has the largest impact on the dispersion of analysts' forecasts, accruals quality, then predictability and finally persistence. This finding suggests that financial analysts give more attention to accounting-based information in their forecasts valuation models.

For the control variables, the results indicate a positive association between dispersion of analysts' forecasts and the number of analysts following but not significant. Also, the results indicate a significant positive association between dispersion of analysts' forecasts and performance variability, indicating that firms with high performance variability have lower analysts' consensus. The association between dispersion of analysts' forecasts and earnings surprise is also positive, indicating firms with larger earnings surprise have higher analysts' forecasts dispersion. There is also a negative significant association between dispersion of analysts' forecasts and firm size indicating larger firms have lower analysts' forecasts dispersion. Finally, the average explanation power of the regressions' models is around 7% which is lower than prior literature e.g., Lang and Lundholm (1996) document an average explanatory power around 38%.

**Table 9-4: Pooled regressions of analysts' forecasts dispersion on each earning quality proxy, and control variables**

| | *Dispersion* | *Dispersion* | *Dispersion* | *Dispersion* |
|---|---|---|---|---|
| $Ln(Following)$ | -0.0036 | 0.014 | 0.019 | 0.0062 |
| | *(-0.075)* | *(0.29)* | *(0.39)* | *(0.13)* |
| Size | -0.17*** | -0.19*** | -0.22*** | -0.19*** |
| | *(-6.74)* | *(-7.75)* | *(-8.04)* | *(-7.68)* |
| σ(ROE) | 0.00099** | 0.0011** | 0.00096** | 0.00087** |
| | *(2.33)* | *(2.51)* | *(2.20)* | *(2.08)* |
| SURP | 0.24*** | 0.25*** | 0.18** | 0.23*** |
| | *(2.95)* | *(2.97)* | *(2.14)* | *(2.87)* |
| AQ | 0.037*** | | | |
| | *(3.28)* | | | |
| Persistence | | 0.014* | | |
| | | *(1.67)* | | |
| Predictability | | | 0.036** | |
| | | | *(2.54)* | |
| Smoothness | | | | 0.047*** |
| | | | | *(5.31)* |
| Constant | 2.76*** | 3.12*** | 3.25*** | 2.94*** |
| | *(9.73)* | *(11.4)* | *(12.1)* | *(11.0)* |
| *N* | 3267 | 3267 | 3267 | 3267 |
| adj. $R^2$ | 0.072 | 0.070 | 0.072 | 0.077 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 3,267 firm-year observations and covering the years from 2005 to 2011.

### *9.3.3 Earnings quality and analysts' forecasts accuracy*

In this section, the association between analysts' forecasts accuracy and earnings quality proxies is examined in addition to control variables.

$$Accuracy_{j,t} = \alpha + \beta_1 Ln(Following)_{j,t} + \beta_2 Size_{j,t} + \beta_3 \sigma(ROE)_{j,t} + \beta_4 SURP_{j,t} + \beta_5 EQProxy^{k}_{j,t} + \varepsilon_{j,t} \quad \text{Equation (9-3)}$$

Where:
$Accuracy$ is the negative of the absolute value of the financial analysts' forecast error, deflated by stock price of a firm in year *t.*
$Ln(Following)$ is log of total number of analysts following a firm in year *t*.
$Size$ is log of total assets of a firm for year *t.*
σ(ROE) is the standard deviation of ROE calculated over the preceding 10 years.
$SURP$ is the absolute value of the difference between the earnings per share for year *t* and t-1, deflated by stock price at the beginning of year *t*.
$EQProxy^{k}_{j,t}$ is the decile rank of firm's value of the *k*th earnings quality proxy in year *t*, $K \in \{AccrualsQuality, Persistence, Predictability, Smoothness\}$.

Table 9-5 reports the results that indicate a significant negative association between analysts' forecasts accuracy and both accruals quality and earnings predictability, and no significant association between analysts' forecasts accuracy and both earnings persistence and smoothness. This finding suggests that earnings quality is a key determinant of analysts' forecasts accuracy. Thus, there is evidence to accept the hypothesis ($H_5$) and to support the decision usefulness theory.

Comparing the coefficient of earnings quality proxies, the results indicate that earnings predictability has the largest effects on analysts' forecasts accuracy then accruals quality. This finding suggests that firms with high earnings predictability and high accruals quality lead to greater analysts' forecasts accuracy. However, financial analysts use both earnings persistence and smoothness in their forecasts model but the information seems does not add value.

Moving to control variables, the results indicate a positive association between analysts' forecasts accuracy and analysts following, indicating firms with high number of analysts following have greater analysts' forecasts accuracy. The results also indicate a positive association between analysts' forecasts accuracy and firm size, indicating larger firms have greater analysts' forecasts accuracy. However, there are negative associations between analysts' forecasts accuracy and both standard deviation of ROE and earnings surprise, which consistent with literature. Finally, the results indicate that this model explains significant portion of analysts' forecasts accuracy variation with an average $R^2$ around 28%, which is near to previous studies e.g., Lang and Lundholm (1996) document an average $R^2$ around 38%.

**Table 9-5: Pooled regressions of financial analysts' forecasts accuracy on each earning quality proxy (decile rank), and control variables**

| | *Accuracy* | *Accuracy* | *Accuracy* | *Accuracy* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.12*** | 0.12*** | 0.10*** | 0.12*** |
| | *(3.67)* | *(3.84)* | *(3.07)* | *(3.64)* |
| Size | 0.066*** | 0.081*** | 0.11*** | 0.082*** |
| | *(3.13)* | *(3.91)* | *(4.19)* | *(3.94)* |
| σ(ROE) | -0.00045* | -0.00057** | -0.00041* | -0.00059** |
| | *(-1.85)* | *(-2.28)* | *(-1.74)* | *(-2.29)* |
| SURP | -2.24*** | -2.25*** | -2.17*** | -2.25*** |
| | *(-8.32)* | *(-8.33)* | *(-7.72)* | *(-8.31)* |
| AQ | -0.029*** | | | |
| | *(-3.12)* | | | |
| Persistence | | 0.010 | | |
| | | *(1.36)* | | |
| Predictability | | | -0.037** | |
| | | | *(-2.19)* | |
| Smoothness | | | | 0.0073 |
| | | | | *(0.93)* |
| Constant | -0.77*** | -1.15*** | -1.18*** | -1.13*** |
| | *(-3.37)* | *(-5.14)* | *(-5.12)* | *(-5.09)* |
| $N$ | 4122 | 4122 | 4122 | 4122 |
| adj. $R^2$ | 0.283 | 0.282 | 0.284 | 0.282 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample contains 4,637 firm-year observations over t = 2005-2011.

## 9.4 Innate Versus Discretionary Earnings Quality

Following the previous chapters, seven and eight, two methods are used to disentangle between the innate and the discretionary earnings quality components and investigate the impact of both components on the three proxies of analysts' information environment: analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy.

### *9.4.1 The association between analysts following and both components of earnings quality*

Table 9-6, panel (A) reports that both innate and discretionary components have significant impact on financial analysts following except the discretionary component for earnings predictability and earnings smoothness. In addition, the innate component coefficient is larger than the discretionary component coefficient and exhibits stronger statistical significance than the discretionary coefficient. This finding suggests that the innate component of earnings quality has a larger impact on analysts following than the discretionary component. The average goodness of fit of the four regressions is 67%. Under Method 2, Table 9-6, panel (B) reports that discretionary earnings quality has a

negative significant coefficient for earnings predictability and persistence. There are, however, insignificant associations for accruals quality and smoothness. The average goodness of fit of the four regressions is 68.5%.

Table 9-6, panel (A-B), points towards rejecting the null hypothesis ($H_7$) of no differences between the effects of innate and discretionary earnings quality components on financial analysts following, supporting the argument that the innate portion of each earnings quality proxy has a larger impact than the discretionary portion on the number of analysts following. This finding suggests that analysts in the UK give greater weight to the innate component, influenced by economic fundamentals, than the discretionary component influenced by management choices.

**Table 9-6: Pooled regressions of financial analysts following on both innate and discretionary components of each earning quality proxy, and control variables**

***Panel A: Pooled regressions of financial analysts following on both innate and discretionary components of each earning quality proxy, and control variables (Method1)***

| | *Following* | *Following* | *Following* | *Following* |
|---|---|---|---|---|
| Size | 2.72*** | 2.47*** | 2.61*** | 2.61*** |
| | *(39.5)* | *(64.5)* | *(62.4)* | *(68.8)* |
| σ(ROE) | 0.0021** | 0.0050*** | 0.0032*** | 0.0034*** |
| | *(2.22)* | *(5.07)* | *(3.20)* | *(3.43)* |
| Growth | -0.18*** | -0.26*** | -0.16*** | -0.16*** |
| | *(-3.29)* | *(-4.96)* | *(-2.94)* | *(-2.98)* |
| AQ (*Innate*) | 0.13*** | | | |
| | *(2.62)* | | | |
| AQ (*Disc.*) | 0.11*** | | | |
| | *(4.63)* | | | |
| Persistence (*Innate*) | | -0.23*** | | |
| | | *(-9.36)* | | |
| Persistence (*Disc.*) | | -0.14*** | | |
| | | *(-6.31)* | | |
| Predictability (*Innate*) | | | -0.09*** | |
| | | | *(4.50)* | |
| Predictability (*Disc.*) | | | -0.0059 | |
| | | | *(-0.12)* | |
| Smoothness (Innate) | | | | -0.041* |
| | | | | *(-1.84)* |
| Smoothness (*Disc.*) | | | | 0.011 |
| | | | | *(0.45)* |
| Constant | -27.8*** | -21.7*** | -25.2*** | -25.2*** |
| | *(-27.0)* | *(-43.4)* | *(-42.3)* | *(-53.5)* |
| *N* | 3701 | 3701 | 3701 | 3701 |
| adj. $R^2$ | 0.673 | 0.681 | 0.671 | 0.671 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 3,701 firm-year observations covering the years 2005 to 2011.

***Panel B: Pooled regressions of financial analysts following on discretionary earning quality, and control variables (Method2)***

| | *Following* | *Following* | *Following* | *Following* |
|---|---|---|---|---|
| Size | 2.34*** | 2.35*** | 2.50*** | 2.34*** |
| | *(46.9)* | *(48.9)* | *(48.1)* | *(47.6)* |
| σ(ROE) | 0.0022** | 0.0024*** | 0.0036*** | 0.0023** |
| | *(2.38)* | *(2.66)* | *(3.87)* | *(2.47)* |
| Growth | -0.16*** | -0.19*** | -0.26*** | -0.15*** |
| | *(-2.95)* | *(-3.71)* | *(-4.81)* | *(-2.81)* |
| σ(CFO) | 0.0057*** | 0.0055*** | 0.0061*** | 0.0057*** |
| | *(4.51)* | *(4.24)* | *(4.81)* | *(4.53)* |
| σ(Sales) | -0.00011 | -0.00016 | -0.00022 | -0.00011 |
| | *(-0.33)* | *(-0.48)* | *(-0.68)* | *(-0.34)* |
| OperCycle | -0.035 | -0.050 | -0.035 | -0.030 |
| | *(-0.41)* | *(-0.59)* | *(-0.42)* | *(-0.35)* |
| NegEarn | -0.0097 | 0.031 | 0.054** | 0.0014 |
| | *(-0.38)* | *(1.26)* | *(2.24)* | *(0.055)* |
| AQ (*Disc.*) | 0.030 | | | |
| | *(1.14)* | | | |
| Persistence (*Disc.*) | | -0.17*** | | |
| | | *(-7.18)* | | |
| Predictability (*Disc.*) | | | -0.25*** | |
| | | | *(-9.43)* | |
| Smoothness (*Disc.*) | | | | -0.0100 |
| | | | | *(-0.40)* |
| Constant | -22.3*** | -21.4*** | -22.7*** | -22.1*** |
| | *(-30.4)* | *(-30.4)* | *(-32.9)* | *(-32.0)* |
| *N* | 3701 | 3701 | 3701 | 3701 |
| adj. $R^2$ | 0.684 | 0.689 | 0.691 | 0.684 |

The sample consists of 3,701 firm-year observations covering the years 2005 to 2011. σ(CFO) is the standard deviation of cash flow operations of a firm computed through the preceding 10 years; σ(Sales) is the standard deviation of net revenue computed through the preceding 10 years of a firm; OperCycle is the log of operating cycle of a firm in year *t*; NegEarn is the number of years where a firm reported net income before extraordinary items (NIBE) < 0 out of the preceding 10 years.
*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.

### *9.4.2 The association between analysts' forecasts dispersion and both components of earnings quality*

According to Table 9-7, panel (A), the results indicate that the innate component of earnings quality has a negative significant impact on analysts' forecasts dispersion however, the discretionary component has no significant impact on financial analysts' forecasts dispersion except the discretionary component of accruals quality. Also, the innate component coefficient is larger than the discretionary component coefficient and also exhibits stronger statistical significance than the discretionary coefficient. This finding suggests that firms with low earnings quality due to the innate component, have higher analysts' forecasts dispersion, compared to low earnings quality due to the discretionary component. The average goodness of fit of the four regressions is 9.5%.

Under Method 2, Table 9-7 Panel (B) reports that the discretionary earnings quality has no significant association with financial analysts' forecasts dispersion for the four proxies of earnings quality. The average goodness of fit of the four regressions is 12%.

The results reported in panel A and B of Table 9-7 point towards the rejection of the null hypothesis ($H_8$) of no difference between the effects of innate and discretionary earnings quality components on financial analysts' forecasts dispersion. Also, it suggests that innate portion of earnings quality has a dominant influence on analysts' forecasts dispersion, while, the discretionary portion of earnings quality has no impact on analysts' forecasts dispersion.

**Table 9-7: Pooled regressions of analysts' forecasts dispersion on both innate and discretionary components of each earning quality proxy, and control variables**

***Panel A: Pooled regressions of financial analysts' forecasts dispersion on both innate and discretionary components of each earning quality proxy, and control variables (Method 1)***

| | *Dispersion* | *Dispersion* | *Dispersion* | *Dispersion* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.059 | 0.044 | 0.076 | 0.025 |
| | *(1.08)* | *(0.84)* | *(1.43)* | *(0.48)* |
| Size | -0.012 | -0.096*** | -0.16*** | -0.17*** |
| | *(-0.48)* | *(-3.59)* | *(-6.12)* | *(-6.51)* |
| σ(ROE) | 0.00046 | 0.00045 | 0.000045 | 0.0000037 |
| | *(1.04)* | *(0.97)* | *(0.099)* | *(0.0080)* |
| SURP | 0.18** | 0.19** | 0.15 | 0.20** |
| | *(2.18)* | *(2.35)* | *(1.59)* | *(2.41)* |
| AQ (*Innate*) | 0.19*** | | | |
| | *(8.18)* | | | |
| AQ (*Disc.*) | 0.025* | | | |
| | *(1.72)* | | | |
| Persistence (*Innate*) | | 0.12*** | | |
| | | *(8.12)* | | |
| Persistence (*Disc.*) | | -0.011 | | |
| | | *(-1.29)* | | |
| Predictability (*Innate*) | | | 0.14*** | |
| | | | *(5.14)* | |
| Predictability (*Disc.*) | | | 0.011 | |
| | | | *(0.40)* | |
| Smoothness (Innate) | | | | 0.13*** |
| | | | | *(9.79)* |
| Smoothness (*Disc.*) | | | | -0.00095 |
| | | | | *(-0.095)* |
| Constant | -0.13 | 1.39*** | 1.95*** | 2.21*** |
| | *(-0.39)* | *(4.61)* | *(6.08)* | *(8.23)* |
| *N* | 2744 | 2744 | 2744 | 2744 |
| adj. $R^2$ | 0.094 | 0.092 | 0.108 | 0.109 |

***Panel B: pooled regressions of financial analysts' forecasts dispersion on discretionary earning quality proxy, and control variables (Method 2)***

| | *Dispersion* | *Dispersion* | *Dispersion* | *Dispersion* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.052 | 0.049 | 0.059 | 0.054 |
| | *(0.95)* | *(0.89)* | *(1.08)* | *(0.99)* |
| Size | -0.11*** | -0.11*** | -0.12*** | -0.12*** |
| | *(-3.27)* | *(-3.35)* | *(-3.50)* | *(-3.53)* |
| σ(ROE) | -0.00014 | -0.00012 | -0.00016 | -0.00014 |
| | *(-0.31)* | *(-0.28)* | *(-0.35)* | *(-0.31)* |
| SURP | 0.16* | 0.16** | 0.15* | 0.16** |
| | *(1.96)* | *(1.98)* | *(1.68)* | *(1.96)* |
| $\sigma(CFO)$ | -0.00016 | -0.00017 | -0.00016 | -0.00014 |
| | *(-1.30)* | *(-1.33)* | *(-1.30)* | *(-1.14)* |
| $\sigma(Sales)$ | 0.000055 | 0.000053 | 0.000061* | 0.000056* |
| | *(1.61)* | *(1.56)* | *(1.74)* | *(1.65)* |
| $OperCycle$ | -0.0090 | -0.0068 | -0.0048 | -0.0050 |
| | *(-0.23)* | *(-0.17)* | *(-0.12)* | *(-0.13)* |
| $NegEarn$ | 0.16*** | 0.17*** | 0.16*** | 0.16*** |
| | *(8.85)* | *(8.91)* | *(8.55)* | *(8.09)* |
| AQ (*Disc.*) | 0.011 | | | |
| | *(0.92)* | | | |
| Persistence (*Disc.*) | | -0.0058 | | |
| | | *(-0.65)* | | |
| Predictability (*Disc.*) | | | 0.0097 | |
| | | | *(0.65)* | |
| Smoothness (*Disc.*) | | | | 0.0059 |
| | | | | *(0.57)* |
| Constant | 1.76*** | 1.85*** | 1.90*** | 1.85*** |
| | *(4.47)* | *(4.81)* | *(4.82)* | *(4.80)* |
| *N* | 2744 | 2744 | 2744 | 2744 |
| adj. $R^2$ | 0.120 | 0.120 | 0.120 | 0.120 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample consists of 2,744 firm-year observations covering the years 2005 to 2011.

### *9.4.3 The association between analysts' forecasts accuracy and both components of earnings quality*

As reported in Table 9-8 panel (A), the results indicate that both innate and discretionary components have significant impact on financial analysts' forecasts accuracy except the discretionary accruals quality, however, the innate component coefficient is larger than the discretionary component coefficient and exhibits stronger statistical significance than the discretionary coefficient. This finding suggest that firms with low earnings quality due to the innate component of earnings quality, have lower analysts' forecasts accuracy, compared to firms with low earnings quality due to the discretionary component of earnings quality.

Moreover, the results indicate that the innate components of both earnings persistence and smoothness have significant positive associations with analysts' forecasts accuracy, however, the discretionary components of both earnings persistence and smoothness have significant negative association with analysts' forecasts accuracy, suggesting that low discretionary component of persistence or smoothness leads to greater accuracy of analysts' forecasts. This finding may explain why there is no significant association between analysts forecasts' accuracy and both total earnings persistence and smoothness. Also, it shed light about how analysts look at the two portions of earnings persistence and smoothness. The average goodness of fit of the four regressions is 29%. Overall, these results provide evidence that analysts are not mislead by discretionary earnings quality, which is consistent with previous studies (e.g., Kim and Schroeder, 1990).

Under Method 2, Table 9-8 panel (B) reports that discretionary components of both earnings persistence and smoothness have significant negative association with analysts' forecasts accuracy; however, the results indicate no significant association between analysts' forecasts accuracy and both discretionary components of accruals quality and predictability. The average goodness of fit of the four regressions is 29%. The results reported in panel A and B of Table 9-8 point towards the rejection of the null hypothesis ($H_9$) of no difference between the effects of innate and discretionary earnings quality components on analysts' forecasts accuracy. This supports the opinion that innate portion of each earnings quality proxy has a larger impact than the discretionary portion on analysts' forecasts accuracy.

**Table 9-8: Pooled regressions of analysts' forecasts accuracy on both innate and discretionary components of each earning quality proxy, and control variables**

***Panel A: Pooled regressions of analysts' forecasts accuracy on both innate and discretionary components of each earning quality proxy (decile rank), and control variables (Method 1)***

| | *Accuracy* | *Accuracy* | *Accuracy* | *Accuracy* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.10*** | 0.14*** | 0.11*** | 0.13*** |
| | *(2.60)* | *(3.67)* | *(2.77)* | *(3.33)* |
| Size | -0.0010 | 0.026 | 0.11*** | 0.080*** |
| | *(-0.033)* | *(1.07)* | *(4.03)* | *(3.43)* |
| σ(ROE) | -0.00079** | -0.00073* | -0.00030 | -0.00057 |
| | *(-1.97)* | *(-1.74)* | *(-0.73)* | *(-1.40)* |
| SURP | -2.17*** | -2.17*** | -1.87*** | -2.18*** |
| | *(-7.86)* | *(-7.93)* | *(-6.48)* | *(-8.00)* |
| AQ (*Innate*) | -0.10*** | | | |
| | (-3.96) | | | |
| AQ (*Disc.*) | -0.021 | | | |
| | *(-1.54)* | | | |
| Persistence (*Innate*) | | -0.080*** | | |
| | | *(-5.94)* | | |
| Persistence (*Disc.*) | | 0.031*** | | |
| | | (3.34) | | |
| Predictability (*Innate*) | | | -0.22*** | |
| | | | *(-3.57)* | |
| Predictability (*Disc.*) | | | -0.19*** | |
| | | | *(-2.86)* | |
| Smoothness (Innate) | | | | -0.077*** |
| | | | | *(-6.36)* |
| Smoothness (*Disc.*) | | | | 0.048*** |
| | | | | *(4.23)* |
| Constant | 0.51 | -0.25 | 0.75 | -0.99*** |
| | *(1.21)* | *(-0.93)* | *(1.33)* | *(-3.97)* |
| *N* | 3404 | 3404 | 3404 | 3404 |
| adj. $R^2$ | 0.285 | 0.289 | 0.302 | 0.295 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample contains 3,404 firm-year observations over t = 2005-2011.

***Panel B: Pooled regressions of financial analysts' forecasts accuracy on discretionary earning quality proxy (decile rank), and control variables (Method 2)***

| | *Accuracy* | *Accuracy* | *Accuracy* | *Accuracy* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.13*** | 0.15*** | 0.12*** | 0.12*** |
| | *(3.20)* | *(3.64)* | *(2.86)* | *(3.15)* |
| Size | 0.0084 | 0.0039 | 0.030 | 0.0031 |
| | *(0.29)* | *(0.14)* | *(0.85)* | *(0.11)* |
| σ(ROE) | -0.00032 | -0.00037 | -0.00032 | -0.00045 |
| | *(-0.80)* | *(-0.89)* | *(-0.79)* | *(-1.08)* |
| SURP | -2.15*** | -2.16*** | -2.13*** | -2.16*** |
| | *(-7.89)* | *(-7.91)* | *(-7.44)* | *(-7.93)* |
| $\sigma(CFO)$ | 0.00043** | 0.00047*** | 0.00043*** | 0.00048*** |
| | *(2.51)* | *(2.70)* | *(2.60)* | *(2.79)* |
| $\sigma(Sales)$ | -0.000012 | -0.0000025 | -0.000022 | 0.0000098 |
| | *(-0.32)* | *(-0.067)* | *(-0.56)* | *(-0.27)* |
| $OperCycle$ | 0.042 | 0.043 | 0.036 | 0.042 |
| | *(0.91)* | *(0.93)* | *(0.78)* | *(0.91)* |
| $NegEarn$ | -0.10*** | -0.11*** | -0.10*** | -0.13*** |
| | *(-5.12)* | *(-5.46)* | *(-5.31)* | *(-5.57)* |
| AQ (*Disc.*) | -0.018 | | | |
| | *(-1.62)* | | | |
| Persistence (*Disc.*) | | 0.028*** | | |
| | | *(2.85)* | | |
| Predictability (*Disc.*) | | | -0.016 | |
| | | | *(-0.88)* | |
| Smoothness (*Disc.*) | | | | 0.045*** |
| | | | | *(3.90)* |
| Constant | -0.17 | -0.35 | -0.39 | -0.36 |
| | *(-0.42)* | *(-0.88)* | *(-0.92)* | *(-0.90)* |
| *N* | 3404 | 3404 | 3404 | 3404 |
| adj. $R^2$ | 0.294 | 0.295 | 0.294 | 0.297 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample contains 3,404 firm-year observations over t = 2005-2011.

## 9.5 Sensitivity Tests

A number of sensitivity tests are conducted in respect of the results of three main tests (using Equation (9-1), Equation (9-2) and Equation (9-3)). First, the decile rank of earnings quality proxies is replaced with the raw values of earnings quality proxies and found the same results (see Table 9-9). Second, Tobit regression is used instead of Newey and West (1987) standard errors pooled regression and found the same results in terms of significance and magnitude (details not reported). Third, the fixed and random effects panel data models are used (see Table 9-10). The advantage of using these models is controlling unobservable firm-specific characteristics that may affect the dependent variable (analysts' information environment proxies) (Wooldridge, 2010). Table 9-10 reports the results for the association between earnings quality and analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy respectively. According to

panel (A) of Table 9-10, it find significant associations between analysts following and both earnings persistence and earnings predictability but no significant associations between analysts following and both accruals quality and earnings smoothness in random model only, which is consistent with the results of main tests except for accruals quality. Moving to panel (B), the results indicate significant associations between analysts' forecasts dispersion and all earnings quality proxies except for earnings persistence, which is consistent with the results of the main tests except earnings persistence. For panel (C), the results indicate significant associations between analysts' forecasts accuracy and both earnings persistence and predictability, but no significant association for both accruals quality and smoothness. Based on the Hausman tests of the three main tests, the fixed effects estimations are more appropriate than random effects estimations.

## 9.6 Summary

This study tests the association between earnings quality and analysts' information environment. The results indicate that there are significant positive associations between analysts following and earnings quality proxies except for the earnings smoothness measure. There are also significant negative associations between all our earnings quality proxies and analysts' forecasts dispersion. Moreover, there are significant positive associations between analysts' forecasts accuracy and two of earnings quality proxies - earnings predictability and accruals quality. The findings suggest that firms with higher earnings quality have larger analysts following, lower analysts' forecasts dispersion and greater accuracy of analysts' forecasts. Furthermore, the results indicate that earnings predictability has the largest impact across earnings quality proxies on analysts' information environment, this finding suggests which of the earnings proxies matter most to analysts. Overall, these findings provide evidence that earnings quality has statistically and economically significant association with analysts' information environment. Also, the results have provided evidence that analysts give more attention to the quality of the time-series behaviour of earnings, as measured by earnings predictability and earnings persistence, more than the relationship between earnings and cash flow as measured by accruals quality and smoothness.

Further, the results indicate that the innate component of earnings quality has a larger impact on all analysts' information environment proxies than the discretionary

component of earnings quality. This finding suggests that analysts give more attention and weight to the innate factors than the discretionary factors of earnings quality.

Finally, the results indicate that firms with high discretionary component of earnings persistence and smoothness have lower analysts' forecasts accuracy than firms with low discretionary component of earnings persistence and smoothness. This finding is consistent with the view of Leuz et al. (2003), who document that earnings smoothness reflects the extent to which accounting standards and legal system allow managers to artificially reduce variability in earnings, presumably to obtain some capital market benefits associated with a smooth earnings stream. Under this view, smoother earnings would indicate lower earnings quality in the UK market.

Overall, these findings suggest that for those countries, which adopt IFRS and have strong enforcement regimes e.g., the UK, the high precision of earnings improves analysts' information environment.

**Table 9-9: Pooled regressions of analysts' information environment proxies on raw values of each earning quality proxy (decile rank)**

***Panel A: Pooled regressions of financial analysts following on raw values of each earning quality proxy, and control variables***

| | *Following* | *Following* | *Following* | *Following* |
|---|---|---|---|---|
| *Size* | 2.56*** | 2.48*** | 2.51*** | 2.52*** |
| | (70.5) | (71.0) | (71.7) | (71.8) |
| σ(ROE) | 0.0030*** | 0.0039*** | 0.0036*** | 0.0037*** |
| | (4.72) | (6.20) | (5.66) | (5.77) |
| Growth | -0.25*** | -0.27*** | -0.22*** | -0.23*** |
| | (-5.64) | (-6.38) | (-5.12) | (-5.26) |
| AQ | -4.55*** | | | |
| | (-4.94) | | | |
| Persistence | | 1.10*** | | |
| | | (8.37) | | |
| Predictability | | | -0.049** | |
| | | | (-2.53) | |
| Smoothness | | | | -0.12 |
| | | | | (-1.47) |
| Constant | -24.8*** | -24.0*** | -24.0*** | -23.9*** |
| | (-56.9) | (-59.7) | (-59.6) | (-57.8) |
| *N* | 4,537 | 4,537 | 4,537 | 4,537 |
| adj. $R^2$ | 0.660 | 0.664 | 0.659 | 0.659 |

***Panel B: Pooled regressions of analysts' forecasts dispersion on raw values of each earning quality proxy, and control variables***

| | *Dispersion* | *Dispersion* | *Dispersion* | *Dispersion* |
|---|---|---|---|---|
| $Ln(Following)$ | -0.000090 | 0.00018 | -0.000022 | 0.000040 |
| | (-0.19) | (0.36) | (-0.046) | (0.084) |
| Size | -0.0017*** | -0.0020*** | -0.0019*** | -0.0019*** |
| | (-6.60) | (-7.75) | (-7.67) | (-7.70) |
| σ(ROE) | 0.0000089** | 0.000011** | 0.000011*** | 0.0000093** |
| | (2.15) | (2.48) | (2.65) | (2.21) |
| SURP | 0.0024*** | 0.0025*** | 0.0030*** | 0.0023*** |
| | (2.96) | (2.98) | (3.41) | (2.88) |
| AQ | 0.024*** | | | |
| | (2.68) | | | |
| Persistence | | -0.0012** | | |
| | | (-2.28) | | |
| Predictability | | | 0.00028** | |
| | | | (-2.32) | |
| Smoothness | | | | 0.0016*** |
| | | | | (4.18) |
| Constant | 0.028*** | 0.032*** | 0.032*** | 0.030*** |
| | (9.54) | (12.1) | (11.9) | (11.2) |
| *N* | 3,267 | 3,267 | 3,267 | 3,267 |
| adj. $R^2$ | 0.074 | 0.070 | 0.070 | 0.075 |

***Panel C: Pooled regressions of analysts' forecasts accuracy on raw values of each earning quality proxy, and control variables***

| | *Accuracy* | *Accuracy* | *Accuracy* | *Accuracy* |
|---|---|---|---|---|
| $Ln(Following)$ | 0.0012*** | 0.0012*** | 0.0010*** | 0.0012*** |
| | (3.76) | (3.80) | (3.44) | (3.64) |
| Size | 0.00060*** | 0.00081*** | 0.00067*** | 0.00081*** |
| | (2.81) | (3.91) | (3.46) | (3.93) |
| σ(ROE) | -0.0000031 | -0.0000057** | -0.0000037* | -0.0000058** |
| | (-1.23) | (-2.31) | (-1.68) | (-2.29) |
| SURP | -0.022*** | -0.022*** | -0.016*** | -0.022*** |
| | (-8.32) | (-8.34) | (-5.62) | (-8.32) |
| AQ | -0.022** | | | |
| | (-2.42) | | | |
| Persistence | | -0.00069 | | |
| | | (-1.33) | | |
| Predictability | | | -0.0032*** | |
| | | | (-4.16) | |
| Smoothness | | | | 0.00030 |
| | | | | (1.02) |
| Constant | -0.0070*** | -0.011*** | -0.0091*** | -0.011*** |
| | (-2.94) | (-4.96) | (-4.54) | (-5.10) |
| *N* | 4,122 | 4,122 | 4,122 | 4,122 |
| adj. $R^2$ | 0.285 | 0.282 | 0.359 | 0.282 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics.
The sample ranges between 3,267 and 4,537 firm-year observations and covering the years from 2005 to 2011.

**Table 9-10: Fixed-random panel regressions of analysts' information environment on each earning quality proxy (decile rank)**

***Panel A: fixed-random panel regressions of financial analysts following on each earning quality proxy (decile rank), and control variables.***

| | *Following* Fixed | *Following* Random | *Following* Fixed | *Following* Random | *Following* Fixed | *Following* Random | *Following* Fixed | *Following* Random |
|---|---|---|---|---|---|---|---|---|
| Size | 2.89*** | 2.35*** | 2.87*** | 2.33*** | 2.64*** | 2.29*** | 2.89*** | 2.36*** |
| | *(25.3)* | *(54.7)* | *(25.2)* | *(56.2)* | *(23.2)* | *(51.6)* | *(25.5)* | *(56.4)* |
| σ(ROE) | 0.0010 | 0.0027*** | 0.0011 | 0.0029*** | -0.00067 | 0.0021** | 0.0012 | 0.0029*** |
| | *(0.76)* | *(3.13)* | *(0.79)* | *(3.31)* | *(-0.49)* | *(2.42)* | *(0.85)* | *(3.26)* |
| Growth | -0.13** | -0.13*** | -0.14*** | -0.15*** | -0.0087 | -0.085** | -0.13*** | -0.13*** |
| | *(-2.56)* | *(-3.08)* | *(-2.77)* | *(-3.65)* | *(-0.18)* | *(-2.04)* | *(-2.73)* | *(-3.25)* |
| AQ | -0.028 | -0.0051 | | | | | | |
| | *(-1.11)* | *(-0.23)* | | | | | | |
| Persistence | | | -0.058*** | -0.10*** | | | | |
| | | | *(-2.68)* | *(-5.52)* | | | | |
| Predictability | | | | | -0.40*** | -0.12*** | | |
| | | | | | *(11.1)* | *(4.33)* | | |
| Smoothness | | | | | | | -0.050* | -0.031 |
| | | | | | | | *(-1.90)* | *(-1.46)* |
| Constant | -28.2*** | -22.1*** | -27.9*** | -21.3*** | -27.7*** | -22.1*** | -28.2*** | -22.0*** |
| | *(-20.4)* | *(-40.3)* | *(-20.2)* | *(-41.5)* | *(-20.7)* | *(-44.3)* | *(-20.6)* | *(-43.1)* |
| *N* | 4,537 | 4,537 | 4,537 | 4,537 | 4,537 | 4,537 | 4,537 | 4,537 |
| *Overall* $R^2$ | 0.6571 | 0.6586 | 0.6606 | 0.6642 | 0.6222 | 0.6495 | 0.6575 | 0.6587 |
| *Hausman* | | 0.0000 | | 0.0000 | | 0.0000 | | 0.0000 |

***Panel B: fixed-random panel regressions of financial analysts' dispersion on each earning quality proxy (decile rank), and control variables.***

| | *Dispersion* Fixed | *Dispersion* Random | *Dispersion* Fixed | *Dispersion* Random | *Dispersion* Fixed | *Dispersion* Random | *Dispersion* Fixed | *Dispersion* Random |
|---|---|---|---|---|---|---|---|---|
| $Ln(Following)$ | 0.11 | 0.12* | 0.10 | 0.12* | 0.072 | 0.11* | 0.11 | 0.12** |
| | *(1.46)* | *(1.93)* | *(1.40)* | *(1.94)* | *(0.95)* | *(1.76)* | *(1.48)* | *(1.98)* |
| Size | -0.16** | -0.26*** | -0.16** | -0.28*** | -0.18** | -0.30*** | -0.15** | -0.28*** |
| | *(-2.14)* | *(-7.72)* | *(-2.21)* | *(-8.31)* | *(-2.44)* | *(-8.74)* | *(-2.03)* | *(-8.27)* |
| σ(ROE) | -0.00036 | 0.00072 | -0.00036 | 0.00077 | -0.00051 | 0.00063 | -0.00048 | 0.00056 |
| | *(-0.54)* | *(1.54)* | *(-0.54)* | *(1.64)* | *(-0.75)* | *(1.33)* | *(-0.72)* | *(1.20)* |
| SURP | 0.27*** | 0.25*** | 0.27*** | 0.25*** | 0.22*** | 0.20*** | 0.22*** | 0.21*** |
| | *(3.80)* | *(3.96)* | *(3.74)* | *(3.91)* | *(3.08)* | *(3.09)* | *(3.05)* | *(3.32)* |
| AQ | 0.028* | 0.032** | | | | | | |
| | *(1.92)* | *(2.56)* | | | | | | |
| Persistence | | | 0.0033 | 0.0060 | | | | |
| | | | *(0.27)* | *(0.58)* | | | | |
| Predictability | | | | | 0.056*** | 0.045*** | | |
| | | | | | *(2.66)* | *(2.87)* | | |
| Smoothness | | | | | | | 0.055*** | 0.055*** |
| | | | | | | | *(3.75)* | *(4.70)* |
| Constant | 2.47*** | 3.79*** | 2.67*** | 4.11*** | 2.64*** | 4.17*** | 2.22** | 3.83*** |
| | *(2.76)* | *(9.85)* | *(2.97)* | *(11.3)* | *(2.99)* | *(11.6)* | *(2.49)* | *(10.5)* |
| *N* | 3,267 | 3,267 | 3,267 | 3,267 | 3,267 | 3,267 | 3,267 | 3,267 |
| *Overall* $R^2$ | 0.0661 | 0.0737 | 0.0617 | 0.0711 | 0.0564 | 0.0739 | 0.0650 | 0.0784 |
| *Hausman* | | 0.0470 | | 0.0221 | | 0.0108 | | 0.0373 |

***Panel C: fixed-random panel regressions of financial analysts Accuracy on each earning quality proxy (decile rank), and control variables.***

| | *Accuracy* Fixed | *Accuracy* Random | *Accuracy* Fixed | *Accuracy* Random | *Accuracy* Fixed | *Accuracy* Random | *Accuracy* Fixed | *Accuracy* Random |
|---|---|---|---|---|---|---|---|---|
| $Ln(Following)$ | 0.078 | 0.11** | 0.082 | 0.12** | 0.081 | 0.11** | 0.076 | 0.11** |
| | *(1.45)* | *(2.36)* | *(1.52)* | *(2.56)* | *(1.49)* | *(2.42)* | *(1.40)* | *(2.36)* |
| Size | 0.19*** | 0.11*** | 0.20*** | 0.12*** | 0.19*** | 0.15*** | 0.18*** | 0.11*** |
| | *(2.81)* | *(3.57)* | *(2.99)* | *(3.88)* | *(2.78)* | *(4.70)* | *(2.67)* | *(3.77)* |
| σ(ROE) | 0.0019*** | 0.00067 | 0.0019*** | 0.00063 | 0.0020*** | 0.00088** | 0.0019*** | 0.00065 |
| | *(3.25)* | *(1.58)* | *(3.23)* | *(1.51)* | *(3.33)* | *(2.08)* | *(3.28)* | *(1.54)* |
| SURP | -1.21*** | -1.66*** | -1.23*** | -1.67*** | -1.20*** | -1.59*** | -1.20*** | -1.66*** |
| | *(-18.4)* | *(-27.7)* | *(-18.7)* | *(-27.9)* | *(-17.8)* | *(-25.7)* | *(-18.1)* | *(-27.5)* |
| AQ | -0.020 | -0.0085 | | | | | | |
| | *(1.56)* | *(-0.74)* | | | | | | |
| Persistence | | | -0.036*** | -0.031*** | | | | |
| | | | *(3.24)* | *(3.13)* | | | | |
| Predictability | | | | | -0.028* | -0.066*** | | |
| | | | | | *(-1.93)* | *(-4.53)* | | |
| Smoothness | | | | | | | -0.0068 | -0.00084 |
| | | | | | | | *(-0.50)* | *(0.075)* |
| Constant | -2.72*** | -1.60*** | -2.95*** | -1.91*** | -2.51*** | -1.73*** | -2.46*** | -1.70*** |
| | *(-3.40)* | *(-4.51)* | *(-3.69)* | *(-5.64)* | *(-3.18)* | *(-5.25)* | *(-3.09)* | *(-5.03)* |
| *N* | 4,122 | 4,122 | 4,122 | 4,122 | 4,122 | 4,122 | 4,122 | 4,122 |
| *Overall* $R^2$ | 0.1996 | 0.2958 | 0.1973 | 0.2919 | 0.2137 | 0.2991 | 0.2077 | 0.2942 |
| *Hausman* | | 0.0000 | | 0.0000 | | 0.0000 | | 0.0000 |

*** p-value <0.01, ** p-value <0.05, * p-value <0.1. *t*-statistics in parentheses and italics

# Chapter 10: Summary and Conclusion

## 10.1 Introduction

This chapter summarises the thesis and draws out the major conclusions about the impact of earnings quality on capital market aspects in the UK. It presents the background of the study, summarises its objectives, and a presents a discussion of the major findings. The chapter identifies, also, the limitations of the main research and provides recommendations for future research.

## 10.2 Summary of the Background

This thesis focuses on how the precision of the financial information, which used to capture one or more of the relevant underlying valuation constructs, affects the participants' assessments of the capital market. In this regard, the disclosure quality is used intensively in the literature as a construct of the overall quality of financial reporting; however, there are a number of caveat points of this construct. First, there is no agreed proxy to measure the overall disclosure quality because firms have many financial and non-financial attributes and no theoretical guidance on how to calculate a composite metric of disclosure quality (Bhattacharya et al., 2013). For example, prior studies use management forecasts (see Miller and Piotroski, 2000), metrics based on the AIMR database (see Lang and Lundholm, 1993; Lang and Lundholm, 1996; Healy et al., 1999), and self-constructed measures (see Botosan, 1997) as proxies for disclosure quality. However, each proxy has its limitations (Healy and Palepu, 2001).

Second, it is difficult to measure the behaviour of a particular element such as accrual based earnings quality by testing the aggregate proxy of disclosure quality. Third, the proxy for disclosure quality that commonly used in empirical research, the AIMR score, has a number of limitations. AIMR scores are available for a very small and select subset of US firms (generally large firms with significant analysts following), and these scores are not available after 1996. Moreover, AIMR scores only represent analysts' perception of voluntary disclosures (Bhattacharya et al., 2013). Other limitations of the AIMR score are detailed in the study of Healy and Palepu (2001, p. 426-427). Therefore, this study

focuses mainly on the precision of earnings, since the researcher considered this as a summary indicator of the overall quality of financial reporting.

In this regard, this thesis provides an overview of alternative definitions and measures of earnings quality along with a discussion of the choices in designing research on earnings quality. Throughout this study, the researcher focuses on a capital markets setting, as opposed, for example, to a contracting or stewardship setting. The reason for this choice stems from the view that there are fundamental reasons why the capital market uses accounting information as a basis for other uses, such as stewardship. It is recognised that resource allocations are *ex-ante* decisions whilst contracting/stewardship assessments are ex-post evaluations of outcomes. It is accepted, also, that evidence on whether, how and to what extent earnings quality influences capital market resource allocation decisions is fundamental to understanding why and how accounting matters are relevant to investors, analysts and others including those charged with stewardship responsibilities. For example, the demonstration of a link between earnings quality and the cost of equity indicates that accounting information has a basic economic role when decisions are made on capital allocations decision. The accounting literature begins only recently to document this role.

The researcher classifies the previous literature into two main groups: Firstly, the previous literature that discusses the definitions and the different approaches to estimating the main variables, earnings quality proxies and the three capital market aspects. Secondly, this study discusses the previous literature that investigates the association between earnings quality and the three capital market aspects. Finally, this study discusses the association between earnings quality and IFRS and, in terms of earnings quality, shed light on the differences between IFRS and US GAAP.

The first group of the literature, which is presented in chapters two and three, discusses the different definitions of earnings quality in the literature. The researcher concludes that high earnings quality ought to have four characteristics: firstly, earnings ought to faithfully represent current performance. Secondly, it ought to be an indicator for future earnings and performance. Thirdly, it ought to have a relationship with current and future operating cash flow. Fourthly, it ought to help users to make useful decisions. In addition, this study follows partially Francis et al.'s (2004) classification of earnings quality

proxies by splitting them into two main categories: accounting-based proxies and market-based proxies. Typically, accounting-based proxies depend only on accounting information such as accruals quality, earnings persistence, earnings predictability and earnings smoothness. Moving to market-based proxies, they depend typically on both accounting and market data such as value relevance, timeliness and conservatism. However, this thesis focuses only on accounting-based earnings quality proxies.

Moving to capital market aspects, this thesis determines three capital market aspects affected by earnings quality; these are the cost of equity capital, information asymmetry and analysts' information environment. The researcher discusses the definition of each one of these aspects and, also, the different approaches, which the previous literature uses to estimate these three aspects. For example, there are two approaches to estimate the cost of equity capital. Firstly, there is the *ex-post* cost of equity capital models which can be estimated by reference to market data such as price earnings ratio or realised returns. Secondly, there is the *ex-ante* cost of equity capital models, which can be estimated by reference to analysts' forecasts by using either the residual income model or the dividend discount model. For information asymmetry, the researcher discusses the four approaches, used in the literature, to estimate information asymmetry: namely, analysts' forecasts proxies; investments opportunity set proxies; stock return proxies; and market microstructure proxies. For analysts' information environment, the researcher discusses the measures of analysts following, analysts' forecasts dispersion and analysts' forecasts accuracy.

The second group of literature aims to discuss the previous studies which examine the association between earnings quality and the three aspects of capital market. Therefore, the researcher classifies these studies into five *sub-groups*. The first *sub-group* addresses the association between earnings quality and the cost of equity capital. This is followed by a discussion of the association between earnings quality and information asymmetry and, next, the association between earnings quality and analysts' information environment. Then, this study discusses the interaction between earnings quality and different aspects of capital market. Finally, in terms of the quality of earnings, it discusses the differences between IFRS and US GAAP.

According to the analyses of previous studies, the following conclusions could be reached: Firstly, most recent research on earnings quality uses one proxy for earnings quality; this is accruals quality. However, in this study, the researcher uses four earnings quality proxies known as accounting-based earnings quality proxies. These are; accrual quality; earnings persistence; earnings predictability; and earnings smoothness. The researcher discusses several proxies which accounting researcher have used as indicators of earnings quality. This discussion is by no means exhaustive. Indeed, it is difficult to imagine how any single proxy could capture adequately the different dimensions of earnings quality. The researcher calibrates the four proxies against three capital market aspects, namely: the cost of equity capital, which is a summary indicator of investor resource allocation decisions; information asymmetry; and analysts' information environment. This is to learn which proxy is viewed by investors and analysts as conferring the greatest capital market advantage; as measured by a reduced cost of equity capital, decreased information asymmetry, a higher number of analysts following, a lower dispersion of analysts' forecasts and more accurate analysts' forecasts accuracy.

Secondly, in the literature, there are few studies that examine the association between earnings quality and different proxies of analysts' information environment. In addition, in the literature, there are controversies about the examination of the association between earnings quality and these proxies. Thirdly, the weight of the existing empirical evidence suggests, also, that the capital market aspects effect of earnings quality appears to be associated strongly with the innate component of earnings quality. However, the earnings quality effects, associated with the discretionary or reporting determinants, are less important.

Fourthly, most previous studies, which focused on the effects of earnings quality on the aspects of capital market, had conducted in the US. This limits the generality of findings vis-à-vis contexts beyond the US. In this regard, there is somewhat mixed evidence on whether there are significant difference between the US GAAP and IFRS in terms of earnings quality, there are two standpoints as regards the differences between IFRS and DAS, and it is difficult to select which one has the upper hand. Theoretically, the application of principles-based standards provides a possible benefit of eliminating alternative accounting treatments for a transaction. The benefit of a single principle,

which reflects fundamental performance, leads to better information about the amount of earnings through reducing the opportunities for earnings management. However, a potential drawback is that principles-based standards prevent the manager from using the discretion allowed within the standards to give relevant information (Dechow et al., 2010). Although, in the capital market, there are more advantages from using IFRS (Li, 2010a), its opponents argue that IFRS give more discretion and less guidance and that the standards are less tested and less comprehensive than US GAAP. Consequently, there is more room for earnings management. To sum up, research evidence of whether IFRS adoption leads to improvement in the capital market is still mixed. On balance, the evidence suggests that there probably were improvement on the capital market, but that they were not experienced by all companies or in all countries. So, it is far from clear that the mixed results from these previous studies can be reconciled. All these findings point to the importance of this study.

## 10.3 Summary of Research Objectives and Hypotheses

The primary objective of this thesis is to examine the association between earnings quality and three capital market aspects in the UK. In particular, the researcher tests the extent to which what is reported to be the higher of four earnings quality proxies known as accounting-based earnings quality proxies (Francis et al. 2004), are associated with a lower cost of equity capital, lower information asymmetry, higher number of analysts following, lower dispersion of analysts' forecasts and greater accuracy of analysts' forecasts. This study aimed, also, to investigate the relative impact of the four earnings quality proxies on the three capital market aspects to determine which proxy matter most to investors and analysts. In addition it aims to determine whether the innate component, which is driven by economic fundamentals, and the discretionary component, which is driven by management choices, of each earnings quality proxy, impact similarly on the three aspects of capital market. Finally, the thesis was concerned with studying the impact of the financial crisis on the association between earnings quality and both the cost of equity capital and information asymmetry.

Based on theory and consistent with previous studies (e.g., Francis et al., 2004; Francis et al., 2005; Gray et al., 2009; Bhattacharya et al., 2013; Jayaraman, 2008; Bhattacharya et al., 2011; Lang and Lundholm, 1996; Lobo et al., 2012; Ascioglu et al., 2012), this

thesis investigates whether high earnings quality are associated with lower cost of equity capital, lower information asymmetry, higher number of analysts following, lower dispersion of analysts' forecasts and more accurate analysts' forecasts. In addition, this thesis investigates whether the innate and the discretionary component of earnings quality have the same impact on the cost of equity capital, information asymmetry, the number of analysts following, the dispersion of analysts' forecasts and the accuracy of analysts' forecasts. Finally, it tests the interaction effects of financial crisis and earnings quality on both the cost of equity capital and information asymmetry.

## 10.4 Summary of Research Philosophy and Methodology

Moving to discuss the research philosophy, the researcher regarded this research as being set within the positivistic (functionalist) paradigm. The functionalist paradigm represents a perspective which relates to the objectivist approach (realism, positivism, determinism and a preference for nomothetic method), and it is rooted firmly in the sociology of regulation (it is more conservative and tends towards preference for very gradual improvement as deemed appropriate rather than more radical change) (Burrell and Morgan, 1979, p. 26). It is often "problem oriented" in approach, focused on providing practical solutions to practical problems and generating knowledge which can be put to use. In this context, different theories of accounting e.g., capital need theory, signalling theory and decision usefulness theory were used as explanatory theories to explain the association between earnings quality and capital market aspects.

The sample of this thesis covers all UK non-financial firms listed on the London Stock Exchange during the period from 2005 to 2011. The *Thomson DataStream* and *I/B/E/S* Databases are used to collect the observations for all variables. Following the literature review, this study excludes the financial institutions from the sample (Peasnell et al., 2005; Francis et al., 2005), and uses The FTSE Industry Classification Benchmark (ICB) hierarchy. It provides eighteen industries which could be used to identify macroeconomic opportunities for investment and trading decisions as given by the *DataStream* Database. Four industries are excluded which are Banks and Financial Services, Insurance, Real Estate and Utilities and there remains fourteen industries. In total, there are 8,175 firm-year observations represents 28% of all the companies available in the *DataStream*. The number of distinct firms each year ranges from 1,074 to 1,224 per year.

## 10.5 Summary of the Empirical Results

In terms of the cost of equity capital, this study generally finds a statistically significant negative association between each earnings proxy considered separately and the cost of equity capital. Also, the results show that the predictability proxy explains more of the variation in estimates of the cost of equity, followed by accruals quality then persistence and finally smoothness. These findings suggest that there are differences between IFRS and US GAAP in the sense of the impact of earnings quality proxies on the cost of equity capital, especially, for earnings predictability and earnings smoothness. This study finds a significantly strong impact of earnings predictability on the cost of equity capital, however, Francis et al. (2004), who conduct their study in the US, do not find any significant impact of earnings predictability on the cost of equity capital. This finding is consistent with the study of Folsom et al. (2013), who find that the principles-based standards i.e., IFRS are more informative, persistent and predictive of future earnings and cash flows than rules-based standards i.e., US GAAP.

The second difference is the impact of earnings smoothness on the cost of equity capital. Results reported by Francis et al. (2004) suggest that capital market participant investors reward smoother earnings streams with reduced costs of equity capital, this finding is consistent with a view that earnings smoothness is desirable (at least in the eyes of investors) because it reflects higher quality financial reporting decisions. However, this study's findings are not consistent with this notion, because there is no significantly strong impact to earnings smoothness on the cost of equity capital. This supports the view of Leuz et al. (2003) who document that earnings smoothness reflects the extent to which accounting standards and legal system allow managers to reduce artificially variability in earnings, presumably to obtain some capital market benefits associated with a smooth earnings stream. According to this view, smoother earnings would indicate lower earnings quality in the UK market. In this regard, Chen et al. (2010) and Capkun et al. (2013) conclude that after the EU applied IFRS, firms became engaged in more earnings smoothness. In addition, this conclusion became stronger during the period of the financial crisis; the results of which indicate no significant association between earnings smoothness and the cost of equity capital. Also, the results of earnings smoothness is consistent with the study of Jayaraman (2008) who find a U-shaped association between

earnings smoothness and bid-ask spread. He concludes that earnings, which are smoother than cash flow, distort information and attract more informed investors; this may lead to higher cost of equity capital. Therefore, the first hypothesis ($H_1$) is accepted that there is a negative association between earnings quality and the cost of equity capital. This finding supports the capital needs theory and decision usefulness theory. These results are consistent across estimation methods (annual regression and pooled regression), specifications of the four earnings quality proxies (decile and raw data), and proxies of the cost of equity capital (*IndEP* and the *ex-ante* cost of equity capital measures).

The interaction effects between earnings quality and financial crisis on the cost of equity capital is also examined. The results indicate that, during the period of the crisis as compared to pre-crisis, the investors pay more attention to the quality of earnings in determining the price of the cost of equity capital of firms. The association between the cost of equity capital and earnings quality is investigated, also, during the period of the financial crisis (2008 and 2009). It finds a significantly strong impact of earnings persistence and predictability when compared to the impact of accruals quality and smoothness. In addition, it finds a significantly larger impact to *Beta* on the cost of equity capital, relative to the full sample period regressions. These findings shed light on the influence of economic consequences on the association between accounting information and its users i.e., investors. The results suggest that the investors pay more attention to sustainability of earnings rather than the relationship between earnings and cash flow. Those results show, also, the information in determining the price of cost of equity capital which matters to the investors throughout the financial crisis. Therefore, the hypothesis ($H_{10}$) is accepted.

An explanation of this finding is that, when the economy is stable, investment opportunities are numerous. Consequently, investors a pay less attention perhaps to the quality of accounting information (Mitton, 2002). Conversely, a crisis could force investors to identify the weakness in the quality of accounting information which existed all along. This identification may lead to a ‘‘flight-to-quality’’ syndrome (e.g., Goh et al., 2015; Francis et al., 2012). Therefore, such a syndrome will lead investors either to withdraw completely from the stock market or move their investments to what they

consider to be firms with high quality accounting information (Francis et al., 2013; Francis et al., 2012).

By using two different methods, this study examines, also, the separate impact of innate and discretionary earnings quality components on the cost of equity capital. It finds that the innate component of each earnings quality proxy has a larger impact on the cost of equity capital than the discretionary component. This result is consistent with the notion that information uncertainty, which results from the innate component is fundamental, compared to reporting uncertainty, which can shift easily from one period to another. Therefore, the hypothesis ($H_6$) that the innate and discretionary components have the same impact on the cost of equity capital is rejected. Moreover, the results suggest that the innate component of earnings smoothness has a significant impact on the cost of equity capital. However, the discretionary component has no significant impact on the cost of equity capital. This finding suggests that investors reward the innate component by reducing the cost of equity capital. However, they do not reward the highly discretionary component of earnings smoothness by reducing the cost of equity capital; they consider it to be a type of earnings management. This finding is consistent with the view of Ahrens (2009) who argue that earnings smoothness ought to be split into two portions, the first portion is the natural smoothness, which happens naturally from the effect of some production processes on earnings streams (the innate component). The second portion is intentional smoothness, which happens when some firms smooth earnings intentionally to benefit from the advantages of such an earnings stream (the discretionary component).

Moving to information asymmetry, the results indicate a significant negative association between earnings quality and information symmetry; therefore the hypothesis ($H_2$) is accepted. Also, the results show that, when compared to other earnings quality proxies, earnings smoothness has the largest impact on information asymmetry. This finding is contrary to the finding of the study of Jayaraman (2008) since he finds a significantly positive association between earnings smoothness and bid-ask spreads. As for the financial crisis, this study test the association between information asymmetry and earnings quality proxy in only the period of the financial crisis (2008 and 2009), and finds

significant associations between information asymmetry and all earnings quality proxies except accruals quality.

Comparing the results of the impact of earnings smoothness on information asymmetry and the cost of equity capital in this study, from the first while, could be controversial. However, the study of Lambert et al. (2012) is useful in this respect. Lambert et al. (2012) provide a comprehensive review of the literature and a key theoretical prediction for the association between information asymmetry and the cost of equity capital. In their framework, information asymmetry could affect the cost of capital only in imperfect competition. Therefore, in highly competitive equity markets, such as the UK, information quality may affect the cost of capital mainly by affecting the precision of investors' information rather than information asymmetry.

Moreover, the results show that the innate component of earnings quality has a significant impact on information asymmetry; however, with the exception of the discretionary component of earnings smoothness, the discretionary component has no significant impact on information asymmetry. Therefore, the null hypothesis ($H_7$) is rejected.

In terms of analysts' information environment, the results indicate that there are significantly positive associations between analysts following and earnings quality proxies except in the case of the earnings quality proxy of earnings smoothness. There are significant negative associations between earnings quality proxies and the dispersion of analysts' forecasts. There are significant positive associations between the accuracy of the analysts' forecasts and both accruals quality and earnings predictability. The findings suggest that firms with higher earnings quality have more analysts following, lower analysts' forecasts dispersion and greater analysts' forecasts accuracy. Therefore, the hypotheses ($H_3$, $H_4$ and $H_5$) are accepted. Moreover, the results indicate that earnings predictability has the largest impact across earnings quality proxies for both analysts' following and forecasts accuracy regressions. This finding suggests which of the earnings proxies matter most to analysts. Overall, these findings provide evidence that earnings quality is an important determinant of analysts' information environment. Also, the results provide evidence that financial analysts pay greater attention to the quality of the time-series behaviour of earnings, as measured by earnings predictability and persistence, than the association between earnings and cash flow as measured by accruals quality and

smoothness. Furthermore, the results indicate that the innate component of earnings quality has a larger impact on all financial analyst behaviour proxies (i.e., number of analysts following, the dispersion of analysts' forecasts and the accuracy of analysts' forecasts) than the discretionary component of earnings quality. This finding suggests that analysts pay more attention and place greater weight on the innate factors than the discretionary factors of earnings quality. Therefore, the null hypotheses ($H_8$, $H_9$, $H_{10}$) are rejected.

In summary, the findings of this study support the importance of accounting information and financial reporting to the capital market participants, i.e., investors and analysts. In addition, they have a capital market consequences i.e., the cost of equity capital, information asymmetry and analysts' information environment. Also, earnings have to be high quality and have a desirable impact on capital market aspects which must be sustainable, predict future earnings and have a high rating for accruals that are realised into cash flows. These findings support the capital needs theory, signalling theory and decision usefulness theory.

Moreover, the findings of this study counter the argument of the limitation impact of accounting standards singly on the quality of earnings if the other factors are constant (e.g., Ball et al., 2003; Leuz, 2003; Ball and Shivakumar, 2005; Burgstahler et al., 2006). Especially, that the results of this study are different from the studies that conducted in the US, which used the same measures and proxies of dependent and independent variables (e.g., Francis et al., 2004; Francis et al., 2005). However, in the literature, this question continues to be controversial and needs more detailed comparison between the two standards in order to determine the differences between them in terms of earnings quality. Finally, this study shed light on the effect of the financial crisis on the association between earnings quality and capital market aspects in a country with strong fiscal sustainability. It indicates, also, that during the period of the financial crisis there are stronger associations between earnings quality proxies and both information asymmetry and the cost of equity capital than the period before the crisis.

## 10.6 Research Implications

The findings of this study could be beneficial to investors, analysts, regulators, standards setters, policy makers and managers who are interested in the quality of accounting information, and who would like to understand the economic consequences of public accounting information. In particular, retail investors seem to be the capital market stakeholder group which loses out the most from the low quality of earnings. Possibly more could be done to provide tools to enable retail investors to calculate measures of the quality of accounting information for the firms in which they invest. Also, more could be done to benchmark these indicators of earnings quality against other firms, especially since the retail investors represent around 18% of the UK market (Office for National Statistics, 2010). This study indicates that firms are motivated to publish high quality accounting information in order to reduce their cost of equity capital. Also, these findings give a clear view to firms of the meaning of high quality earnings; this meaning should capture the persistence and predictability of earnings with high quality of accruals. This study gives, also, information about the quality of earnings under IFRS in the common-law system. This is important for accounting standard setting bodies, particularly, when they prepare to change or review the accounting standards and regulations.

Moving to the financial crisis, this study is important for policy makers, investors and regulators. In particular, it helps policy makers in their preparation of defence mechanisms against a crisis. The findings of this study shed light on the impact of the severe financial crisis on the quality of accounting information in the UK. This study gives, also, insights to investors when setting their investment portfolios and strategies amidst crises or, generally, amidst conditions of uncertainty and volatility. In addition, this study is useful for accounting regulators when preparing accounting regulations which seek to reduce information asymmetry and earnings manipulation and increase the quality of accounting information during a crisis.

Moreover, this study is useful to researchers who are examining IFRS' consequences of earnings quality on the capital market. This study finds that high earnings quality leads to a lower cost of equity capital, lower information asymmetry, improve the financial analysts' environment and enhance the ability of analysts to forecast future earnings.

An interesting implication of these findings is the quality of earnings under IFRS in the UK which is an important source of information for financial analysts. The high quality of current accounting information enhances the analysts' ability to forecast the future earnings.

## 10.7 Research Limitations

The empirical results are subject to many caveats. Firstly, the measurement of earnings quality is difficult especially since earnings quality is multifaceted construct. This research attempts to address this issue by measuring earnings quality through using four proxies, known as accounting-ased earnings quality proxies, and making comparisons between them in order to determine which proxy matters most to users. Therefore there are other angles of earnings quality are not covered by this thesis such as the market-based proxies, which assume that the function of earnings is to reflect economic income as shown by stock returns.

Secondly, this research considers no interaction between information generates from the financial reporting process, and other information generates from other processes in the capital market. Most previous studies followed the same approach (e.g., Francis et al., 2005; Francis et al., 2004; Gray et al., 2009).

Thirdly, this research does not test the association between earnings quality and the three aspects of capital market from the viewpoint of the stewardship theory. This reflects the *ex-post* role of financial information by using that information to control and monitor the management's use of capital (Holthausen and Watts, 2001; Cascino et al., 2013).

Fourthly, this study investigates the association between earnings quality and the analysts' information environment in order to reflect the effects of earnings quality on the decision usefulness for equity valuation. However, the disadvantage of using the analysts' information environment proxies is the required assumption that analysts are unbiased and expert forecasters, given that evidence on the validity of those assumptions is still unclear (e.g., Dechow et al., 2010).

Fifthly, because it lay outside its scope, this study does not capture properly the potential simultaneity between earnings quality proxies and analysts' information environment proxies. To be explicit, by using a simultaneous equation, future research could examine

these associations. Such a piece of research is particularly important in order to provide a better understanding of the interplay between the quality of accounting information and financial analysts.

## 10.8 Future Research

Future research would be interesting if: firstly, doing cross-country earnings quality studies among the European countries. In particular, investigating the association between earnings quality and aspects of capital market in countries with different governance and enforcement regimes, would shed further light on the factors which affect the quality of earnings, how it impacts the different aspects of capital market.

Secondly, as mentioned, the concept of earnings quality remains quite vague and there is no consensus on it. Also, earnings quality proxies are not substitutes and that they measure different angles of earnings quality with a little overlap among each of them. Therefore, it would be interesting if future research uses both accounting-based earnings quality and market-based earnings quality, and compare between their impacts on the key aspects of capital market. Also, it would be useful using different models of the cost of equity capital; information asymmetry and the analysts' information environment.

Third, the intent in this study is to examine the capital market effects of earnings quality but to stimulate further research in this area. The researcher encourages the undertaking of research which examines the impact of earnings quality in contracting and stewardship settings. This would provide an answer to the question of what information do users, e.g., investors, use to assess stewardship. Compared to the decision usefulness role, the stewardship role of information receives less attention in the literature. Also, most of studies on stewardship are based on theoretical analyses (O'Connell, 2007; Cascino et al., 2013).

Fourthly, the researcher suggests that, in terms of earning quality, there should be in depth comparative study between the US (US GAAP) and the UK (IFRS). This could determine, in terms of the quality of earnings, whether there are differences between the two accounting systems in the common law countries. Also, the researcher suggests the undertaking of a comparison study, which examines the impact of earnings quality on aspects of capital market in pre-IFRS and post-IFRS in the UK.

Fifthly, the researcher suggests that, in terms of the association between earnings quality and the aspects of capital market, there should be in depth comparative study between large and small publicity traded firms. Based on previous studies, it is not clear that larger and smaller publicly traded firms are probably benefited to the same extent from high earnings quality.

Sixthly, in terms of the financial crisis, the researcher suggests carrying out comparative studies between common law and code law countries in terms of the association between financial crisis and earnings quality. These could determine whether the distinctive characteristics between the two types of systems have its effect on this association.

Seventhly, it is worthwhile carrying out an investigation of the potential simultaneity in the association between earnings quality proxies and analysts' information environment. This type of research will provide a better understanding of the interplay between quality of earnings and the analysts' information environment.

Finally, using the triangulation approach would be useful. This could be done by adding the interview method with the quantitative methods. This might provide useful insights into the users' views on earnings quality, and how they use it in their decision making.

## References


Abarbanell, J. & Lehavy, R. 2003. Biased forecasts or biased earnings? The role of reported earnings in explaining apparent bias and over/underreaction in analysts' earnings forecasts. *Journal of Accounting and Economics,* 36(1)**,** pp 105-146.

Abd-Elsalam, O. H. & Weetman, P. 2003. Introducing international accounting standards to an emerging capital market: relative familiarity and language effect in Egypt. *Journal of International Accounting, Auditing and Taxation,* 12(1)**,** pp 63-84.

Aboody, D., Hughes, J. & Liu, J. 2005. Earnings quality, insider trading, and cost of capital. *Journal of Accounting Research,* 43(5)**,** pp 651-673.

Acker, L. & Athanassakos, G. 1997. Prior uncertainty, analyst bias, and subsequent abnormal returns. *The Journal of Financial Research,* 20(2)**,** pp 263-273.

Affleck-Graves, J., Callahan, C. M. & Ramanan, R. 2000. Detecting abnormal bid-ask spread: a comparison of event study methods. *Review of Quantitative Finance and Accounting,* 14(1)**,** pp 45-65.

Agoglia, C. P., Doupnik, T. S. & Tsakumis, G. T. 2011. Principles-based versus rules-based accounting standards: The influence of standard precision and audit committee strength on financial reporting decisions. *The Accounting Review,* 86(3)**,** pp 747-767.

Ahmed, A. S., Neel, M. & Wang, D. 2013. Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. *Contemporary Accounting Research,* 30(4)**,** pp 1344-1372.

Ahrens, B. 2009. *Capital market implications of earnings quality*, Koln: Josef Eul Verlag.

Ajinkya, B. B., Rowland, K. A. & Gift, M. J. 1991. Volume of trading and the dispersion in financial analysts' earnings forecasts. *The Accounting Review,* 66(2)**,** pp 389-401.

Akerlof, G. A. 1970. The market for "Lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics,* 84(3)**,** pp 488-500.

Alford, A. W. 1992. The effect of the set of comparable firms on the accuracy of the price-earnings valuation method. *Journal of Accounting Research,* 30(1)**,** pp 94-108.

Ali, A., Klein, A. & Rosenfeld, J. 1992. Analysts' use of information about permanent and transitory earnings components in forecasting annual EPS. *The Accounting Review,* 67(1)**,** pp 183-198.

Allayannis, G. & Simko, P. 2009. *Earnings smoothing, analyst following, and firm value* [Online]. Virginia University. Available: http://faculty.darden.virginia.edu/AllayannisY/documents/AS-Earnings%20Smoothing%20Analyst%20Following%20and%20Firm%20Value.pdf [Accessed 18/08/2014.

Amihud, Y. 2002. Illiquidity and stock returns: Cross-section and time-series effects. *Journal of Financial Markets,* 5(1)**,** pp 31-56.

Amihud, Y. & Mendelson, H. 1980. Dealership market: Market-making with inventory. *Journal of Financial Economics,* 8(1)**,** pp 31-53.

Artiach, T. C. & Clarkson, P. M. 2011. Disclosure, conservatism and the cost of equity capital: A review of the foundation literature. *Accounting & Finance,* 51(1)**,** pp 2-49.

Ascioglu, A., Hegde, S. P., Krishnan, G. V. & McDermott, J. B. 2012. Earnings management and market liquidity. *Review of Quantitative Finance and Accounting,* 38(2)**,** pp 257-274.

Ashbaugh, H. & Pincus, M. 2001. Domestic accounting standards, international accounting standards, and the predictability of earnings. *Journal of Accounting Research,* 39(3)**,** pp 417-434.

Atwood, T., Drake, M. S., Myers, J. N. & Myers, L. A. 2011. Do earnings reported under IFRS tell us more about future earnings and cash flows? *Journal of Accounting and Public Policy,* 30(2)**,** pp 103-121.

Ayers, B. C. & Freeman, R. N. 2003. Evidence that analyst following and institutional ownership accelerate the pricing of future earnings. *Review of Accounting Studies,* 8(1)**,** pp 47-67.

Bailey, K. D. 1978. *Methods of social research*, London: Collier Macmillan.

Ball, R. 2006. International Financial Reporting Standards (IFRS): Pros and cons for investors. *Accounting and Business Research,* 36(supplement)**,** pp 5-27.

Ball, R. & Brown, P. 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research,* 6(2)**,** pp 159-178.

Ball, R., Kothari, S. & Robin, A. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics,* 29(1)**,** pp 1-51.

Ball, R., Robin, A. & Wu, J. S. 2003. Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics,* 36(1)**,** pp 235-270.

Ball, R. & Shivakumar, L. 2005. Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics,* 39(1)**,** pp 83-128.

Barker, R. & Imam, S. 2008. Analysts' perceptions of 'earnings quality'. *Accounting and Business Research,* 38(4)**,** pp 313-329.

Barnea, A., Ronen, J. & Sadan, S. 1976. Classificatory smoothing of income with extraordinary items. *The Accounting Review,* 51(1)**,** pp 110-122.

Barron, O. E., Kile, C. O. & O'Keefe, T. B. 1999. MD&A quality as measured by the SEC and analysts' earnings forecasts. *Contemporary Accounting Research,* 16(1)**,** pp 75-109.

Barron, O. E., Kim, O., Lim, S. C. & Stevens, D. E. 1998. Using analysts' forecasts to measure properties of analysts' information environment. *The Accounting Review,* 73(4)**,** pp 421-433.

Barron, O. E., Stanford, M. H. & Yu, Y. 2009. Further evidence on the relation between analysts' forecast dispersion and stock returns. *Contemporary Accounting Research,* 26(2)**,** pp 329-357.

Barron, O. E. & Stuerke, P. S. 1998. Dispersion in analysts' earnings forecasts as a measure of uncertainty. *Journal of Accounting, Auditing & Finance,* 13(3)**,** pp 245-270.

Barry, C. & Brown, S. J. 1985. Differential information and security market equilibrium. *Journal of Financial and Quantitative Analysis,* 20(4)**,** pp 407-422.

Barth, M. E., Beaver, W. H. & Landsman, W. R. 2001. The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics,* 31(1)**,** pp 77-104.

Barth, M. E., Konchitchki, Y. & Landsman, W. R. 2013. Cost of capital and earnings transparency. *Journal of Accounting and Economics,* 55(2-3)**,** pp 206-224.

Barth, M. E. & Landsman, W. R. 2010. How did financial reporting contribute to the financial crisis? *European Accounting Review,* 19(3)**,** pp 399-423.

Barth, M. E., Landsman, W. R. & Lang, M. H. 2008. International accounting standards and accounting quality. *Journal of Accounting Research,* 46(3)**,** pp 467-498.

Bartov, E., Goldberg, S. R. & Kim, M. 2005. Comparative value relevance among German, US, and international accounting standards: A German stock market perspective. *Journal of Accounting, Auditing & Finance,* 20(2)**,** pp 95-119.

Basu, S. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics,* 24(1)**,** pp 3-37.

Beattie, V., Fearnley, S. & Hines, T. 2011. *Reaching key financial reporting decisions: how directors and auditors interact*, 1st ed., Chichester: John Wiley.

Beatty, R. P. & Welch, I. 1996. Issuer expenses and legal liability in initial public offerings. *Journal of Law and Economics,* 39(2)**,** pp 545-602.

Beaver, W. H. & Ryan, S. G. 2005. Conditional and unconditional conservatism: Concepts and modeling. *Review of Accounting Studies,* 10(2-3)**,** pp 269-309.

Bebbington, J., Laughlin, R. & Gray, R. 2001. *Financial accounting : Practice and principles*, 3rd ed., London: Thomson Learning.

Bekaert, G. & Harvey, C. R. 1995. Time-varying world market integration. *The Journal of Finance,* 50(2)**,** pp 403-444.

Bennett, B., Bradbury, M. & Prangnell, H. 2006. Rules, principles and judgments in accounting standards. *Abacus,* 42(2)**,** pp 189-204.

Benston, G. J., Bromwich, M. & Wagenhofer, A. 2006. Principles-versus rules-based accounting standards: The FASB's standard setting strategy. *Abacus,* 42(2)**,** pp 165-188.

Beuselinck, C., Joos, P., Khurana, I. K. & Van der Meulen, S. 2010. *Mandatory IFRS reporting and stock price informativeness* [Online]. Tilburg: Tilburg University. Available: https://pure.uvt.nl/portal/files/1259918/2010-82.pdf [Accessed 20/09/2014.

Beyer, A., Cohen, D. A., Lys, T. Z. & Walther, B. R. 2010. The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics,* 50(2)**,** pp 296-343.

Bhagat, S., Marr, M. W. & Thompson, G. R. 1985. The rule 415 experiment: equity markets. *The Journal of Finance,* 40(5)**,** pp 1385-1401.

Bhattacharya, N., Desai, H. & Venkataraman, K. 2013. Does earnings quality affect information asymmetry? Evidence from trading costs. *Contemporary Accounting Research,* 30(2)**,** pp 482-516.

Bhattacharya, N., Ecker, F., Olsson, P. M. & Schipper, K. 2011. Direct and mediated associations among earnings quality, information asymmetry, and the cost of equity. *The Accounting Review,* 87(2)**,** pp 449-482.

Bhattacharya, U., Daouk, H. & Welker, M. 2003. The world price of earnings opacity. *The Accounting Review,* 78(3)**,** pp 641-678.

Bhushan, R. 1989. Firm characteristics and analyst following. *Journal of Accounting and Economics,* 11(2)**,** pp 255-274.

Blackwell, D. & Dubins, L. 1962. Merging of opinions with increasing information. *The Annals of Mathematical Statistics,* 33(3)**,** pp 882-886.

Block, S. B. 1999. A study of financial analysts: Practice and theory. *Financial Analysts Journal,* 55(4)**,** pp 86-95.

Botosan, C. A. 1997. Disclosure level and the cost of equity capital. *The Accounting Review,* 72(3)**,** pp 323-349.

Botosan, C. A. & Plumlee, M. A. 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research,* 40(1)**,** pp 21-40.

Botosan, C. A. & Plumlee, M. A. 2005. Assessing alternative proxies for the expected risk premium. *The Accounting Review,* 80(1)**,** pp 21-53.

Botosan, C. A., Plumlee, M. A. & Wen, H. 2011. The relation between expected returns, realized returns, and firm risk characteristics. *Contemporary Accounting Research,* 28(4)**,** pp 1085-1122.

Botosan, C. A. & Stanford, M. 2005. Managers' motives to withhold segment disclosures and the effect of SFAS No. 131 on analysts' information environment. *The Accounting Review,* 80(3)**,** pp 751-772.

Bowen, R. M. & Khan, U. 2014. Market reactions to policy deliberations on fair value accounting and impairment rules during the financial crisis of 2008–2009. *Journal of Accounting and Public Policy,* 33(3)**,** pp 233-259.

Bowen, R. M., Rajgopal, S. & Venkatachalam, M. 2008. Accounting discretion, corporate governance, and firm performance. *Contemporary Accounting Research,* 25(2)**,** pp 351-405.

Bradley, D., Clarke, J., Lee, S. & Ornthanalai, C. 2014. Are analysts' recommendations informative? Intraday evidence on the impact of time stamp delays. *The Journal of Finance,* 69(2)**,** pp 645-673.

Bradshaw, M. T., Richardson, S. A. & Sloan, R. G. 2001. Do analysts and auditors use information in accruals? *Journal of Accounting Research,* 39(1)**,** pp 45-74.

Brav, A., Lehavy, R. & Michaely, R. 2005. Using expectations to test asset pricing models. *Financial Management,* 34(3)**,** pp 31-64.

Brooks, C. 2008. *Introductory econometrics for finance*, 2nd ed., Cambridge: Cambridge University Press.

Brown, S. & Hillegeist, S. A. 2007. How disclosure quality affects the level of information asymmetry. *Review of accounting studies,* 12(2)**,** pp 443-477.

Brown, S., Hillegeist, S. A. & Lo, K. 2004. Conference calls and information asymmetry. *Journal of Accounting and Economics,* 37(3)**,** pp 343-366.

Burgstahler, D. C., Hail, L. & Leuz, C. 2006. The importance of reporting incentives: earnings management in European private and public firms. *The Accounting Review,* 81(5)**,** pp 983-1016.

Burrell, G. & Morgan, G. 1979. *Sociological paradigms and organisational analysis: Elements of the sociology of corporate life*, London: Heinemann.

Bushman, R. M. & Indjejikian, R. J. 1993. Stewardship value of" distorted" accounting disclosures. *The Accounting Review,* 68(4)**,** pp 765-782.

Bushman, R. M., Piotroski, J. D. & Smith, A. J. 2004. What determines corporate transparency? *Journal of Accounting Research,* 42(2)**,** pp 207-252.

Bushman, R. M., Piotroski, J. D. & Smith, A. J. 2011. Capital allocation and timely accounting recognition of economic losses. *Journal of Business Finance & Accounting,* 38(1-2)**,** pp 1-33.

Byard, D., Li, Y. & Yu, Y. 2011. The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research,* 49(1)**,** pp 69-96.

Callahan, C. M., Lee, C. M. & Yohn, T. L. 1997. Accounting information and bid-ask spreads. *Accounting Horizons,* 11(4)**,** pp 50-60.

Callen, J. L., Segal, D. & Hope, O.-K. 2010. The pricing of conservative accounting and the measurement of conservatism at the firm-year level. *Review of Accounting Studies,* 15(1)**,** pp 145-178.

Campbell, J. Y. & Ammer, J. 1993. What moves the stock and bond markets? A variance decomposition for long-term asset returns. *The Journal of Finance,* 48(1)**,** pp 3-37.

Campbell, J. Y. & Shiller, R. J. 1988. The dividend-price ratio and expectations of future dividends and discount factors. *Review of Financial Studies,* 1(3)**,** pp 195-228.

Capkun , V., Collins, D. W. & Jeanjean, T. 2013. *The effect of IAS/IFRS adoption on earnings management (smoothing): A closer look at competing explanations* [Online]. SSRN. Available: http://ssrn.com/abstract=1850228 [Accessed 20/01/2015.

Capstaff, J., Paudyal, K. & Rees, W. 1995. The accuracy and rationality of earnings forecasts by UK analysts. *Journal of Business Finance & Accounting,* 22(1)**,** pp 67-85.

Carhart, M. M. 1997. On persistence in mutual fund performance. *The Journal of Finance,* 52(1)**,** pp 57-82.

Carmines, E. G. & Zeller, R. A. 1979. *Reliability and validity assessment*, London: Sage Publications.

Cascino, S., Clatworthy, M., García Osma, B., Gassen, J., Imam, S. & Jeanjean, T. 2013. *The use of information by capital providers Academic literature review* [Online]. Edinburgh: ICAS & EFRAG. Available: http://www.efrag.org/files/Academic%20Research/EFRAG_ICAS_27-12-17.pdf [Accessed 01/07/2014.

Chambers, R. J. 1955. Blueprint for a theory of accounting. *Accounting Research,* 6(1)**,** pp 17-25.

Chatham, M. 2004. *Does the extent of compliance with international accounting standards affect information asymmetry?* Doctor of Philosophy, Oklahoma State University.

Chen, H., Tang, Q., Jiang, Y. & Lin, Z. 2010. The role of international financial reporting standards in accounting quality: Evidence from the European Union. *Journal of International Financial Management & Accounting,* 21(3)**,** pp 220-278.

Choi, F. D. S. 1973. Financial disclosure in relation to a firm's capital costs. *Accounting and Business Research,* 3(12)**,** pp 282-292.

Choi, J.-H., Kim, J.-B. & Lee, J. J. 2011. Value relevance of discretionary accruals in the Asian financial crisis of 1997–1998. *Journal of Accounting and Public Policy,* 30(2)**,** pp 166-187.

Choi, Y. S., Peasnell, K. & Toniato, J. 2013. Has the IASB been successful in making accounting earnings more useful for prediction and valuation? UK evidence. *Journal of Business Finance & Accounting,* 40(7-8)**,** pp 741-768.

Chopra, V. K. 1998. Why so much error in analysts' earnings forecasts? *Financial Analysts Journal,* 54(6)**,** pp 35-42.

Christensen, H. B., Lee, E. & Walker, M. 2009. Do IFRS reconciliations convey information? The effect of debt contracting. *Journal of Accounting Research,* 47(5)**,** pp 1167-1199.

Christensen, P. O., Feltham, G. A. & Şabac, F. 2005. A contracting perspective on earnings quality. *Journal of Accounting and Economics,* 39(2)**,** pp 265-294.

Chua, W. F. 1986. Radical developments in Accounting thought. *The Accounting Review,* 61(4)**,** pp 601-632.

Chung, K. H. & Charoenwong, C. 1991. Investment options, assets in place, and the risk of stocks. *Financial Management,* 20(3)**,** pp 21-33.

Chung, K. H., Van Ness, B. F. & Van Ness, R. A. 2004. Trading costs and quote clustering on the NYSE and NASDAQ after decimalization. *Journal of Financial Research,* 27(3)**,** pp 309-328.

Clarke, J. & Shastri, K. 2001. *Adverse selection costs and closed-end funds* [Online]. SSRN. Available: http://ssrn.com/abstract=256728 [Accessed 01/07/2012.

Clarke, J. E., Fee, C. E. & Thomas, S. 2004. Corporate diversification and asymmetric information: evidence from stock market trading characteristics. *Journal of Corporate Finance,* 10(1)**,** pp 105-129.

Clatworthy, M. A., Pong, C. K. & Wong, W. K. 2012. Auditor quality effects on the relationship between accruals, cash flows and equity returns: a variance decomposition analysis. *Accounting and Business Research,* 42(4)**,** pp 419-439.

Claus, J. & Thomas, J. 2001. Equity premia as low as three percent? Evidence from analysts' earnings forecasts for domestic and international stock markets. *The Journal of Finance,* 56(5)**,** pp 1629-1666.

Cohen, D. 2003. *Quality of financial reporting choice: determinants and economic consequences.* Doctor of Philosophy, Northwestern University.

Cohen, D. A. 2008. Does information risk really matter? An analysis of the determinants and economic consequences of financial reporting quality. *Asia-Pacific Journal of Accounting & Economics,* 15(2)**,** pp 69-90.

Collins, D. W. & Kothari, S. 1989. An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics,* 11(2)**,** pp 143-181.

Collins, D. W., Maydew, E. L. & Weiss, I. S. 1997. Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics,* 24(1)**,** pp 39-67.

Collis, J. & Hussey, R. 2009. *Business research: A practical guide for undergraduate and postgraduate students*, 3rd, London: Palgrave Macmillan.

Collis, J. & Hussey, R. 2014. *Business research: A practical guide for undergraduate and postgraduate students*, 4th, London: Palgrave Macmillan.

Comiskey, E. E., Walkling, R. A. & Weeks, M. A. 1987. Dispersion of expectations and trading volume. *Journal of Business Finance & Accounting,* 14(2)**,** pp 229-239.

Cooke, T. E. 1993. Disclosure in Japanese corporate annual reports. *Journal of Business Finance & Accounting,* 20(4)**,** pp 521-535.

Core, J. E., Guay, W. R. & Verdi, R. 2008. Is accruals quality a priced risk factor? *Journal of Accounting and Economics,* 46(1)**,** pp 2-22.

Cox, R. A. & Kleiman, R. T. 2002. Superstardom and institutional investor's all-British research team. *Managerial Finance,* 28(1)**,** pp 1-13.

Craven, B. M. & Marston, C. L. 1999. Financial reporting on the Internet by leading UK companies. *European Accounting Review,* 8(2)**,** pp 321-333.

Creswell, J. W. 2014. *Research Design*, 4th ed., Thousand Oaks, CA: SAGE.

Crotty, M. 1998. *The foundations of social research: Meaning and perspective in the research process*, 1st, London: Sage Publications.

Cuijpers, R. & Buijink, W. 2005. Voluntary adoption of non-local GAAP in the European Union: A study of determinants and consequences. *European Accounting Review,* 14(3)**,** pp 487-524.

Daley, L., Senkow, D. W. & Vigeland, R. L. 1988a. Analysts' forecasts, earnings variability, and option pricing: Empirical evidence. *The Accounting Review,* 63(4)**,** pp 563-585.

Daley, L. A., Senkow, D. W. & Vigeland, R. L. 1988b. Analysts' forecasts, earnings variability, and option pricing: Empirical evidence. *The Accounting Review,* 63(4)**,** pp 563-585.

Das, S. & Saudagaran, S. M. 1998. Accuracy, bias, and dispersion in analysts' earnings forecasts: The case of cross-listed foreign firms. *Journal of International Financial Management & Accounting,* 9(1)**,** pp 16-33.

Daske, H. 2006. Economic benefits of adopting IFRS or US-GAAP – Have the expected cost of equity capital Really decreased? *Journal of Business Finance & Accounting,* 33(3-4)**,** pp 329-373.

Daske, H., Hail, L., Leuz, C. & Verdi, R. 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research,* 46(5)**,** pp 1085-1142.

Daske, H., Hail, L., Leuz, C. & Verdi, R. 2013. Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research,* 51(3)**,** pp 495-547.

Davis-Friday, P. Y., Eng, L. L. & Liu, C.-S. 2006. The effects of the Asian crisis, corporate governance and accounting system on the valuation of book value and earnings. *The International Journal of Accounting,* 41(1)**,** pp 22-40.

Davis, J. H., Schoorman, F. D. & Donaldson, L. 1997. Toward a stewardship theory of management. *Academy of Management Review,* 22(1)**,** pp 20-47.

Dechow, P. & Dichev, I. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review,* 77(Supplement)**,** pp 35-59.

Dechow, P., Ge, W., Larson, C. R. & Sloan, R. G. 2011. Predicting material Accounting misstatements. *Contemporary Accounting Research,* 28(1)**,** pp 17-82.

Dechow, P., Ge, W. & Schrand, C. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics,* 50(2)**,** pp 344-401.

Dechow, P. & Schrand, C. M. 2004. Earnings quality. *The Research Foundation of CFA Institute*.

Dechow, P., Sloan, R. G. & Sweeney, A. P. 1995. Detecting earnings management. *The Accounting Review,* 70(2)**,** pp 193-225.

Dechow, P., Sloan, R. G. & Sweeney, A. P. 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the sec. *Contemporary Accounting Research,* 13(1)**,** pp 1-36.

Dechow, P. M. 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics,* 18(1)**,** pp 3-42.

Deegan, C. & Rankin, M. 1997. The materiality of environmental information to users of annual reports. *Accounting, Auditing & Accountability Journal,* 10(4)**,** pp 562-583.

Deegan, C. & Unerman, J. 2011. *Financial accounting theory*, 2nd, Berkshire: McGraw Hill Education.

Degeorge, F., Patel, J. & Zeckhauser, R. 1999. Earnings management to exceed thresholds. *The Journal of Business,* 72(1)**,** pp 1-33.

Demirkan, S., Radhakrishnan, S. & Urcan, O. 2012. Discretionary accruals quality, cost of capital, and diversification. *Journal of Accounting, Auditing & Finance,* 27(4)**,** pp 496-526.

Demsetz, H. 1968. The cost of transacting. *The Quarterly Journal of Economics,* 82(1)**,** pp 33-53.

Denzin, N. K. & Lincoln, Y. S. 1994. *Handbook of qualitative research*, Thousand Oaks: Sage Publications.

Dhaliwal, D., Heitzman, S. & Zhen Li, O. 2006. Taxes, leverage, and the cost of equity capital. *Journal of Accounting Research,* 44(4)**,** pp 691-723.

Diamond, D. W. 1985. Optimal release of information by firms. *Journal of Finance* 40(4)**,** pp 1071-1094.

Diamond, D. W. & Verrecchia, R. E. 1991. Disclosure, liquidity, and the cost of capital. *The Journal of Finance,* 46(4)**,** pp 1325-1359.

Dichev, I., Graham, J., Harvey, C. R. & Rajgopal, S. 2013. Earnings quality: Evidence from the field. *Journal of Accounting and Economics,* 56(2-3)**,** pp 1-33.

Dichev, I. D. & Tang, V. W. 2008. Matching and the changing properties of accounting earnings over the last 40 years. *The Accounting Review,* 83(6)**,** pp 1425-1460.

Dichev, I. D. & Tang, V. W. 2009. Earnings volatility and earnings predictability. *Journal of Accounting and Economics,* 47(1)**,** pp 160-181.

Ding, Y., Hope, O.-K., Jeanjean, T. & Stolowy, H. 2007. Differences between domestic accounting standards and IAS: Measurement, determinants and implications. *Journal of Accounting and Public Policy,* 26(1)**,** pp 1-38.

Donaldson, L. & Davis, J. H. 1991. Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of management,* 16(1)**,** pp 49-64.

Donaldson, L. & Davis, J. H. 1994. Boards and company performance-research challenges the conventional wisdom. *Corporate Governance: An International Review,* 2(3)**,** pp 151-160.

Dunn, K. & Nathan, S. 2005. Analyst industry diversification and earnings forecast accuracy. *The Journal of Investing,* 14(2)**,** pp 7-14.

Dunne, T., Fifield, S., Finningham, G., Fox, A., Hannah, G., Helliar, C., Power, D. & Veneziani, M. 2008. *The implementation of IFRS in the UK, Italy and Ireland*, Edinburgh: Institute of Chartered Accountants of Scotland.

Duru, A. & Reeb, D. M. 2002. International diversification and analysts' forecast accuracy and bias. *The Accounting Review,* 77(2)**,** pp 415-433.

Dutta, S. & Zhang, X. j. 2002. Revenue recognition in a multiperiod agency setting. *Journal of Accounting Research,* 40(1)**,** pp 67-83.

Eames, M. J. & Glover, S. M. 2003. Earnings predictability and the direction of analysts' earnings forecast errors. *The Accounting Review,* 78(3)**,** pp 707-724.

Easley, D., Hvidkjaer, S. & O'hara, M. 2002. Is information risk a determinant of asset returns? *The Journal of Finance,* 57(5)**,** pp 2185-2221.

Easley, D. & O'hara, M. 2004. Information and the cost of capital. *The Journal of Finance,* 59(4)**,** pp 1553-1583.

Easterwood, J. C. & Nutt, S. R. 1999. Inefficiency in analysts' earnings forecasts: systematic misreaction or systematic optimism? *The Journal of Finance,* 54(5)**,** pp 1777-1797.

Easton, P. D. 2004. PE ratios, PEG ratios, and estimating the implied expected rate of return on equity capital. *The Accounting Review,* 79(1)**,** pp 73-95.

Easton, P. D. & Monahan, S. J. 2005. An evaluation of accounting-based measures of expected returns. *The Accounting Review,* 80(2)**,** pp 501-538.

Eckel, N. 1981. The income smoothing hypothesis revisited. *Abacus,* 17(1)**,** pp 28-40.

Ecker, F., Francis, J., Kim, I., Olsson, P. M. & Schipper, K. 2006. A returns-based representation of earnings quality. *The Accounting Review,* 81(4)**,** pp 749-780.

Elliott, J. A. & Philbrick, D. R. 1990. Accounting changes and earnings predictability. *The Accounting Review,* 65(1)**,** pp 157-174.

Elton, E. J., Gruber, M. J. & Gultekin, M. N. 1984. Professional expectations: Accurary and diagonosis of errors. *Journal of Financial and Quantitative Analysis,* 19(4)**,** pp 351-363.

Eng, L. L., Sun, L. & Vichitsarawong, T. 2014. Are International Financial Reporting Standards–Based and U.S. GAAP–Based Accounting Amounts Comparable? Evidence From U.S. ADRs. *Journal of Accounting, Auditing & Finance,* 29(2)**,** pp 163-187.

Evans, M., Houston, R., Peters, M. & Pratt, J. 2012. *Earnings Management under US GAAP and IFRS* [Online]. Minnesota: Carlson School of Management. Available: http://www.carlsonschool.umn.edu/accounting/midwest-summer-research-conference-2012/schedule/documents/MarkEvansPaper.pdf [Accessed 28/05/2014.

Ewert, R. & Wagenhofer, A. 2012a. *Accounting standards, earnings management, and earnings quality* [Online]. Sydney: University of Technology, Sydney. Available: https://www.uts.edu.au/sites/default/files/aut14Mar17AWagenhofer.pdf [Accessed 15/06/2014.

Ewert, R. & Wagenhofer, A. 2012b. Earnings management, conservatism, and earnings quality. *Foundations and Trends (R) in Accounting,* 6(2)**,** pp 65-186.

Fama, E. F. & French, K. R. 1992. The cross-section of expected stock returns. *The Journal of Finance,* 47(2)**,** pp 427-465.

Fama, E. F. & French, K. R. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics,* 33(1)**,** pp 3-56.

Fama, E. F. & French, K. R. 1997. Industry costs of equity. *Journal of Financial Economics,* 43(2)**,** pp 153-193.

Fama, E. F. & MacBeth, J. D. 1973. Risk, return, and equilibrium: Empirical tests. *The Journal of Political Economy,* 81(3)**,** pp 607-636.

Field, A. 2005. *Discovering statistics using SPSS*, 2nd ed., London: SAGE Publications.

Filip, A. & Raffournier, B. 2014. Financial crisis and earnings management: The European evidence. *The International Journal of Accounting,* 49(4)**,** pp 455-478.

Firth, M. 1980. Raising finance and firms' corporate reporting policies. *Abacus,* 16(2)**,** pp 100-115.

Fishman, M. J. & Hagerty, K. M. 1992. Insider trading and the efficiency of stock prices. *The RAND Journal of Economics,* 23(1)**,** pp 106-122.

Fogarty, T. J. & Rogers, R. K. 2005. Financial analysts' reports: an extended institutional theory evaluation. *Accounting, Organizations and Society,* 30(4)**,** pp 331-356.

Folsom, D., Hribar, P., Mergenthaler, R. & Peterson, K. 2013. *Principles-Based Standards and Earnings Attributes* [Online]. SSRN. Available: http://ssrn.com/2046190 [Accessed 20/09/2014.

Fox, A., Hannah, G., Helliar, C. & Veneziani, M. 2013. The costs and benefits of IFRS implementation in the UK and Italy. *Journal of Applied Accounting Research,* 14(1)**,** pp 86-101.

Francis, B., Hasan, I. & Wu, Q. 2013. The benefits of conservative accounting to shareholders: Evidence from the financial crisis. *Accounting Horizons,* 27(2)**,** pp 319-346.

Francis, B. B., Hasan, I. & Wu, Q. 2012. Do corporate boards matter during the current financial crisis? *Review of Financial Economics,* 21(2)**,** pp 39-52.

Francis, J., LaFond, R., Olsson, P. & Schipper, K. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics,* 39(2)**,** pp 295-327.

Francis, J., LaFond, R., Olsson, P. M. & Schipper, K. 2004. Costs of equity and earnings attributes. *The Accounting Review,* 79(4)**,** pp 967-1010.

Francis, J., Nanda, D. & Olsson, P. 2008. Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research,* 46(1)**,** pp 53-99.

Francis, J., Olsson, P. & Schipper, K. 2006. Earnings quality. *Foundations and Trends® in Accounting,* 1(4)**,** pp 259-340.

Francis, J. & Schipper, K. 1999. Have financial statements lost their relevance? *Journal of Accounting Research,* 37(2)**,** pp 319-352.

García Lara, J. M., Garcia Osma, B. & Penalva, F. 2014. Information consequences of accounting conservatism. *European Accounting Review,* 23(2)**,** pp 173-198.

García Lara, J. M., García Osma, B. & Penalva, F. 2011. Conditional conservatism and cost of capital. *Review of Accounting Studies,* 16(2)**,** pp 247-271.

Gassen, J. & Sellhorn, T. 2006. Applying IFRS in Germany-determinants and consequences. *Betriebswirtschaftliche Forschung und Praxis,* 58(4)**,** pp 365-386.

Gebhardt, W. R., Lee, C. & Swaminathan, B. 2001. Toward an implied cost of capital. *Journal of Accounting Research,* 39(1)**,** pp 135-176.

Gelb, D. S. & Zarowin, P. 2002. Corporate disclosure policy and the informativeness of stock prices. *Review of Accounting Studies,* 7(1)**,** pp 33-52.

George, T. J., Kaul, G. & Nimalendran, M. 1991. Estimation of the bid-ask spread and its components: A new approach. *Review of Financial Studies,* 4(4)**,** pp 623-656.

Givoly, D. & Hayn, C. 2000. The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? *Journal of Accounting and Economics,* 29(3)**,** pp 287-320.

Givoly, D., Hayn, C. K. & Natarajan, A. 2007. Measuring reporting conservatism. *The Accounting Review,* 82(1)**,** pp 65-106.

Gjesdal, F. 1981. Accounting for stewardship. *Journal of Accounting Research,* 19(1)**,** pp 208-231.

Glautier, M. W. E. & Underdown, B. 2001. *Accounting theory and practice*, 7th, Harlow: Financial Times Prentice Hall.

Glosten, L. R. & Harris, L. E. 1988. Estimating the components of the bid/ask spread. *Journal of Financial Economics,* 21(1)**,** pp 123-142.

Glosten, L. R. & Milgrom, P. R. 1985. Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics,* 14(1)**,** pp 71-100.

Gode, D. & Mohanram, P. 2003. Inferring the cost of capital using the Ohlson–Juettner model. *Review of Accounting Studies,* 8(4)**,** pp 399-431.

Goh, B. W., Ng, J. & Yong, K. O. 2015. Market pricing of banks 'fair value assets reported under SFAS 157 during the 2008 Economic Crisis. *Journal of Accounting and Public Policy,* 34(2)**,** pp 129-145.

Gordon, E., Jorgensen, B. & Linthicum, C. 2008. *Could IFRS replace US GAAP? A comparison of earnings attributes and informativeness in the US market* [Online]. New York: INSEAD, the Business School for the World. Available: http://www.insead.edu/facultyresearch/areas/accounting/events/documents/CouldIFRSReplaceUSGAAP-JORGENSEN.pdf [Accessed 15/10/2012.

Gordon, J. R. & Gordon, M. J. 1997. The finite horizon expected return model. *Financial Analysts Journal,* 53(3)**,** pp 52-61.

Graham, J. R., Harvey, C. R. & Rajgopal, S. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics,* 40(1)**,** pp 3-73.

Graham, R., King, R. & Bailes, J. 2000. The value relevance of accounting information during a financial crisis: Thailand and the 1997 decline in the value of the baht. *Journal of International Financial Management & Accounting,* 11(2)**,** pp 84-107.

Gray, P., Koh, P. S. & Tong, Y. H. 2009. Accruals quality, information risk and cost of capital: Evidence from Australia. *Journal of Business Finance & Accounting,* 36(1-2)**,** pp 51-72.

Greene, W. H. 2012. *Econometric analysis*, 7th ed., Boston: Pearson Prentice Hall.

Gu, Z. & Wu, J. S. 2003. Earnings skewness and analyst forecast bias. *Journal of Accounting and Economics,* 35(1)**,** pp 5-29.

Guay, W., Kothari, S. & Shu, S. 2011. Properties of implied cost of capital using analysts' forecasts. *Australian Journal of Management,* 36(2)**,** pp 125-149.

Guay, W. R., Kothari, S. & Watts, R. L. 1996. A market-based evaluation of discretionary accrual models. *Journal of Accounting Research,* 34(Supplement)**,** pp 83-105.

Guay, W. R. & Verrecchia, R. E. 2008. Conservative financial reporting, debt covenants, and the agency costs of debt. *Journal of Accounting and Economics,* 45(2)**,** pp 175-180.

Gujarati, D. 2003. *Basic econometrics*, 4th ed., Boston: McGraw-Hill.

Hail, L. & Leuz, C. 2006. International differences in the cost of equity capital: Do legal institutions and securities regulation matter? *Journal of Accounting Research,* 44(3)**,** pp 485-531.

Hail, L., Leuz, C. & Wysocki, P. 2010. Global accounting convergence and the potential adoption of IFRS by the US (Part II): Political factors and future scenarios for US accounting standards. *Accounting Horizons,* 24(4)**,** pp 567-588.

Harris, M. S. & Muller, K. A. 1999. The market valuation of IAS versus US-GAAP accounting measures using Form 20-F reconciliations. *Journal of Accounting and Economics,* 26(1)**,** pp 285-312.

Haverty, J. L. 2006. Are IFRS and US GAAP converging?: Some evidence from People's Republic of China companies listed on the New York Stock Exchange. *Journal of International Accounting, Auditing and Taxation,* 15(1)**,** pp 48-71.

Healy, P. M., Hutton, A. P. & Palepu, K. G. 1999. Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research,* 16(3)**,** pp 485-520.

Healy, P. M. & Palepu, K. G. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics,* 31(1)**,** pp 405-440.

Healy, P. M. & Wahlen, J. M. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons,* 13(4)**,** pp 365-383.

Heflin, F. L., Shaw, K. W. & Wild, J. J. 2005. Disclosure policy and market liquidity: Impact of depth quotes and order sizes. *Contemporary Accounting Research,* 22(4)**,** pp 829-865.

Henry, E., Lin, S. & Yang, Y.-w. 2009. The European-US "GAAP Gap": IFRS to US GAAP Form 20-F Reconciliations. *Accounting Horizons,* 23(2)**,** pp 121-150.

Hicks, J. 1939. *Value and capital : An inquiry into sone fundamental principles of economic theory*, Oxford: Clarendon Press.

Hitz, J.-M. 2007. The decision usefulness of fair value accounting: A theoretical perspective. *European Accounting Review,* 16(2)**,** pp 323-362.

Hölmstrom, B. 1979. Moral hazard and observability. *The Bell Journal of Economics,* 10(1)**,** pp 74-91.

Holthausen, R. W. & Watts, R. L. 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics,* 31(1)**,** pp 3-75.

Hope, O. K. 2003a. Accounting policy disclosures and analysts' forecasts. *Contemporary Accounting Research,* 20(2)**,** pp 295-321.

Hope, O. K. 2003b. Disclosure practices, enforcement of accounting standards, and analysts' forecast accuracy: An international study. *Journal of Accounting Research,* 41(2)**,** pp 235-272.

Hopkins, P. E., Botosan, C. A., Bradshaw, M. T., Callahan, C. M., Ciesielski, J., Farber, D. B., Hodder, L. D., Kohlbeck, M. J., Laux, R. & Stober, T. L. 2008. Response to the SEC release: Acceptance from foreign private issuers of financial statements prepared in accordance with International Financial Reporting Standards without reconciliation to US GAAP file no. S7-13-07. *Accounting Horizons,* 22(2)**,** pp 223-240.

Hoque, Z. 2006. *Methodological issues in accounting research: Theories, methods and issues*, 1st ed., London: Spiramus Press.

Horton, J., Serafeim, G. & Serafeim, I. 2013. Does mandatory IFRS adoption improve the information environment? *Contemporary Accounting Research,* 30(1)**,** pp 388-423.

Hsiao, C. 2003. *Analysis of panel data*, 2nd ed., Cambridge: Cambridge University Press.

Huang, R. D. & Stoll, H. R. 1996. Dealer versus auction markets: A paired comparison of execution costs on NASDAQ and the NYSE. *Journal of Financial Economics,* 41(3)**,** pp 313-357.

Hughes, J. S., Liu, J. & Liu, J. 2007. Information asymmetry, diversification, and cost of capital. *The Accounting Review,* 82(3)**,** pp 705-729.

Hunt, A., Moyer, S. E. & Shevlin, T. 2000. *Earnings volatility, earnings management, and equity value* [Online]. Washington: University of Washington. Available: http://faculty.washington.edu/shevlin/hms2vol.pdf [Accessed 15/10/2012.

Hussainey, K., Schleicher, T. & Walker, M. 2003. Undertaking large-scale disclosure studies when AIMR-FAF ratings are not available: the case of prices leading earnings. *Accounting and Business Research,* 33(4)**,** pp 275-294.

Iatridis, G. 2010. International Financial Reporting Standards and the quality of financial statement information. *International Review of Financial Analysis,* 19(3)**,** pp 193-204.

Iatridis, G. & Dimitras, A. I. 2013. Financial crisis and accounting quality: Evidence from five European countries. *Advances in Accounting,* 29(1)**,** pp 154-160.

Iatridis, G. E. 2011. Accounting disclosures, accounting quality and conditional and unconditional conservatism. *International Review of Financial Analysis,* 20(2)**,** pp 88-102.

IFRS Foundation 2010. *The Conceptual Framework for Financial Reporting 2010*, London: IFRS Foundation.

Ijiri, Y. 2005. US accounting standards and their environment: A dualistic study of their 75-years of transition. *Journal of Accounting and Public Policy,* 24(4)**,** pp 255-279.

Imhoff, E. A., Jr. & Lobo, G. J. 1992. The Effect of Ex Ante Earnings Uncertainty on Earnings Response Coefficients. *The Accounting Review,* 67(2)**,** pp 427-439.

Investment Company Institute. 2010. *Equity Ownership in America* [Online]. Available: http://www.ici.org/research/stats [Accessed 01/05/2013.

IOSCO. 2000. Press Release: IASC Standards. Sydney, Australia: IOSCO.

Iqbal, A. & Kume, O. 2013. Impact of financial crisis on capital structure of UK firms. *the 20th Annual Conference of the Multinational Finance Society.* Izmir, Turkey.

Irani, A. J. & Karamanou, I. 2003. Regulation fair disclosure, analyst following, and analyst forecast dispersion. *Accounting Horizons,* 17(1)**,** pp 15-29.

Jayaraman, S. 2008. Earnings volatility, cash flow volatility, and informed trading. *Journal of Accounting Research,* 46(4)**,** pp 809-851.

Jeanjean, T. & Stolowy, H. 2008. Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*, 27(6)**,** pp 480-494.

Jermakowicz, E. K. & Gornik-Tomaszewski, S. 2006. Implementing IFRS from the perspective of EU publicly traded companies. *Journal of International Accounting, Auditing and Taxation,* 15(2)**,** pp 170-196.

Jiang, G., Lee, C. M. & Zhang, Y. 2005. Information uncertainty and expected returns. *Review of Accounting Studies,* 10(2-3)**,** pp 185-221.

Jiao, T., Koning, M., Mertens, G. & Roosenboom, P. 2012. Mandatory IFRS adoption and its impact on analysts' forecasts. *International Review of Financial Analysis,* 21(1)**,** pp 56-63.

Jones, J. J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research,* 29(2)**,** pp 193-228.

Kantor, B. & Holdsworth, C. 2010. Lessons from the global financial crisis (or why capital structure is too important to be left to regulation). *Journal of Applied Corporate Finance,* 22(3)**,** pp 112-122.

Kasznik, R. & McNichols, M. F. 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research,* 40(3)**,** pp 727-759.

Kerlinger, F. N. 1964. *Foundations of behavioral research*, 3rd ed., New York: Rinehart and Winston.

Khan, M. & Watts, R. L. 2009. Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics,* 48(2)**,** pp 132-150.

Kim, D. & Qi, Y. 2010. Accruals quality, stock returns, and macroeconomic conditions. *The Accounting Review,* 85(3)**,** pp 937-978.

Kim, K. & Schroeder, D. A. 1990. Analysts' use of managerial bonus incentives in forecasting earnings. *Journal of Accounting and Economics,* 13(1)**,** pp 3-23.

Kim, O. & Verrecchia, R. E. 2001. The relation among disclosure, returns, and trading volume information. *The Accounting Review,* 76(4)**,** pp 633-654.

Kothari, S., Ramanna, K. & Skinner, D. J. 2010. Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics,* 50(2)**,** pp 246-286.

Kothari, S. P., Leone, A. J. & Wasley, C. E. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics,* 39(1)**,** pp 163-197.

Kousenidis, D. V., Ladas, A. C. & Negakis, C. I. 2013. The effects of the European debt crisis on earnings quality. *International Review of Financial Analysis,* 30(1)**,** pp 351-362.

Krishnaswami, S. & Subramaniam, V. 1999. Information asymmetry, valuation, and the corporate spin-off decision. *Journal of Financial Economics,* 53(1)**,** pp 73-112.

Kyle, A. 1985. Continuous auctions and insider trading. *Econometrica,* 53(6)**,** pp 1315-1335.

Lambert, R. 2010. Discussion of "Implications for GAAP from an analysis of positive research in accounting". *Journal of Accounting and Economics,* 50(2)**,** pp 287-295.

Lambert, R. & Larcker, D. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research,* 25(Supplement)**,** pp 85-123.

Lambert, R., Leuz, C. & Verrecchia, R. E. 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research,* 45(2)**,** pp 385-420.

Lambert, R. A., Leuz, C. & Verrecchia, R. E. 2012. Information asymmetry, information precision, and the cost of capital. *Review of Finance,* 16(1)**,** pp 1-29.

Lang, M. & Lundholm, R. 1993. Cross-sectional determinants of analyst behavior. *The Accounting Review,* 71(4)**,** pp 467-492.

Lang, M. H., Lins, K. V. & Miller, D. P. 2003. ADRs, analysts, and accuracy: Does cross listing in the United States improve a firm's information environment and increase market value? *Journal of Accounting Research,* 41(2)**,** pp 317-345.

Lang, M. H. & Lundholm, R. J. 1996. Corporate disclosure policy and analyst behavior. *The Accounting Review,* 71(4)**,** pp 467-492.

Lehavy, R. 2009. Discussion of "Are earnings forecasts more accurate when accompanied by cash flow forecasts?". *Review of Accounting Studies,* 14(2)**,** pp 392-400.

Leuz, C. 2003. IAS versus US GAAP: Information asymmetry–based evidence from Germany's new market. *Journal of Accounting Research,* 41(3)**,** pp 445-472.

Leuz, C., Nanda, D. & Wysocki, P. D. 2003. Earnings management and investor protection: an international comparison. *Journal of Financial Economics,* 69(3)**,** pp 505-527.

Leuz, C. & Verrecchia, R. E. 2000. The economic consequences of increased disclosure. *Journal of Accounting Research,* 38(Supplement)**,** pp 91-136.

Lev, B. 1989. On the usefulness of earnings and earnings research: Lessons and directions from two decades of empirical research. *Journal of Accounting Research,* 27(Supplement)**,** pp 153-192.

Lev, B. & Penman, S. H. 1990. Voluntary forecast disclosure, nondisclosure, and stock prices. *Journal of Accounting Research,* 28(1)**,** pp 49-76.

Lev, B. & Zarowin, P. 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research,* 37(2)**,** pp 353-385.

Li, S. 2010a. Does mandatory adoption of International Financial Reporting Standards in the European Union reduce the cost of equity capital? *The Accounting Review,* 85(2)**,** pp 607-636.

Li, X. 2010b. *Accounting conservatism and cost of capital: International analysis* [Online]. SSRN. Available: http://ssrn.com/abstract=1107539

Li, Y., Stokes, D., Taylor, S. & Wong, L. 2009. *Audit quality, accounting attributes and the cost of equity capital* [Online]. SSRN. Available: http://ssrn.com/abstract=1481823.

Lim, T. 2001. Rationality and analysts' forecast bias. *The Journal of Finance,* 56(1)**,** pp 369-385.

Lin, S., Riccardi, W. & Wang, C. 2012. Does accounting quality change following a switch from US GAAP to IFRS? Evidence from Germany. *Journal of Accounting and Public Policy,* 31(6)**,** pp 641-657.

Linsley, P. & Shrives, P. 2000. Risk management and reporting risk in the UK. *Journal of Risk,* 3(1)**,** pp 115-129.

Lipe, R. 1990. The relation between stock returns and accounting earnings given alternative information. *The Accounting Review,* 65(1)**,** pp 49-71.

Liu, M. & Wysocki, P. 2008. Cross-sectional determinants of information quality proxies and cost of capital measures. *American Accounting Association (AAA).* Available at SSRN: http://ssrn.com/abstract=1013652.

Lo, K. 2008. Earnings management and earnings quality. *Journal of Accounting and Economics,* 45(2–3)**,** pp 350-357.

Lobo, G. J., Song, M. & Stanford, M. 2012. Accruals quality and analyst coverage. *Journal of Banking & Finance,* 36(2)**,** pp 497-508.

Locke, L. F., Silverman, S. J. & Spirduso, W. W. 2010. *Reading and understanding research*, 3rd ed., London: SAGE.

Lopez, T. J. & Rees, L. 2002. The effect of beating and missing analysts' forecasts on the information content of unexpected earnings. *Journal of Accounting, Auditing & Finance,* 17(2)**,** pp 155-184.

Lys, T. & Sohn, S. 1990. The association between revisions of financial analysts' earnings forecasts and security-price changes. *Journal of Accounting and Economics,* 13(4)**,** pp 341-363.

Madhavan, A. 2000. Market microstructure: A survey. *Journal of Financial Markets,* 3(3)**,** pp 205-258.

Madhavan, A., Richardson, M. & Roomans, M. 1997. Why do security prices change? A transaction-level analysis of NYSE stocks. *Review of Financial Studies,* 10(4)**,** pp 1035-1064.

Mariampolski, H. 2001. *Qualitative market research: A comprehensive guide*, London: Sage Publications.

Marston, C. & Shrives, P. 1996. A review of the development and use of explanatory models in financial disclosure studies. *EAA Congress.* Bergen: EAA.

Mathews, M. R. & Perera, M. H. B. 1996. *Accounting theory & development*, 3rd ed., Melbourne: Thomas Nelson.

Matsumoto, D., Pronk, M. & Roelofsen, E. 2011. What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions. *The Accounting Review,* 86(4)**,** pp 1383-1414.

McInnis, J. 2010. Earnings smoothness, average returns, and implied cost of equity capital. *The Accounting Review,* 85(1)**,** pp 315-341.

McLaughlin, R., Safieddine, A. & Vasudevan, G. K. 1998. The information content of corporate offerings of seasoned securities: An empirical analysis. *Financial Management,* 27(2)**,** pp 31-45.

McNichols, M. F. 2002. Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review,* 77(Supplement)**,** pp 61-69.

Meek, G. K. & Gray, S. J. 1989. Globalization of stock markets and foreign listing requirements: voluntary disclosures by continental European companies listed on the London Stock Exchange. *Journal of International Business Studies,* 20(2)**,** pp 315-336.

Meek, G. K., Roberts, C. B. & Gray, S. J. 1995. Factors influencing voluntary annual report disclosures by U.S., U.K. and Continental European multinational corporations. *Journal of International Business Studies,* 26(3)**,** pp 555-572.

Melville, A. 2008. *International Financial Reporting: A practical guide*, 2nd ed., London: Financial Times/ Prentice Hall.

Merton, R. C. 1987. A Simple Model of Capital Market Equilibrium with Incomplete Information. *The Journal of Finance,* 42(3)**,** pp 483-510.

Mikhail, M. B., Walther, B. R. & Willis, R. H. 2003. Reactions to dividend changes conditional on earnings quality. *Journal of Accounting, Auditing & Finance,* 18(1)**,** pp 121-152.

Miller, G. & Piotroski, J. 2000. The role of disclosure for high book-to-market firms. *Unpublished working paper.* Harvard University.

Miller, M. H. & Rock, K. 1985. Dividend policy under asymmetric information. *The Journal of Finance,* 40(4)**,** pp 1031-1051.

Mitton, T. 2002. A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics,* 64(2)**,** pp 215-241.

Morris, R. D. 1987. Signalling, agency theory and accounting policy choice. *Accounting and Business Research,* 18(69)**,** pp 47-56.

Morse, D., Stephan, J. & Stice, E. K. 1991. Earnings announcements and the convergence (or divergence) of beliefs. *The Accounting Review,* 66(2)**,** pp 376-388.

Mouselli, S. & Hussainey, K. 2014. Corporate governance, analyst following and firm value. *Corporate Governance,* 14(4)**,** pp 453-466.

Mouselli, S., Jaafar, A. & Goddard, J. 2013. Accruals quality, stock returns and asset pricing: Evidence from the UK. *International Review of Financial Analysis,* 30(1)**,** pp 203-213.

Mouselli, S., Jaafar, A. & Hussainey, K. 2012. Accruals quality vis-à-vis disclosure quality: Substitutes or complements? *The British Accounting Review,* 44(1)**,** pp 36-46.

Neal, R. & Wheatley, S. M. 1998. Adverse selection and bid–ask spreads: Evidence from closed-end funds. *Journal of Financial Markets,* 1(1)**,** pp 121-149.

Nelson, M. W. & Skinner, D. J. 2013. How should we think about earnings quality? A discussion of "earnings quality: evidence from the field". *Journal of Accounting and Economics,* 56(2)**,** pp 34-41.

Newey, W. K. & West, K. D. 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica: Journal of the Econometric Society,* 55(3)**,** pp 703-708.

Ng, J. 2011. The effect of information quality on liquidity risk. *Journal of Accounting and Economics,* 52(2)**,** pp 126-143.

Nobes, C. & Parker, R. B. 2012. *Comparative international accounting*, 12th ed., Cambridge: Pearson.

O'Brien, P. C. & Bhushan, R. 1990. Analyst following and institutional ownership. *Journal of Accounting Research,* 28(Supplement)**,** pp 55-76.

O'Connell, V. 2007. Reflections on stewardship reporting. *Accounting Horizons,* 21(2)**,** pp 215-227.

O'Connell, V. & Sullivan, K. 2008. The impact of mandatory conversion to IFRS on the net income of FTSEurofirst 80 firms. *Journal of Applied Research in Accounting and Finance (JARAF),* 3(2)**,** pp 17-26.

O'Hara, M. 1995. *Market microstructure theory*, Oxford: Blackwell Business.

Office for National Statistics. 2010. *Ownership of UK Quoted Shares* [Online]. Available: http://www.ons.gov.uk/ons/rel/pnfc1/share-ownership---share-register-survey-report/2010/stb-share-ownership-2010.html [Accessed 01/05/2013.

Ogneva, M. 2012. Accrual Quality, Realized Returns, and Expected Returns: The Importance of Controlling for Cash Flow Shocks. *The Accounting Review,* 87(4)**,** pp 1415-1444.

Ohlson, J. A. 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research,* 11(2)**,** pp 661-687.

Ohlson, J. A. & Juettner-Nauroth, B. E. 2005. Expected EPS and EPS growth as determinantsof value. *Review of Accounting Studies,* 10(2-3)**,** pp 349-365.

Othman, R. 2012. Impact of financial reporting quality on the implied cost of equity capital: Evidence from the Malaysian listed firms. *Asian Journal of Business and Accounting,* 3(1)**,** pp 1-25.

Paananen, M. 2008. *The IFRS adoption's effect on accounting quality in Sweden* [Online]. University of Hertfordshire. Available: http://www.adoptifrs.org/uploads/Sweden/The%20IFRS%20%20Effect%20on%20Accounting%20Quality%20in%20Sweden.pdf.

Peasnell, K. V., Pope, P. F. & Young, S. 2005. Board monitoring and earnings management: do outside directors influence abnormal accruals? *Journal of Business Finance & Accounting,* 32(7-8)**,** pp 1311-1346.

Penman, S. H. 1996. The articulation of price-earnings ratios and market-to-book ratios and the evaluation of growth. *Journal of Accounting Research,* 34(2)**,** pp 235-259.

Penman, S. H. 2007. *Financial statement analysis and security valuation*, New York: McGraw-Hill.

Penman, S. H. & Zhang, X. J. 2002. Accounting conservatism, the quality of earnings, and stock returns. *The Accounting Review,* 77(2)**,** pp 237-264.

Perotti, P. & Wagenhofer, A. 2014. Earnings quality measures and excess returns. *Journal of Business Finance & Accounting,* 41(5-6)**,** pp 545-571.

Pincus, M. & Rajgopal, S. 2002. The interaction between accrual management and hedging: Evidence from oil and gas firms. *The Accounting Review,* 77(1)**,** pp 127-160.

Previts, G. J., Bricker, R. J., Robinson, T. R. & Young, S. J. 1994. A content analysis of sell-side financial analyst company reports. *Accounting Horizons,* 8(2)**,** pp 55-70.

PricewaterhouseCoopers (PwC). 2009. IFRS and U.S. GAAP: Similarities and Differences, (London).

Revsine, L., Collins, D. W. & Johnson, W. B. 2005. *Financial reporting and analysis*, 3rd ed., New Jersey: Pearson Prentice Hall.

Riahi-Belkaoui, A. 2004. *Accounting theory*, 5th ed., London: Thomson.

Richardson, S., Tuna, İ. & Wysocki, P. 2010. Accounting anomalies and fundamental analysis: A review of recent research advances. *Journal of Accounting and Economics,* 50(2)**,** pp 410-454.

Richardson, S. A. 2003. Earnings quality and short sellers. *Accounting Horizons,* 17(Supplement)**,** pp 49-61.

Richardson, S. A., Sloan, R. G., Soliman, M. T. & Tuna, I. 2005. Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics,* 39(3)**,** pp 437-485.

Ross, S. A. 1976. The arbitrage theory of capital asset pricing. *Journal of Economic Theory,* 13(3)**,** pp 341-360.

Rountree, B., Weston, J. P. & Allayannis, G. 2008. Do investors value smooth performance? *Journal of Financial Economics,* 90(3)**,** pp 237-251.

Roychowdhury, S. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics,* 42(3)**,** pp 335-370.

Ryan, S. G. 2006. Identifying conditional conservatism. *European Accounting Review,* 15(4)**,** pp 511-525.

Saunders, M., Lewis, P. & Thornhill, A. 2009. *Research methods for business students*, 5th ed., Harlow: Financial Times Prentice Hall.

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

Schipper, K. 1991. Analysts' forecasts. *Accounting Horizons,* 5(4)**,** pp 105-121.

Schipper, K. & Vincent, L. 2003. Earnings quality. *Accounting Horizons,* 17(Supplement)**,** pp 97-110.

Schwartz, R. A. 1991. *Reshaping the equity markets: a guide for the 1990s*, USA: HarperBusiness.

Securities and Exchange Commission (SEC). 2008. Roadmap for the potential use of financial statements prepared in accordance with International Financial Reporting Standards by U.S. issuers, (Washington, D.C.: SEC).

Sharpe, W. F. 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance,* 19(3)**,** pp 425-442.

Shibly, F. B. & Dumontier, P. 2014. Investigating the role of information environment in EU capital markets: The case of IFRS And MAD. *European Accounting Association 37th Annual Congress.* Tallinn.

Simpson, A. 2010. Analysts' use of nonfinancial information disclosures. *Contemporary accounting research,* 27(1)**,** pp 249-288.

Singleton-Green, B. 2014. *The effects of mandatory IFRS adoption in the EU: A review of empirical research* [Online]. SSRN. Available: http://ssrn.com/abstract=2515391 [Accessed 20/01/2015.

Sloan, R. G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review,* 71 (3)**,** pp 289-315.

Smith, C. W. & Watts, R. L. 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics,* 32(3)**,** pp 263-292.

Snavely, H. J. 1967. Accounting information criteria. *The Accounting Review,* 42(2)**,** pp 223-232.

Soderstrom, N. S. & Sun, K. J. 2007. IFRS adoption and accounting quality: a review. *European Accounting Review,* 16(4)**,** pp 675-702.

Spence, M. 1973. Job market signaling. *The Quarterly Journal of Economics,* 87(3)**,** pp 355-374.

Sterling, R. R. 1970. On theory construction and verification. *The Accounting Review,* 45(3)**,** pp 444-457.

Stickel, S. E. 1992. Reputation and performance among security analysts. *The Journal of Finance,* 47(5)**,** pp 1811-1836.

Stoll, H. R. 1978. The supply of dealer services in securities markets. *The Journal of Finance,* 33(4)**,** pp 1133-1151.

Swaminathan, S. 1991. The impact of SEC mandated segment data on price variability and divergence of beliefs. *The Accounting Review,* 66(23-41.

Tan, H., Wang, S. & Welker, M. 2011. Analyst following and forecast accuracy after mandated IFRS adoptions. *Journal of Accounting Research,* 49(5)**,** pp 1307-1357.

Thomas, J. K. & Zhang, H. 2002. *Value-relevant properties of smoothed earnings* [Online]. Chicago: Columbia University and University of Illinois Available: http://www.researchgate.net/publication/228491328_Value-relevant_properties_of_smoothed_earnings [Accessed 15/07/2012.

Trombetta, M. & Imperatore, C. 2014. The dynamic of financial crises and its non-monotonic effects on earnings quality. *Journal of Accounting and Public Policy,* 33(3)**,** pp 205-232.

Tucker, J. W. & Zarowin, P. A. 2006. Does income smoothing improve earnings informativeness? *The Accounting Review,* 81(1)**,** pp 251-270.

Van der Meulen, S., Gaeremynck, A. & Willekens, M. 2007. Attribute differences between US GAAP and IFRS earnings: An exploratory study. *The International Journal of Accounting,* 42(2)**,** pp 123-142.

Van Tendeloo, B. & Vanstraelen, A. 2005. Earnings management under German GAAP versus IFRS. *European Accounting Review,* 14(1)**,** pp 155-180.

Vanstraelen, A., Zarzeski, M. T. & Robb, S. W. 2003. Corporate nonfinancial disclosure practices and financial analyst forecast ability across three European countries. *Journal of International Financial Management & Accounting,* 14(3)**,** pp 249-278.

Verbeek, M. 2012. *A guide to modern econometrics*, 4th ed., New Jersey: Wiley.

Verbeek, M. & Nijman, T. E. 1992. Testing for selectivity bias in panel data models. *International Economic Review,* 33(3)**,** pp 681-703.

Verdi, R. 2006. *Financial reporting quality and investment efficiency* [Online]. SSRN. Available: SSRN: http://ssrn.com/abstract=930922 [Accessed 15/12/2011.

Verrecchia, R. E. 1982. The use of mathematical models in financial accounting. *Journal of Accounting Research,* 20(Supplement)**,** pp 1-42.

Vuolteenaho, T. 2002. What drives firm-level stock returns? *The Journal of Finance,* 57(1)**,** pp 233-264.

Walker, M. 2013. How far can we trust earnings numbers? What research tells us about earnings management. *Accounting and Business Research,* 43(4)**,** pp 445-481.

Walliman, N. 2011. *Your Research Project - Designing and Planning Your Work*, 3rd ed., London: SAGE.

Walther, B. R. 1997. Investor sophistication and market earnings expectations. *Journal of Accounting Research,* 35(2)**,** pp 157-179.

Wang, R., hogartaigh, C. Ó. & van Zijl, T. 2009. Measures of accounting conservatism: a construct validity perspective. *Journal of Accounting Literature,* 28(165.

Wang, X., Young, D. & Zhuang, Z. 2008. *The effects of mandatory adoption of international financial reporting standards on information environments.* Doctor of Philosophy, The Chinese University of Hong Kong.

Watts, R. L. 2003a. Conservatism in accounting part I: Explanations and implications. *Accounting Horizons,* 17(3)**,** pp 207-221.

Watts, R. L. 2003b. Conservatism in accounting part II: Evidence and research opportunities. *Accounting Horizons,* 17(4)**,** pp 287-301.

Watts, R. L. & Zimmerman, J. L. 1986. *Positive zccounting theory: Contemporary topics in accounting series*, 1st ed., New Jersey: Prentice-Hall.

Welker, M. 1995. Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary Accounting Research,* 11(2)**,** pp 801-827.

Womack, K. L. 1996. Do brokerage analysts' recommendations have investment value? *The Journal of Finance,* 51(1)**,** pp 137-167.

Wong, L. 2009. *The pricing of earnings quality in Australia.* Doctor of Philosophy, The University of New South Wales.

Wooldridge, J. M. 2010. *Econometric analysis of cross section and panel data*, Cambridge Massachusetts: The MIT Press.

Wu, J. S. & Zhang, I. X. 2009. The voluntary adoption of internationally recognized accounting standards and firm internal performance evaluation. *The Accounting Review,* 84(4)**,** pp 1281-1309.

Xie, H. 2001. The mispricing of abnormal accruals. *The Accounting Review,* 76(3)**,** pp 357-373.

Yu, M. 2010. Analyst forecast properties, analyst following and governance disclosures: A global perspective. *Journal of International Accounting, Auditing and Taxation,* 19(1)**,** pp 1-15.

Zhang, X. 2006. Information uncertainty and stock returns. *The Journal of Finance,* 61(1)**,** pp 105-137.

Ziebart, D. A. 1990. The Association between consensus of beliefs and trading activity surrounding earnings announcements. *The Accounting Review,* 65(2)**,** pp 477-488.