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Disclosure Quality, Corporate Governance Mechanisms and Firm Value

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TO

My parents, Prof. Magdy Samy; my hero and my role model & Mrs. Fatma Badr

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Abstract

One of the main aims of the underlying research is to respond to continuous calls for introducing and measuring a sound economic definition for best practice disclosure quality (e.g. Beyer et al., 2010) that is derived from a reliable guidance framework (Botosan, 2004) using an innovative natural language processing technique (Berger, 2011). It also aims to examine the impact of corporate governance on best practice disclosure quality. Finally, it aims to examine the joint effect of both best practice disclosure quality and corporate governance on firm value.

The thesis contributes to disclosure studies in three principal ways. First, it introduces a new measure for best practice disclosure quality. Further tests show that the proposed measure is reliable and valid. A novel feature of this measure is that it captures all qualitative dimensions of information issued by the Accounting Standards Board, 2006 (ASB) Operating and Financial Review (OFR) Reporting Statement. Second, it uses machine-readable OFR statements for financial years ending in 2006-2009, and develops a language processing technique through constructing five keyword lists. Third, it examines the extent to which disclosure quantity provides a proper proxy for disclosure quality. The analysis shows that disclosure quantity is not a good proxy for disclosure quality. Accordingly, results derived, using quantity as a proxy for quality, are questionable. Results of the association between disclosure quality and corporate governance mechanisms suggest that the most effective governance mechanisms in improving disclosure quality are leadership structure, audit committee meeting frequency, and audit firm size.

Using a wide set of corporate governance mechanisms, the study also contributes to three research strands and explains the inconclusive results in relation to the association between disclosure quality, corporate governance mechanisms and firm value. It provides empirical evidence as to which governance mechanisms promote the quality of voluntarily disclosed information in large UK firms. Additionally, it provides empirical evidence as to the joint effect of best practice disclosure quality, corporate governance mechanisms on firm value in the UK. Results also show that best practice disclosure quality enjoys a substitutive relationship with two corporate governance mechanisms (audit committee independence and audit committee size) and a complementary association with board independence in relation to firm value.

The study has various research and policy implications. It suggests new research avenues for re-examining disclosure relationships, especially research areas that do not have persuasive conclusions such as the economic consequences of disclosure quality. Such research may inform both regulators and managers as to the costs and benefits of disclosure quality to both firms and stakeholders. It also provides feedback on the current disclosure practices by firms so that policy-makers can modify reporting frameworks/guidance accordingly.

Table of Abbreviations

ABR	Accounting and Business Research
AICPA	American Institute of Certified Public Accountants
AIDM	Artificial Intelligence Disclosure Measurement
AIMR-FAF	Association for Investment Management and Research – Financial Analysts Federation
ASB	Accounting Standards Board
BAA	British Accounting Association
CARs	Cumulative Abnormal Returns
CEO	Chief Executive Officer
CG	Corporate Governance
CICA	Canadian Institute of Chartered Accountants
CLR	Company Law Review
CIFAR	Centre for International Financial Analysis and Research
COV	Coverage
DEFRA	Department for Environment Food and Rural Affairs
DIS	Dispersion
DQ/D	Disclosure Quality
EAA	European Accounting Association
EPS	Earnings Per Share
FASB	Financial Accounting Standards Board
FL	Forward-Looking [information]
FLQ	Forward-Looking Quantitative [information]
FRC	Financial Reporting Council
FD_SCORE	Financial Disclosure
FV	Firm Value
GAAP	Generally Accepted Accounting Standards
I/B/E/S	Institutional Brokers' Estimate System
IASB	International Accounting Standards Board
ICAEW	Institute of Chartered Accountants in England and Wales
IV	Instrumental Variable
KPIs	Key Performance Indicators
MC	Management Commentary
MD&A	Management Discussion and Analysis
NAS	Non-Audit Services
OECD	Organisation for Economic Co-operation and Development
OFR	Operating and Financial Review
OLS	Ordinary Least Square
OPR	Outlook Profile Ratio
RED	Reporting Exposure Draft
ROE	Return On Equity
RS	Reporting Standard
SEC	Securities and Exchange Commission
SORP	Statement of Recommended Practice
SOX	Sarbanes-Oxley Act
UK	United Kingdom
US	United States
VIF	Variance Inflation Factor
2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares

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Chapter One: Introduction

1.1 Overview

In recent years, considerable attention has been given to the association between disclosure quality (DQ) and corporate governance (CG). The route of this research commenced with the study of Ho and Wong (2001) as a reaction to the Asian financial crisis. They argue that this crisis was not only due to a loss of investor confidence, but also to ineffective corporate governance, coupled with insufficient transparency. The same notion has been re-examined after other major financial crises, for example US and European crises and scandals such as Enron and Parmalat (Beretta and Bozzolan, 2008). In the aftermath of the most recent international financial crisis, these ideas continue to be worthy of examination. Waymire and Basu (2011) claim that the recent financial crisis raises the question of whether the quality of financial reporting in general can seriously harm the overall economy.

Disclosure quality, and corporate governance have recently received wide attention, either at the academic level (e.g. Beyer et al., 2010; Berger, 2011; Brown and Tucker, 2011; Brown et al., 2011; Roulstone, 2011) or at the professional and policy-maker levels (examples include the latest revision of the UK governance code in 2010 and the new Management Commentary document (IFRS, 2010), intended to improve best practice disclosure quality reporting practice, issued by the International Accounting Standards Board in December 2010). Reasons for such increased attention are discussed in the next section.

1.2 Motivations

Motivations to conduct the underlying research are basically two-fold, namely personal and research-led motivations. With regard to the personal motivations, the researcher is interested in market-based accounting research in general, and issues of financial reporting in particular. Following the submission of an MSc dissertation which examined the effect of mergers and acquisitions on the performance of Egyptian firms. The researcher earned a good experience in financial statements reporting, and how these statements were perceived to be becoming less relevant to their users. This motivated the researcher to look at the other part of the annual report, the narrative sections in general and the OFR in particular. It was observed that this area of research has received limited attention in disclosure studies. Looking at the OFR statements, the researcher observed that the length of this statement is not the same for all UK firms, this motivated the researcher to think about two important questions: first, what factors affect OFR disclosures? Second, what is the impact of this disclosure on firm value? For that reason, the researcher came to UK to conduct this research and find answers for these particular research questions.

In relation to the research-led motivations, there are two general motivations, which are then sub-divided into six specific motivations. With respect to the general motivations, firstly, the financial statements as the main channel for information to investors have lost their relevance over the past 20 years (Lev and Zarowin, 1999). This suggests that investors do not use historical information as a basis for valuing firms. Additionally, increasing complexity of business strategies makes it difficult for investors to appreciate financial information by itself without more detailed information (Marston and Shrives 1991). One

way to fulfil the needs of the stakeholders is improving communication skills and enhancing the value-relevance of information through best practice disclosure (Beretta and Bozzolan, 2004). Thus, the first research motivation is the need to enhance the quality of best practice narrative disclosure. The increased attention given to corporate governance (i.e. the latest revision of the UK governance code in 2010) and best practice disclosure quality reporting (e.g. the new Management Commentary document in 2010) represents the second general motivation of this research.

The underlying research adds to the accounting literature on the association between disclosure quality, corporate governance and their relationship with firm value. It also gives insights to the regulatory bodies and has some policy implications in the UK context. The following paragraphs discuss these points.

From the above two general motivations, six more specific motivations are discussed. When reviewing the extant literature on the association between disclosure quality and corporate governance, many limitations and research gaps have been identified, which reinforces the importance of the current research. The first research motivation arises from the significant challenge of measuring best practice disclosure quality (Berger, 2011). Currently, the disclosure literature employs various proxies for best practice disclosure quality assuming that disclosure quality and quantity are positively correlated (e.g. Hussainey et al., 2003). This assumption, however, has been criticised in prior research (e.g. Beattie et al., 2004; Beretta and Bozzolan, 2004a; 2008). In a recent article, Beyer et al. (2010) review prior research that considers different proxies for the quality of corporate disclosure. They conclude that:

"A sensible economic definition of voluntary disclosure/financial reporting quality and direct derivation of measures from that definition is missing from the literature. This lack of an underlying economic definition hinders our ability to draw inferences from this work, and we recommend that future research address this issue" (p. 311).

Therefore, the current research is important as it responds to continuous research calls and provides a sound economic definition of best practice disclosure quality. As such, the proposed disclosure measure improves researchers' ability to draw inferences from disclosure studies.

The second motivation stems from the need to develop a computerised approach for content analysis to allow for undertaking large-scale disclosure studies. Prior literature usually manually analyses the content of disclosure (e.g. Abrahamson and Amir, 1996; Clatworthy and Jones, 2003). However, this approach is labour intensive and therefore the sample size is often small, which raises concerns on the generalisability of the results. An innovative approach involves using natural language processing techniques.

In a recent article, Grüning (2011) introduces a new computerised language technique. He proposes an artificial intelligence measurement of disclosure (AIMD). AIMD is a software that enables quantifying the extent of information along ten disclosure topics in the annual reports. Although Grüning's (2011) attempt is a step toward improved computerised content analysis, it suffers from some limitations. The first limitation is that AIMD concentrates on only one dimension of disclosure quality (i.e. comprehensiveness). AIMD measures the intensity of information disclosed in isolation from other quality dimensions, such as verifiability, comparability, and balance and neutrality. A second apparent limitation is the lack of a reliable and solid regulatory/guidance framework for selecting the disclosure topics. The third limitation is that the reliability of AIMD is not assessed in

Grüning (2011). By contrast, the underlying proposed disclosure quality measure is a computerised technique that allows the evaluation of all OFR quality dimensions- the guidance framework used to derive the quality dimensions- not just the comprehensiveness of disclosure. Moreover, the proposed disclosure quality measure is tested for reliability.

While innovative language processing techniques provide premises for innovative disclosure quality measurement, current attempts to develop a computerised approach for content analysis do suffer some weaknesses (Berger, 2011). One common limitation is the use of ready-made language processing software[1] (e.g. Henry, 2008; Kothari et al., 2009; Li, 2010a). Berger (2011) questions the ability of such general dictionary software to analyse the special corporate filing language. Using N6 software, Hussainey et al. (2003) developed a customised forward-looking keywords list and were able to perform a computerised content analysis for UK annual report narratives. However, Hussainey et al.'s approach suffers from various limitations. The most important is that this approach was able to correctly capture only 55% of the actual forward-looking disclosure released in the narratives. In other words, Hussainey et al. (2003) captured 55% of what they could have captured if they had manually analysed the narratives. Accordingly, there is a need to develop a multi-dimensional computerised approach (not only for forward-looking disclosure) that is highly reliable and substitute the manual content analysis approach. Accordingly, the underlying research is important as it introduces a computerised approach for content analysis, which should help in undertaking large-scale disclosure studies.

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[1] Ready-made language processing software includes imbedded dictionaries to allow for automated word search and count. Such general dictionaries are not tailored for specific context such as financial reporting. This type of software does not allow the user to develop a customised dictionary to fit the corporate filling context.

In line with the two previous motives, the third research motivation arises from the need to explain and justify the inconclusive and conflicting results surrounding the association between corporate governance and disclosure quality. It is likely that such mixed results are due to improper measures of disclosure quality. This assumption is consistent with the argument that "researchers investigating the determinants and consequences of disclosure quality could be wasting their efforts if the primary variable of interest is not being measured with a sufficient degree of accuracy" (Beattie et al., 2004: 233). Another potential reason for the inconclusive results is the use of narrow proxies of corporate governance when examining the association between disclosure quality and corporate (García-Meca and Sánchez-Ballesta, 2010). Studying narrow proxies of corporate governance neglects the potential interactions between corporate governance mechanisms and thus, may fail to provide a comprehensive picture of the effectiveness of corporate governance mechanisms (Ernstberger and Grüning, 2013). Thus, it is important to re-examine the association between disclosure quality –rather than a proxy for disclosure quality- and a wide range of corporate governance mechanisms, in an effort to mitigate the mixed results issue in similar studies.

A third related research strand examined in the thesis is the joint effect of disclosure quality and corporate governance mechanisms on firm value. Examining such relationship helps to identify whether there is a complementary or supplementary effect between disclosure quality and corporate governance in terms of their association with firm value. The fourth motivation of the current research stems from the limited literature on this association and the contradictory results prevailing in the extant literature (Black et al., 2006; Bebchuk and Weisbach, 2010). Similarly, such mixed results might be backed by using improper proxies

for disclosure quality and/or limited or aggregated numbers of corporate governance mechanisms. Accordingly, the current research is worthy of study as it investigates the joint effect of disclosure quality and corporate governance mechanisms on firm value since to the researcher's knowledge, this research strand is not tested in the literature, particularly in the UK.

Additionally, the current research earns its importance from its implications for the financial reporting in general, which is, therefore, the fifth research motivation. More specifically, developing a new best practice disclosure quality measure opens avenues for re-examining disclosure relationships, especially in research areas that do not have persuasive conclusions. Moreover, the present study promotes the efficiency of the financial reporting research areas with a low-cost, time-saving approach. This would help in undertaking large studies and hence deriving more reliable results than previous findings based on small-sample, manual analysis studies. In addition, this research has implications pertaining to the financial reporting studies, which link disclosure with corporate governance, and firm value. It helps to mitigate the conflicting results persisting in the current studies prevailing in the literature.

The sixth motivation to conduct the underlying research is concerned with the practical implementation of the OFR statement. This research is hoped to provide in-depth empirical feedback on the practical implementation of a multidimensional quality concept in the UK. Interestingly, with the new best practice disclosure quality score, regulatory bodies (e.g. Accounting Standard Board) can evaluate the applicability extent of their guidance. ASB can assess the strength and weakness of the current OFR requirements and make informative decisions to promote current reporting standards or induce new modifications.

1.3 Research Objectives

In response to Beyer et al.'s (2010) call for researchers to consider a sound definition of best practice disclosure quality and to directly derive a proper measure from that definition, the research's first objective is to introduce a sound and acceptable definition and a new valid and reliable measure for disclosure quality.

The second objective is to respond to Berger's (2011) calls for improving language-processing techniques used in content analysis. Prior research uses disclosure quantity as a proxy for disclosure quality (e.g. Hussainey et al., 2003; Beekes and Brown, 2006; Celik et al., 2006; Abraham and Cox, 2007; Boesso and Kumar, 2007; and Cerbioni and Parbonetti, 2007), assuming that disclosure quality and quantity are positively correlated. The third objective, therefore, is to empirically examine the extent to which disclosure quantity provides a proper proxy for disclosure quality.

The fourth objective of the thesis is to provide potential explanations for the mixed results on research related to the association between disclosure quality and corporate governance, which in many cases contradicts with agency theory. García-Meca and Sánchez-Ballesta (2010) contend that one of the possible reasons for such mixed results is the use of narrow proxies of corporate governance. Additionally, Beattie et al. (2004) argue that a well-developed disclosure quality measure might lead to the fundamental re-interpretation of certain relations associated with disclosure. Thus, using different proxies for disclosure quality instead of a disclosure quality measure could also be a source for such mixed results on the association between disclosure quality and corporate governance.

Finally, the fifth objective of the thesis is to fill an important gap in literature related to firm value. In particular, the thesis aims to mitigate the commonly omitted variables bias by including corporate governance and disclosure quality as well as the joint effect of both (i.e. corporate governance and disclosure quality).

1.4   Research Questions

Four research questions are developed to achieve the aforementioned research objectives. The first research question: Is it possible to provide a practical definition and a reliable measure for disclosure quality? If so, to what extent are the OFR quality dimensions recommended by The Accounting Standard Board (ASB)[2] (2006) measurable? The first research question covers the first and the second research objectives (i.e. introducing an acceptable definition and a new valid and reliable measure for disclosure quality and improving language-processing techniques used in content analysis to respond to recent calls).

This research question is answered through the first study (chapters Three and Four). More specifically, chapter Three corresponds to the first research objective. It introduces a new definition of disclosure quality and develops a new measure for it. This measure overcomes the limitations of prior attempts. The principles of OFR is used as the guidance on the

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[2] Whereas accounting standards were previously set by the ASB, this became the responsibility of the FRC Board on 2 July 2012. On that date, reforms were carried out to enable the FRC to operate as a unified regulatory body with enhanced independence. A new structure was implemented to ensure effective governance of all of the FRC's regulatory activities under ultimate responsibility of the FRC Board. The Accounting Council also replaced the Accounting Standards Board (ASB), assuming an advisory role to the Codes & Standards Committee and the FRC Board. As part of the reforms, the Codes and Standards Committee was established to advise the FRC Board on maintaining an effective framework of UK codes and standards.

dimensions of high-quality information. The chapter ends up by defining an aggregated disclosure quality measure composed of seven quality dimensions. Chapter Four corresponds to the second research objective. It develops five highly reliable keyword lists pertaining to narrative reporting (forward-looking, quantitative, bad news, good news and scope). This improves the content analysis techniques and more importantly, allows for the computerisation of the content analysis.

The second research question: Is disclosure quantity a proper proxy for disclosure quality? This question is linked to the third research objective (i.e. to empirically examine the extent to which disclosure quantity provides a proper proxy for disclosure quality). This research question in answered in chapters Four, and Six. In chapter Four, the first validity test examines whether disclosure quantity could be used as an explanatory variable for disclosure quality. In chapter Six, one of the main robustness tests examines whether corporate governance mechanisms, which affect disclosure quality, differ from those relating to disclosure quantity. This in turn provides further evidence on whether disclosure quantify is a proper proxy for disclosure quality.

The third research question: What are the corporate governance and firm characteristics that influence best practice disclosure quality in the UK? Such a question corresponds to the fourth research objective (i.e. to provide potential explanations for the mixed results on research related to the association between disclosure quality and corporate governance, which in many cases contradicts with agency theory).

This research question is answered through the second study (chapters Five and Six). Chapter Five sets out 14 research hypotheses to answer the third research question. These

hypotheses are concerned with the relationship between 14 corporate governance mechanisms and disclosure quality. Chapter Six tests these hypotheses and concludes with those corporate governance mechanisms and firm characteristics that influence disclosure quality in the UK.

The last research question is: What is the joint effect of best practice disclosure quality and corporate governance mechanisms on firm value in the UK? This research question is linked to the fifth research objective (i.e the fifth objective of the thesis is to fill an important gap in literature related to firm value), which is addressed in the third study, chapters Seven and Eight. In chapter Seven, 15 research hypotheses are theoretically developed to test the effect of disclosure quality, corporate governance mechanisms, and the joint effect of both on firm value in the UK. Chapter Eight tests these hypotheses and concludes with answering the fourth research question.

1.5 Research Contributions

By achieving the first research objective, the current research contributes to the disclosure literature by introducing a measure for disclosure quality. The proposed measure is mainly based on all qualitative dimensions of information issued by the Accounting Standards Board (ASB, 2006) that aims to enhance the usefulness of information to stakeholders. This allows for a more considered definition of disclosure quality, rather than using proxies for disclosure quality.

The measure comprises the OFR quality dimensions. The Accounting Standard Board (ASB) sets the principles, which represent the quality dimensions as follows (ASB, 2006, Summary, para. b & c):

"b. The Reporting Statement recommends that directors prepare an OFR addressed to members, setting out their analysis of the business, with a forward-looking orientation in order to assist members to assess the strategies adopted by the entity and the potential for those strategies to succeed. The information disclosed in the OFR will also be of relevance to other stakeholders. The OFR should not, however, be seen as a replacement for other forms of reporting addressed to a wider stakeholder group".

"c. The Reporting Statement sets out a number of other principles regarded as best practice in the preparation of an OFR, namely that the review should: both complement and supplement the financial statements; be comprehensive and understandable; be balanced and neutral; and be comparable over time."

Based on the Reporting Statement, the proposed quality measure comprises the above mentioned principles as follows; forward-looking orientation, relevance, supplement and complement the financial statements, comprehensiveness, understandability, balance and neutrality, and comparability.

The second contribution, which is realised through the second research objective, is the introduction of five keyword lists that are necessary for the computerised content analysis, and are relevant to the narrative disclosure context. The forward-looking keyword list improves Hussainey et al.'s (2003) forward-looking keyword list to progress from capturing only 55% of actual forward-looking disclosure, to capturing 95.3% (see Table 4.1 and the related discussion). This innovative computerised approach will help to save costs and effort associated with manual content analysis, and help in undertaking large-scale disclosure studies.

The third contribution of the current research is realised through meeting the third research objective. Mainly, results of the current research suggest that disclosure quantity is not an appropriate proxy for disclosure quality. Analysis shows that there is no correlation between disclosure quality and disclosure quantity. Using firm-specific characteristics and corporate governance mechanisms, the study also finds that determinants of disclosure quality and disclosure quantity are not identical.

The fourth research contribution, which corresponds to the fourth objective, is investigating the association between disclosure quality and corporate governance using the proposed disclosure quality measure, and a wide set of accounting-based corporate governance mechanisms. In doing so, this research uses wide proxies of governance. This might lead to explaining the problem of some results contradicting agency theory. Correlation analysis reveals that almost all corporate governance mechanisms are in line with the predicted association based on agency theory. Accordingly, mixed results on the association between disclosure quality and corporate governance are attributed partly to the use of improper proxies for disclosure quality, and partly to uses of narrow proxies for corporate governance.

Finally, the fifth contribution corresponds to the fifth research objective. The current research contributes to firm value literature by introducing empirical evidence on the joint effect of disclosure quality and corporate governance mechanisms on firm value.

1.6   Research Methodology

This section elaborates the research methodology adopted in the current research. The researcher explains the philosophical approach, which frames the underlying study. An in-depth discussion of the different research philosophies generally applied in the financial and accounting research paradigm is provided. The relative merits of the applied research philosophy are elaborated. Then, the research design and the theoretical framework are discussed.

Research methodology is the strategy or design lying behind the choice of a particular methods and linking the choice and use of methods to the desired outcomes (Crotty, 1998). It includes research philosophy, design, and methods used to achieve the research objectives and provide answers for the research questions discussed earlier. As articulated by Bisman, "Methodology, in turn, reflects an underlying philosophy comprising an ontological view and associated epistemological assumptions. Thus, the most fundamental consideration in posing and answering research questions is the researcher's philosophical or meta-theoretical position (2010, p.5). Broadly speaking, any research idea is formulated, developed, investigated, and illustrated based upon the researcher's epistemological beliefs in terms of how knowledge is acquired and illustrated research philosophy.

The approach employed in the current research is a theory testing (deductive) approach. It is a top-down approach that works from the general to the specific. Stated differently, the starting point is the identification of a relevant theory (i.e. agency theory in the underlying research). A set of hypotheses are then developed to test the theory. Afterwards, using the suitable research method, the hypotheses are tested. Results suggest either accepting the

hypotheses (and thus confirmation of the theory) or rejecting them. At the end, the research reports the contribution made to the understanding of the theory.

1.6.1 Research Philosophy

A valid research philosophy is fundamental to any research. Any raised dispute over the methodological approach of a certain study would simply impair the validity of its results. A research philosophy is "the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria (Crotty, 1998; p. 3). In other words, it is about a belief regarding the way in which data about a phenomenon are gathered, analysed and used. Lopes (2015) provides a perfect summary for the most popular classification of research philosophy in the finance and accounting fields. Four main philosophical approaches are normally used in the finance and accounting research namely: positivism; constructionism; critical realism; and pragmatism. The first philosophical approach is the positivist (mainstream). Positivist evidences the way to achieve the truth, believing that it is always possible to predict that world. The featured assumptions of this research philosophy are that: it is a replicable research, depends on finding generalization, and employs a deductive reasoning tests the cause and effect relations within structured and multilateral frameworks. Positivism relies on the objective measures, the direct observation and the dismissal of research emotions and thoughts (Chua, 1986; Laughlin, 1995; Ryan et al., 2002; and Sekaran and Bougie, 2013).

The second philosophical research approach is constructionism. Constructionism as a research philosophy assumes that the reality is mentally constructed (Sekaran and Bougie,

2013). This approach thus focuses on the comprehensiveness of the procedures used to achieve connections in the real world (Lopes, 2015). From this perspective, the capture and creation of knowledge is based on observations and interpretations of social practices (Ryan et al., 2002). It is mainly built on qualitative analysis. As documented by Senik (2009), constructionism has social subjectivity and accordingly, declared disagreement between positivist approaches.

The third philosophical research approach is critical realism. Critical realism perspective is an intermediary approach, which assumes that an objective truth exists but cannot be objectively and reliably measured (Sekaran and Bougie, 2013). It assumes that the researcher would tend to bias his understanding. Behavioural theories can support those biases, especially phenomena that, researcher cannot observe and measure directly, as satisfaction, motivation, organizational or knowledge management culture and values (Lopes, 2015).

Finally, According to Lopes (2015), the forth research philosophy; "pragmatism" emerges as a pluralist but practical perspective. Its transversal practical view aligns research methodologies as a mix of research aims and objectives, observable phenomena, and research questions.

For several decades, theory construction and verification in accounting has been dominated by 'mainstream' research conducted within the positivist paradigm (Bisman, 2010). That is, a strong commitment is demonstrated to what would be labelled as 'objective' research, where, research is viewed as a process of constructing precise and economic theories validated by well-designed tests using large and unbiased samples (Rayan et al., 2002).

With the research philosophy being crucial in validating an entire research study, "positivism" as the research philosophy applied in the underlying research is thoroughly explored in the remainder of this section.

Positivism means, "what is posited or given in direct experience is what is observed, the observation in question being scientific observation carried out by way of the scientific method" (Crotty, 1998, p. 20). Positivism is a highly objectivist view of a common, single reality, so reality is an externality which exists independently of human thought and perception (Bisman, 2010). Crotty (1998) contends that, positivists believe in scientific objective findings that are derived from a well-designed research.

The emergence of positivism dates back to, 1920s and 1930s. It started as a consequence ideas of a discussion group of philosophers, mathematicians and scientists organized by Moritz Schlick (1882-1936) to investigate scientific language and methodology. The group is known as the "Vienna Circle". David Hume (1711-1776), an empiricist, and the physicist, Ernest Mach (1838- 1916) influenced the development and underlying philosophy of the Vienna Circle, in particular its first idea of empiricism. Bertrand Russell (1872-1970) and Ludwig Wittgenstein influenced this group with their logical approach. Ludwig Wittgenstein's "Tractatus logico-philosophicus" had a significant influence on the circle's main tenet – the verification principle."

Afterwards, Russell and Whitehead (1913) formulated a new form of logic in their work "Principia Mathematica", which applied the logical tools of analysis to empirical investigation. This new logic was then adopted by the circle in their analysis and named "Logical Positivism".

The main distinction between "Positivism" and "Logical Positivism" is that the later term proposes that meaningful statements are only those which can, in principle at least, be verified by appeal to observation. Juma'h (2006, p. 89) presents a simple and clear distinction between positivism and logical positivism:

"Positivism is a theory of knowledge which only allows statements that are based on empirical data, collected through experience. Logical positivism is an extension of this concept and as is logical analysis and mathematical techniques. Logical positivism is a form of reasoning based on two key concepts, the collection of experiences yielding empirical data and the logical analysis of this data. Therefore, it imposes on its practitioners a structure of thinking and leads to a particular form of theory because only certain types of knowledge are allowed".

There are two main assumptions/ principles for positivism and logical positivism; the meaning of verification and the theoretical terms. Logical positivists assert, "Only meaningful statements were to be permitted scientific consideration and accorded the status of knowledge claims" (Caldwell, 1984). Accordingly, a meaningful statement is either analytic or verifiable (Juma'h, 2006). Analytical statements are concerned with tautologies; it is true for all values, or self-contradictions. The central doctrine of logical positivism is the verification theory of meaning, that is, a proposition is meaningful if and only if it can be empirically verified or if and only if there exists an empirical method or evidence for deciding the truthness and falseness (Brown, 1977). Logic and mathematics were meaningful since they tell us nothing but what was implicit in what we knew already, as their procedures defined a way of verifying any statement made within them (Juma'h, 2006).

An alternative notion of confirmation is proposed to overcome the problems implicit in this approach. Although it is not possible to verify the law, it is possible to gradually increase confirmation of the law (Caldwell, 1984). This is to say, if in a continued series of a testing experiments no negative instance is found but the number of positive instances increases, then the confidence in the law will grow step by step (Juma'h, 2006).

The second significant difficulty is concerned with the ontological status of theoretical terms, which are non-observable. Logical positivists held a dominant view that theories do not explain a phenomenon, a generic term used to cover both events and process (Ryan et al, 2002). Instead, logical positivists believe that theories are only tools for describing certain correlation between observed phenomena (Juma'h, 2006). At the observational level, logical positivists argue through the verification principle for a correspondence theory of truth, while at the theoretical level they would argue that truth is what is convenient rather than what is coherent at either the individual or social level (Aliyu et al, 2014).

There have been two broad strategies for dealing with these difficulties: the first simply denies the distinction between observational and theoretical terms. The second admits the distinction between theoretical and observational terms yet argues that theoretical terms have no real observational meaning. In this view, theoretical terms are merely convenient analytical constructions of observational terms whose purpose is to help in the derivation of novel observational implications and predictions. This latter approach has become known as 'instrumentalism' (Ryan et al, 2009).

The point at issue here is that the merits of the positivism outweigh its above discussed limitations. Importantly, it entails a great level of objectivity, has a strong predictive power and utilises quantitative analysis, which in turn allows for generalisation (Lopes, 2015).

It is well documented that a good research is the one where the method chosen is driven by, and appropriate to, the research questions. Recalling the underlying research questions and objectives, the most appropriate research method that best serves the study's objectives and promptly addresses the study's questions is the "logical positivism" research philosophy. The current research is scientific, structured, has a prior theoretical base, seeks to establish the nature of relationships and causes and effects, and employs empirical validation and statistical analyses to test and confirm theories and thus it is under the logical positivism research philosophy.

Applying logical positivism in the current study rests on several reasons. Firstly, over the past decade, positivism has been, and continues to be regarded as the most suitable philosophy for accounting research. In particular, it fit perfectly the financial accounting and corporate governance research (Lopes, 2005). As mentioned by Bisman (2010), logical positivism presupposes that the scientific approach is appropriate to the discovery, explanation and prediction of accounting phenomena. Secondly, positivism suggests that "the research pursed is a scientific, structured, has a prior theoretical base, seeks to establish the nature of relationships and causes and effects, and employs empirical validation and statistical analyses to test and confirm theories" (Bisman, 2010; p.5). Thirdly, positivism as a research philosophy entails that the researcher is independent form the study and there are no provisions for human interests within the study (Crowther and

Lancaster, 2008). With adopting a positivism paradigm in the current study, the researcher maintains objective judgement and relies on facts and tests' results for deriving conclusions and assuming generalisation of results.

Up until this point, the discussion has been particularly concerned with introducing the different research philosophies with a coherent focus on the positivism approach, its assumptions, limitations, merits, and justifications for adopting it in the underlying research. To sum up and conclude this sub-section, a research method starts with a formulated theory emerged from literature review, and derives in the form of a mathematical model or in an interpretive or critical systematization. It is intended that from this process may result new knowledge towards the confirmation or refutation of the theory that have been supporting each research (Lopes, 2015).

1.6.2 Research Design

The two popular research designs are quantitative and qualitative research approaches. Quantitative approach measures things while qualitative approach aims to obtain insights about observations (Hague, 1998). The choice of the research design depends on the research philosophy adopted, the nature of the research objectives, and the research questions. The research design most suited to the logical positivism philosophy is the quantitative approach (Crotty, 1998, Lopes, 2015). Moreover, the nature of the research questions suggests the use of quantitative techniques. Recalling the research questions and objectives, quantitative techniques are more likely to provide valid answers, with a strong predictive power that could be generalised. Thus, in the underlying research, a quantitative approach is used to test for the hypothesis and reflect on the theoretical framework.

1.6.3 The Theoretical Framework

The conceptual framework underlying the premises of the current research is the agency theory. Agency theory models the relationship between the principal (and agent). The nature of an agency relationship is defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling, 1976, p. 308). Additionally, according to the agency theory, there is potential for a conflict of interests between managers and shareholders. Generally, managers are perceived to have a tendency to maximise their own benefits. On the other hand, the celebrated goal is presumed to be maximising shareholders' wealth (Loderer et al., 2010).

Agency theory offers a fertile framework for addressing the association between disclosure quality and corporate governance. It is the most dominant theory in the governance literature (Carcello et al., 2006), and in particular is heavily used in explaining motivations for disclosure (Lang and Lundholm, 1993). Similarly, agency theory frames the association between disclosure quality, corporate governance, and firm value (Dhaliwal et al., 2011). Therefore, agency theory is the most suitable theoretical framework to the current research that would best help to properly answer the research questions and achieve the research objectives.

Notably, it is well documented in the literature that there are various theories other than agency theory which explain disclosure (Healy and Palepu 2001; and Celik et al. 2006), for instance, signalling theory, attribution theory, legitimacy theory, stakeholder theory, and institutional theory. Signalling theory assumes that managers of higher quality firms will

wish to distinguish themselves from lower quality firms through disclosures (Eccles et al., 2001). According to the signalling theory, a firm's performance will affect the extent of disclosure. Firm performance could be reflected by many performance measures, such as profitability, liquidity, and dividends paid. Attribution theory suggests that managers disclose bad information and attribute it to external causes beyond the management's control (Clatworthy and Jones, 2003). Legitimacy theory assumes that firms tend to disclose social and environmental information to indicate adherence to certain laws and related regulations (Shocker and Sethi, 1973; and Merkl-Davies and Brennan 2007). However, Oliveira et al. (2008) argue that legitimacy theory is more related to the reporting of intellectual capital. Stakeholder theory is similar to legitimacy theory in that it targets external users of financial reports other than shareholders such as employees, customers, government agencies, and lobby groups. Institutional theory suggests that managers are assumed to respond to institutional pressures in their corporate reports (Merkl-Davies and Brennan, 2007).

It is apparent from the above discussion that, unlike the agency theory, those theories explains the association between firm characteristics and disclosure but do not explain the relationship between corporate governance and disclosure or the association among disclosure, corporate governance, and firm value. Therefore, they are not best suited to the underlying research and, hence, agency theory is used as the main theoretical framework in the current research. The detailed aspects of the research methods; including sample selection, procedures of developing the disclosure quality measure, and statistical models used are discussed thoroughly in chapter Two.

1.7 Research Outline

Chapter Two presents a through and detailed discussion of the research methodology employed in the current research. The research philosophy, theoretical framework, research design and research method of the three empirical studies are discussed. Each of the study's method is discussed in details in separate sub-sections, including sample selection, data collection, type of models, and tests used to examine the related research questions.

Chapter Three discusses voluntary disclosure definition and how it differs from mandatory disclosure. It also discusses different definitions of voluntary disclosure quality. Additionally, the chapter provides a wide review of various proxies for disclosure quality and discusses their limitations. Prior attempts to develop measures for disclosure quality are also reviewed, and the chapter then introduces an overview of the OFR Reporting Statement, the basis for developing the proposed measure. Accordingly, the chapter provides an innovative definition for disclosure quality and presents a detailed discussion of the seven quality dimensions, detailing how each dimension is measured to reach the overall quality score.

Chapter Four develops an aggregated disclosure quality score. It starts by discussing the main steps followed to reach an aggregated quality score and highlights the methodology adapted in this regard; in doing so, it employs a content analysis approach that uses both computerised and manual methods. Five reliable keyword lists are developed. It then presents the formula used to derive the aggregated quality score. Finally, three reliability tests and three validity tests are conducted. Chapters Three and Four represent the first strand of the empirical work conducted in the thesis.

Chapter Five starts by discussing agency theory as the theoretical premise that backs the association between disclosure quality and corporate governance mechanisms, and their potential impact on firm value. It then reviews prior literature on the association between disclosure quality and corporate governance mechanisms. Additionally, it develops individual research hypotheses for the potential association between 14 corporate governance mechanisms and disclosure quality.

Chapter Six presents the study design and the empirical analysis of the association between disclosure quality and corporate governance mechanisms. It begins by illustrating the reasons for using an OLS regression model in conducting the cross-sectional analysis. It discusses the sample selection process, empirical model and variable definitions. It also presents a descriptive analysis and discusses the interpretation of the empirical results. It ends by describing several robustness tests, which are also considered to validate the proposed disclosure quality measure developed in chapters Three and Four. Chapters Five and Six, then, represent the second strand of empirical work in the thesis.

Chapter Seven provides the theoretical arguments in drafting the relationship between disclosure quality and firm value, corporate governance mechanisms and firm value, and the joint effect of both; disclosure quality and corporate governance mechanisms on firm value. Moreover, it develops 15 hypotheses to answer related research questions.

Chapter Eight contains an empirical examination of the 15 hypotheses developed in chapter Six. It starts by elaborating the study design and then discusses the endogeneity problem and the use of a fixed-effect panel data model to mitigate it. It then defines the sample and

the variables tested, and the empirical tests are presented and interpreted. Finally, the chapter discusses various robustness tests.

Chapter Nine summarises the research aims, questions and main findings. It then discusses the implications of the results for academia and regulatory bodies. Finally, the research limitations and suggestions for future research are discussed.

The following figure 1.1 summarises the research objectives, questions, and research outline

Figure 1.1: The Link between Research Objectives, Questions, and Research Outline

Objective No. 1&2	→	Question No. 1	→	Chapters 2 & 3 & 4
Objective No. 3	→	Question No. 2	→	Chapters 4 & 6
Objective No. 4	→	Question No. 3	→	Chapters 5 & 6
Objective No. 5	→	Question No. 4	→	Chapters 7 & 8
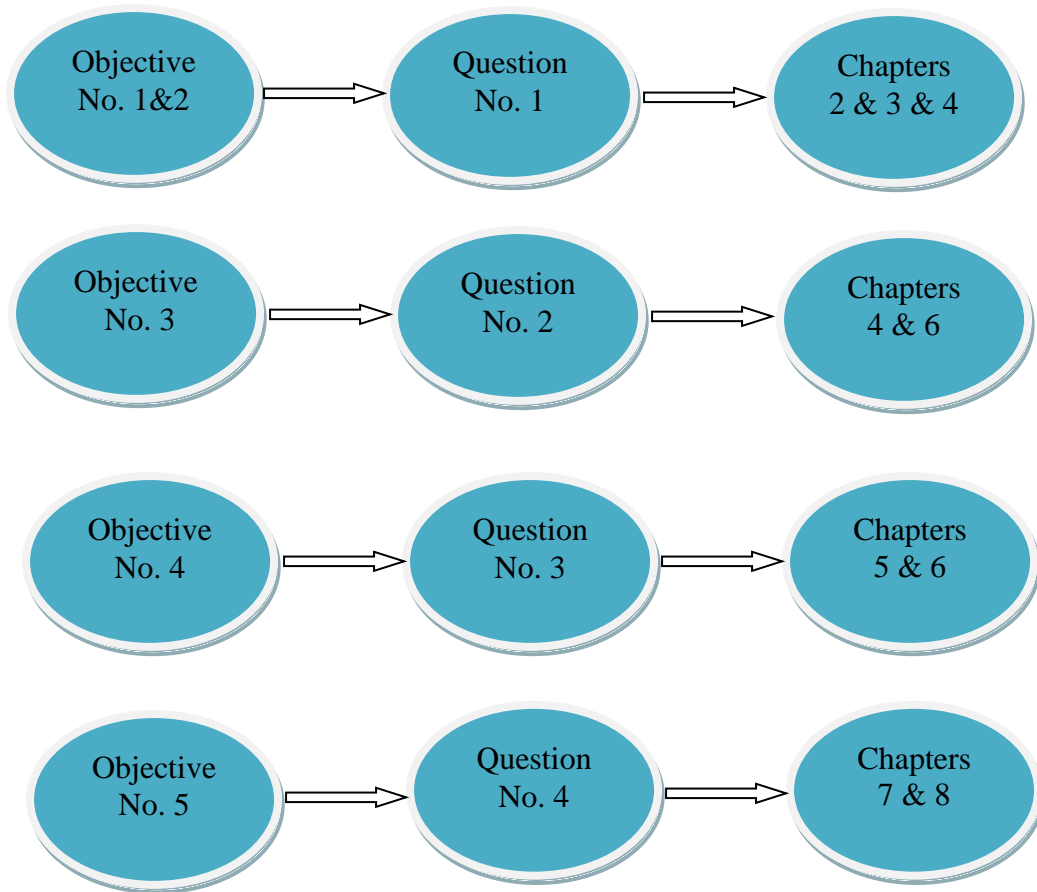
Chapter Two : Research Method

2.1 Overview

In this chapter, the detailed steps of the study design, sample selection, different models and tests used in the underlying research are thoroughly explained and justified. As detailed earlier in chapter One, chapters numbers Three, Five, and Seven set the theoretical background of the underlying research. Particularly, the nature, concept, and assumptions of agency theory are explored in depth in chapter Three. Chapter Five discusses the literature regarding the relationship between different corporate governance mechanisms and disclosure quality. Based on agency theory, 14 research hypotheses are developed. Chapter Seven serves as a theoretical review of the relevant literature concerning the association between disclosure quality, corporate governance mechanisms and firm value. Driven from the agency theory, 15 research hypotheses shaping the relationship among disclosure quality, corporate governance mechanisms and firm value are introduced.

2.2 Research Method

A research method is a technique or procedure used to gather and analyse data related to some research question or hypothesis (Crotty, 1998). In this sub-section, the researcher demonstrates the method followed in undertaking the underlying research to answer the research questions and meets the research objectives successfully. This section presents a detailed map of how the current study is conducted in terms of sampling, data gathering, the statistical models used, explaining results and deriving conclusions.

This study consists of three inter-related studies, for convenient presentation purposes, the upcoming sub-section elaborates firstly the common methodological aspect of the three studies, and then a separate sub-section will be devoted to the explanation of the research method(s) associated with each of the individual studies.

2.2.1 Sample Selection

This sub-section discusses the sample selection process. The basis of developing the proposed disclosure quality measure is the UK disclosure guidance issued by the Accounting Standards Board (ASB, 2006). The sample used in the three studies is a UK-based. The initial sample consists of FTSE 350 companies listed on the London Stock Exchange. FTSE 350 is chosen because it covers the economically most important companies (Abdullah and Page, 2009). The sample covers all industry sectors, except the financial sector. Financial firms are excluded because of the special nature of their operations, which differs from that of the non-financial firms (Schleicher and Walker, 2010). Financial firms are concerned with financial products and instruments, which are regulated by different set of rules. Apparently, the OFR statement is mainly directed towards providing disclosure guidelines for non-financial firms and hence, it follows that the current study focuses only on non-financial firms. This gives a sample of 232 non-financial firms.

In identifying industry sectors, level two Datastream industry classifications is used, which consists of ten industry sectors. More firms are lost for a number of reasons; these include missing annual reports (23 firms); missing data regarding some firm characteristics which could not be obtained elsewhere (42 firms); and an inability to convert PDF-format annual reports to text files (23 firms). Finally, firms remaining after these prior steps and were included in the pilot study (11 firms) are excluded. This results in a sample of 133 firms for each year.

The sample period covers four years from 2006 to 2009. The analysis starts with 2006, because this is the first year the OFR reporting statement became a best practice statement. The analysis period ends with the latest available annual reports (annual reports for firms whose financial year ends in 2009) when the data for the current research is being collected in 2009. Accordingly, the final sample contains 133 firms. Each firm is analysed over the four years. Thus, the final sample consists of 532 firm-year observations.

It is worthwhile to discuss whether there is a survivorship bias in the sample selection process. Survivorship bias is the tendency for failed firms to be excluded from performance studies due to the fact that they no longer exist, i.e. those companies which were unsuccessful enough to survive until the end of the analysis period) (Investor words. com). In the sample selection process, the researcher excluded firms for which annual reports were not available for the four years of the analysis. These firms only count for almost 10% of the sample (23/133). This percentage (17%) is not solely excluded due to, survivorship issue (i.e. firms that were unsuccessful enough to survive until the end of the analysis period).

However, some firms are excluded because they have entered the market after the beginning of the analysis period (i.e. 2006). For example, one company just entered the market in 2008, and thus has only 2 observations (2008 and 2009). Accordingly, the possibility of a survivorship bias is even less than 17% of the observations. There are two reasons, which justify including only firms that have annual reports in the four years of the analysis, namely:

1- In the second and third studies, governance variables are included as the main independent variables. Governance variables are somewhat unchanged over very short time periods; therefore, continuous time series for each firm are more preferable in order to catch any change in governance variables. Notably, as discussed above, the four year time period is chosen because the OFR became a best practice statement in 2006 and the analysis ends with the latest available annual reports (annual reports for firms whose financial year ends in 2009) when this research started in 2009.

2- Another important reason is the need to have a balanced data set in the third study since a fixed effect model is used. It is worthwhile here to define balanced data: "In balanced panel data, all entities have measurements in all time periods. …When each entity in a data set has different numbers of observations due to missing values, the panel data are not balanced" (Park, 2009). The main limitation of unbalanced data is that it entails some computational and estimation issues (Park, 2009).

Therefore, based on the above mentioned reasons, the decision was to include only firms that have continuous observations over the four years. The trade-off between having insignificant survivorship bias and the accuracy of the empirical analysis in chapters Six and Eight, which is best achieved using balanced data (four observations for each firm), is in favour of the latter. Accordingly, the survivorship bias (less than 17%) does not affect the findings. The final sample contains 532 firm-year observations. Table 2.1 elaborates the sample selection steps.

Table 2.1: Sample Selection Process

FTSE 350	350 firms	1400 firm-year observations
Less non-UK firms	19	76
Total	**331**	**1324**
Less financial UK firms	99	396
Total	**232**	**928**
Less firms with missing reports (2006-2009)	23	92
Total	**209**	**836**
Less firms with missing firm characteristics	42	168
Total	**167**	**668**
Less firms with files that cannot be converted to text format	23	92
Total	**144**	**576**
Less firms remaining after the prior steps yet was included in the pilot study	11	44
Final Sample	**133**	**532**

Table constructed by author.

This sample is used for the first and second studies (chapters Four and Six). As for the third study (chapter Eight), some observations are lost. In particular, six firms are required to be deleted due to unavailable data on daily stock prices, which is used to calculate firm value. Another 5 firms were required to be deleted due to of unavailable data on sales growth.[3] Accordingly, 11 firms were lost, i.e. 44 firm-year observations (11 firms * 4 years).

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[3]Sales growth is used as a control variable. This variable is mainly extracted from Datastream, as detailed later. The researcher tried to hand-collect the missed data from the annual reports; however, the dropped observations are related to firms that were not listed before 2005 and 2004, whereas data on sales of 2003, 2004, and 2005 is needed to calculate sales growth for 2006. Another difficulty faced is determining the annual compound rate used. Therefore, those firms are excluded from the sample.

Therefore, the final sample used for investigating the joint effect of disclosure quality and corporate governance on firm value is reduced to 488 firm-year observations.

2.2.2 Study One: Developing the Disclosure Quality Score

This is the first study in the underlying research. As outlined earlier in chapter One (figure 1.1), this study is associated with two research objectives and answers two research questions. In correspondence to the first research objective, this study (chapter Three) involves introducing and developing a sound measure for disclosure quality (disclosure quality hereafter) that overcomes limitations imbedded in prior attempts to develop such measures. Chapter Four is related to the second research objective where five highly reliable keyword lists pertaining to narrative reporting (forward-looking, quantitative, bad news, good news and scope) are developed.

Indeed, prior attempts (these attempts and their limitations are discussed in details in chapter Three, section 3.5) to develop disclosure quality measures have many limitations. First, there is no clear definition for the concept of disclosure quality. Second, there is no justification for the assumption that disclosure quality is a function of the stated disclosure quality dimensions; thus, Botosan (2004) argues that any measure for disclosure quality should start with a well-supported and convincing discussion of the information dimensions proposed by a regulatory framework. Third, some of these measures are restricted to one type of best practice disclosure (i.e. risk disclosure in Beretta and Bozzolan, 2004a, and forward-looking disclosure in Beretta and Bozzolan, 2008). Finally, these measures overemphasise quantity in their way of calculating disclosure quality.

In an attempt to propose a sound measure for disclosure quality, the study employs an innovative computerised[4] content analysis approach and develops new keyword lists relevant to the OFR disclosure context, which will enable large-scale disclosure studies to be conducted.

As detailed later in chapter Three, there are continuous calls (e.g. Beattie et al., 2004; Beyer et al., 2010, and Berger, 2011) in the recent literature to improve content analysis and introduce a reliable computerised content analysis technique. The current study answers these calls.

2.2.2.1 Content Analysis as a Research Methodology

Content analysis has a long history of use by a growing array of researchers (Neuendorf, 2002). It is defined as "a research technique for making replicable and valid inferences from data to their context" (Krippendorff, 1980, p. 21). It is "an observational research method that is used to systematically evaluate the symbolic content of all forms of recorded communications [that] can also be analysed at many levels (image, word, roles, etc.), thereby creating a realm of research opportunities" (Kolbe and Burnett, 1991, p. 243). It is the "systematic, objective, quantitative analysis of message characteristics" (Neuendorf, 2002, p. 1). The underlying principle of content analysis is that "the many words of a text can be classified into many fewer content categories, where each category consists of one or many similar words or word phrases, and that each word or phrase occurrence can be counted and the counts compared analytically" (Kothari et al., 2009, p. 1649).

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[4] Of the seven quality dimensions, only one dimension (comparability) is captured through manual content analysis.

Content analysis as research technique provides new insights, representation of facts, and a practical guide to action (Krippendorff, 1980). Moreover, it is useful in analysing different levels of communication, as defined by the meanings of the words themselves (Kothari et al., 2009). It fits the positivism paradigm of social research (Gunter, 2000).

Despite the merits of content analysis in general, however, traditional (manual) content analysis entails several limitations: it is labour intensive, time consuming, tiresome and costly; consequently, studies using manual content analysis are rarely implemented or extended into other research areas (Nacos et al., 1991). This fact is also documented by Shevlin (2004), who argues that studies requiring extensive manual data collection – or even data analysis – entail high implementation costs and subjective judgements that are limited in value. Arguably, manual content analysis is highly subjective and the probability of human mistakes is high, thereby affecting the reliability of the measure. Additionally, traditional content analysis hinders the analysis of large sample size, and hence result accuracy is questioned. Examples of prior studies employing manual content analysis include: (Ho and Wong, 2001; Peters et al., 2001; Evans, 2004; Willekens et al., 2005; Lakhal , 2005; Mangena and Pike, 2005; Barako et al., 2006; Celik et al., 2006; Abraham and Cox, 2007;Aljifri and Hussainey, 2007; Boesso and Kumar, 2007; Lim et al., 2007; O'Sullivan et al., 2008; Chen et al., 2008; Donnelly and Mulcahy, 2008; Laksamana, 2008; Li et al., 2008; and Hoitash et al., 2009).

Nevertheless, if computers could be programmed to perform sophisticated coding with the degree of reliability expected from human coding, this opens the generalisation opportunity of the research findings (Nacos et a l., 1991). Krippendorff (1980) limits the term "computerised (computational) content analysis" to situations in which a computer is programmed to mimic, model, replicate, or represent some aspects of the social context of the data it processes; (Hussainey et al., 2003; Beattie et al., 2004; Henry, 2008; Kothari et al., 2009; and Grüning, 2011) are examples of studies using computerised content analysis.

The advantages of using computerised content analysis are apparent. The first obvious merit is the ability to test large sample size and consequently increase the credibility of findings and improve generalisability. Krippendorff (1980) believes that computerised processes are deterministic, highly reliable, and allow control over the behaviour of the computer, and that they are therefore equivalent to a perfect theory of representation. Moreover, Hussainey et al. (2003) argue that comparability among firms is easy when using computerised content analysis, as the keywords and topics are unified across different firm years. Finally, the ability to replicate the disclosure score adds to the merits of computerised content analysis.

However, as discussed earlier in chapter One, Section 2, while innovative language processing techniques provide premises for innovative disclosure quality measurement, current attempts to develop a computerised approach for content analysis do suffer some weaknesses (Berger, 2011). To the best of the researcher's knowledge, the current computerised content analysis approaches in the literature suffer from some limitations.

One common limitation is the use of ready-made language processing software[5] (e.g. Henry, 2008; Kothari et al., 2009; and Li, 2010a). Berger (2011) questions the ability of such general dictionary software to analyse the special corporate filling language.

For instances, Grüning (2011)'s proposed computerised language technique is a step toward improved computerised content analysis, however, it suffers from some limitations. The first of which is the focus on only one dimension of disclosure quality (i.e. comprehensiveness). A second apparent limitation is the lack of a reliable and solid regulatory/guidance framework for selecting the disclosure topics. The third limitation is that the reliability of AIMD is not assessed. By contrast, the underlying proposed disclosure quality measure is a computerised technique that allows the evaluation of all OFR quality dimensions- the guidance framework used to derive the quality dimensions- not just the comprehensiveness of disclosure. Second, the proposed disclosure quality measure is tested for reliability.

Irrespective of being traditional or computerised, the content analysis in the form of mere counting of certain information neglects the relative difference in value of different information for users (Hussainey et al., 2003).

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[5] Ready-made language processing software includes imbedded dictionaries to allow for automated word search and count. Such general dictionaries are not tailored for specific context such as financial reporting. This type of software does not allow the user to develop a customised dictionary to fit the corporate filling context.

After reviewing the related disclosure literature (e.g. Beekes and Brown, 2006; Abraham and Cox, 2007; and Hussainey and Al-Najjar, 2011), one can argue that a more serious limitation of this type of content analysis – as employed in prior studies (e.g. Celik et al., 2006; and Aljifri and Hussainey, 2007) as well as other index-based disclosure scores (e.g. Cheung et al., 2010; and Jiang et al., 2010) – is that it is not a good indicator for the level of disclosure quality.

Yet, in using content analysis as a research technique in this study, the researcher avoids the mere counting of sentences, and thereby overcomes the inherent limitation of the content analysis outlined previously. In short, it is not a limitation incorporated in the content analysis itself; rather, the limitation lies in the way in which the content analysis is used. The next section elaborates steps employed to report a score for a firm's disclosure quality.

2.2.2.2 Steps for Calculating the Disclosure Quality Score

The proposed disclosure score is derived through a series of sequential steps. Figure 2.1 shows these steps.

Figure 2.1: Steps for Developing the Disclosure Score

Selecting the Sample
Preparing the Text for Coding
Identifying the Text Unit of Analysis

Constructing Keyword Lists (Customised Dictionaries)

Surveying Prior Lists (Preliminary List)
Reading a sample of OFR Statements and Refining the Preliminary List (Refined List)
Checking the Reliability of the Refined List (Accuracy)
Approving the Final Keyword List

Reliability of the Coding Sachems (Stability and Reproducibility)
Validity Tests

Step One: Sample selection-Pilot study

The first step is the sample selection process. Sample selection procedures are detailed above in the previous section (2.2.1). Of particular interest to this study is the pilot study. Given the nature of the current research, a pilot study is first undertaken to check the reliability of the underlying research methodology. It examines five dissimilar industry sectors to control for industry characteristics. These include oil and gas, consumer goods, consumer services, healthcare and telecommunications. For each industry sector, three firms are randomly selected. The first firm is the market leader[6] over the analysis period. To detect differences – if any – in profit- and loss-making firms, the second firm is randomly selected from the profit-making firms and the third firm is the one with the highest loss figure in the latest available year (2009). Overall, the pilot study embraces 15 firms analysed over three years, therefore, the pilot study contains 45 firm-year observations extracted from FTSE 350 index. After confirming the reliability of the research method, the same methodology (as discussed below) is applied for a large-scale sample in order to gain generalised results. Firms used in the reliability test are not included in the main study.

Step Two: Preparing the Text for Coding

The second step is text preparation for coding. Firstly, annual reports are downloaded in PDF format from the Northcote Database. The QSR N6 software is used to code the narrative statements. QSR N6 codes text files only. Therefore, each annual report is then converted to a text file. Afterwards, the OFR statement is saved in a separate text file.

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[6]Market leadership is based on the market share. For more details on the definition of market leader and calculation procedures, see chapter Four, section 4.7.7.

There is rarely a definitive document entitled OFR in the annual reports. When the researcher scans the annual reports to identify the OFR statements, it was noticed that, most firms produce a best practice statement under many different titles. Only 16.7% of the firms use the term OFR. Notably, 33% of firms display the same contents under the titles "Business Review". Few firms (1.7%) use the title "Chief Executive's Review". The majority of firms (35.6%) include two separate sections called "Operating Review" and "Financial Review". This totals 505 firms, representing 87% of the sample. The remaining 13% produce either an "Operating (Business) Review" only (11%), or a "Financial Review" (2%).

On 2007, The ASB surveyed the UK narratives on a review statement. The review concludes that:

"The companies reviewed are titling their narrative reporting sections using a variety of names, such as Business Review, OFR, or Performance review, as well as the more traditional Chairman's and Chief Executive's reviews (ASB, 2007, Summary of conclusion, para. 1.10).

"In this survey when scoring for compliance against the Reporting Statement (OFR) all narrative sections of the annual report have been reviewed irrespective of the title of the section. Deloitte, in their survey, noted that approximately 75 per cent of companies either prepare a formal OFR or show clear recognition of OFR principles when preparing their annual reports. A similar outcome is shown in this survey with generally high levels of compliance to Reporting Statement requirements even from those companies not preparing a formal OFR" (ASB, 2007, Summary of conclusion, para. 1.11).

"While narrative reporting is still evolving, and whatever name is given to the narrative sections of the annual report, the overall impression is that there appears to be a willingness among many companies to go beyond strict legal requirements and to move towards best practice reporting. The ASB hopes that trend will continue" (ASB, 2007, Summary of conclusion, para. 1.13).

Similarly, the ASB's 2009's survey did not evaluate the narratives based on its content. However, the content of the narrative is analysed and accordingly is classified as mandatory (compliant with the Companies Act 2006) or best practice (OFR).

From the above discussion, it could be concluded that: firstly, the ASB does not differentiate between mandatory or best practice disclosure based on the title of the statement, i.e. Business Review versus OFR. Secondly, since most companies, as documented in the ASB (2007)'s survey are attempting to comply with the best practice OFR even when not formally naming the statement, "OFR" excluding those companies that have a title "Business Review" from the analysis will bias the sample.

Additionally the researcher conducts in-depth analysis of the narratives of some firms in the sample, in order to investigate whether the title of the narrative is associated with its content. The analysis is sub-divided into two parts. The first part (A) related to statements titled "Business Review". The second part (B) related to statements titled "OFR".

A- Below are examples for companies producing "Business Review" while acknowledging that recommendations of the OFR have been followed:

Example 1: Daily Mail and General Trust plc (2009)

This company has a heading "Business Review"; however, it is stated on p. 6 of its annual report that:

"This business review is addressed to the members of the company. Its purpose is to help them assess how the directors have performed in their duty to promote the success of the company. It is framed by the principles and guidelines for OFRs published by the UK Accounting Standards Board in 2006. It outlines the main operational and financial factors underpinning the development, performance and position of the Group as well as those likely to affect performance over the coming year, illustrating this with key performance indicators".

Example 2: Pearson plc (2009)

This company has a heading "Business Review". However, it is stated on p. 2 of its annual report that:

"Our Business Review on pages 8 to 43 has been prepared in accordance with the Directors' report Business Review Requirement of section 417 of the Companies Act 2006. It also incorporates much of the guidance set out in the Accounting Standards Board's Reporting Statement on the OFR".

Example 3: Kesa plc (2008)

This company has a heading "Business Review". However, one of the sub-headings is "Operating business and Financial Review".

Example 4: Ultra plc (2009)

This company does not provide a "Business Review" nor an "OFR", rather, separate sections titled: "performance", "risks" and "corporate social responsibility" are included. However, in the directors' report, under the title Business Review, it is stated on p. 36 that:

"Business review: The company is required to set out in this report a fair review of the business of the Group during the financial year ended 31 December 2009 and of the position of the Group at the end of that financial year, together with a description of the principal risks and uncertainties facing the Group. The information that satisfies these requirements can be found in the following sections: Ultra's performance in 2009 on pages 14 to 24 and Management of risks and uncertainties and corporate responsibility on pages 25 to 31".

In conclusion, in line with the ASB's survey, analysing some narratives shows that there is a clear recognition of the OFR principles in annual reports even when the title given to the statement is "Business Review".

B- Below are examples for companies producing "OFR" statement while acknowledging that requirements for "Companies Act" have been followed:

Example 1: Cook plc (2006)

This company titled two statements: "Operating Review" and "Financial Review". However, in the directors' report under the title "Business Review", it is stated (p.35) that:

*"As required by the Companies Act 1985, the Company must provide a fair review of the development and performance of the Group during 2006, its financial position at the end of the year and likely future developments in the Group's business, together with information on environmental matters and employees and a description of the principal risks and uncertainties facing the Group. The information which satisfies these requirements, to the extent that it is not included in this report, is to be found in the Chief Executive's Review on pages 12 to 13; the **Operating Review** on pages 14 to 27; the **Financial Review** on pages 28 to 32; and the Corporate Social Responsibility section on pages 33 and 34; each of these is incorporated in this report by reference".*

Example 2: National plc (2007)

This company titled a statement of "OFR". It is stated (p.38) that:

"Reviews of the business, likely future developments and details of principal risks and uncertainties as required by Section 234ZZB of the Companies Act 1985 can be found in the following pages and are incorporated into this report by reference: Chairman's Statement on pages 7 to 9, Chief Executive's Review on pages 10 to 13, OFR on pages 14 to 35".

Example 3: Dairy Crest Group plc (2008)

This company titled statements of "Operating" and "Financial Review". However, in the directors' report under the title "Business Review", it is stated (p.43) that:

"The information satisfying the Business Review requirements is set out in this report: the Chairman's statement on page 3; Chief Executive's review on pages 4 to 5; Operating review on pages 6 to 21; and Financial Review on pages 22 to 24, all of which are incorporated into this report by reference".

Example 4: Lonmin plc (2009)

This company titled a statement of "Operating" and "Financial Review". However, in the directors' report under the title "Business Review", it is stated (p.62) that:

"The Companies Act 2006, Section 417 requires that the Directors present a Business Review in this report to inform shareholders of the Company and help them assess how the Directors have performed their duty to promote the success of the Company. The information that fulfils this requirement can be found in the sections set out below and is incorporated by reference into this report: The Chairman's Letter on pages 4 and 5; The Chief Executive's Review (including discussion of the main trends and factors likely to affect the future development, performance and position of the Company's business) on pages 6 to 8; The Operational Review on pages 9 to 15; The Financial Review on pages 18 to 25".

In sum, companies are producing "OFR" statements, while incorporating in this statement Business Review requirements as well as OFR best practice principles. Additionally, Business Review requirements are usually incorporated in many sections of the narrative, not only in the "OFR". Examples include Chairman Statement.

The above discussion reinforces the overlap between OFR and the Business Review discussed in chapter Three, section 3.9. In summary, following the approach adopted by the ASB, all titles of narrative (i.e. OFR, Business Review, Chief Executive's Review, Operating Review, and Financial Review) are included in the analysis to avoid selection bias.

In preparing the text for coding, the researcher manually scans the narrative section of the annual report of each firm to locate and identify those sections to be considered as part of the OFR statements. This is done based on the scope and framework defined by the ASB. To check the reliability of this step, the researcher identifies OFR statements in a separate text file, and then Dr. Hussainey who possesses a comprehensive knowledge in the content analysis field randomly checks a sample of these files prepared by the researcher before coding. No disagreement was identified in this regard.

Step Three: Define the Analysis Text Unit

The two most commonly used analysis text units in prior literature are "word" and "sentence". Using "sentence" as the analysis text unit is generally considered more reliable than "item", "paragraph", or "word" (Hackston and Milne, 1996). Following Muslu et al. (2010), the researcher uses the sentence as a unit of analysis for five information dimensions which needs keywords list (understandability and comparability does not require the construction of keywords list).

Step Four: Constructing Keyword Lists (Customised Dictionaries)

As mentioned earlier, a pilot study for a random sample of 45 firm-year observations is utilised to check the reliability of the content analysis; therefore, the discussion on constructing the keyword lists is based on the pilot study. A keyword list is a customised dictionary, which the computer uses to code the OFR statements.

In order to content analyse and measure some qualitative dimensions of disclosure, several keyword lists are required. Indeed, determining the frequency of occurrence for a specific word criterion via the computer software requires the development of a set of keywords (keyword list) to search for such criterion (the remaining of this sub-section elaborates this process in details).

In this research, five keyword lists are developed to help identify and evaluate five of the quality dimensions, namely; forward-looking, quantitative, bad news, good news, and spread. The readability dimension does not need a keyword list; rather, it is captured via the LIX score. Similarly, since KPIs are analysed manually, it does not require a keyword list either.

Typically, three steps are followed in developing each keywords list. The first step involves reviewing existing keyword lists developed through prior disclosure studies and accordingly, creating a preliminary keyword list. The extant literature is prone to several limitations in this regard. The prime limitation in the available keyword lists, with the exception of Abrahamson and Amir (1996), and Hussainey et al. (2003), is that they do not discuss the procedures undertaken to ensure the reliability of such lists. The reliability of a keyword list means the accuracy of the list in reflecting what it is designed to reflect. Importantly, accuracy is deemed the strongest reliability test available (Krippendorff, 1980). Accuracy is "the degree to which a process functionally conforms to a known standard, or yields what it is designed to yield" (Krippendorff, 1980, p. 131).

Abrahamson and Amir (1996) is an example of the few studies, which assess the reliability of keywords in their keywords lists. Abrahamson and Amir (1996) use "words" as a text unit to measure bad news information. They created a final list of bad news keywords that appeared more than 30 times in a US president's letter, according to the computerised analysis. They then manually read each paragraph in which the bad news keyword was coded to judge the reliability of the keyword. Hussainey et al. (2003) demonstrate that their keywords list was able to capture only 55.2% of the actual forward-looking sentences in the narrative section.

The second limitation of the available keyword lists is that most of them are derived from different information contexts rather than those of financial reporting and, more precisely, voluntarily disclosed information. For example, Abrahamson and Amir's (1996) study is focused on a president's letters, whilst the studies of Henry (2008) and Henry and Leone (2009) look at earnings press releases. Different information contexts probably contain words that are different from those usually used in best practice reporting sections in financial statements. The study of Hussainey and Walker (2008) is an exception, since the authors investigate the narrative section in analyst reports.

Given these limitations, it is evident that prior keyword lists need to be refined. Refinements should meet two objectives: first, there is a need to develop keyword lists that reflect the particular UK OFR context. Second, there is a need to develop keyword lists, which are demonstrably reliable. To meet these objectives, a random selection of 45 firms from five different industries are used as a pilot study to facilitate the reliability tests.

If the current study develops reliable keyword lists relevant to the OFR context, the study will have invoked a novel contribution to the literature by developing multiple reliable keywords lists suitable for the context of OFR disclosures in the UK, which can facilitate future research and avoid limitations associated with manual content analysis such as extensive time and cost, and consequently enable large-scale sample studies to be conducted.

The second step aims to figure out related keywords used in OFR statements other than those utilised in prior studies; this step ends by creating a refined keywords list. This is done through reading a sample of five OFR statements, representing 11% of the pilot study sample. Step three is focused on checking the reliability of each keyword. A reliability test is performed through reading a random sample of 30 sentences for each keyword in the refined list and evaluating it. In those few cases where there was ambiguity in coding the sentences, the researcher consulted the second supervisor to obtain a second independent opinion.

For all keyword lists except the good news list, a word is included in the final keyword list if it appears in its relevant context at least in 90% of the sentences. For good news keywords, the ratio is 80%. The reliability percentage of the keywords is generally lower in the case of good news keywords than it is for forward-looking and bad news keywords. Only three keywords exhibit 100% reliability, denoting a good news sentence, and four keywords range from 90% to 100%. Accordingly, it was decided to decrease the minimum acceptable percentage to 80%.

Thus, for a word to be included in the good news keywords list, this word should at least reflect a good news context in 80% of the sentences in which, such a word appears. On this basis the keywords list contains 23 good news keywords. The following sub-sections elaborate the steps for developing each keywords list.

1- Forward-Looking Keywords List
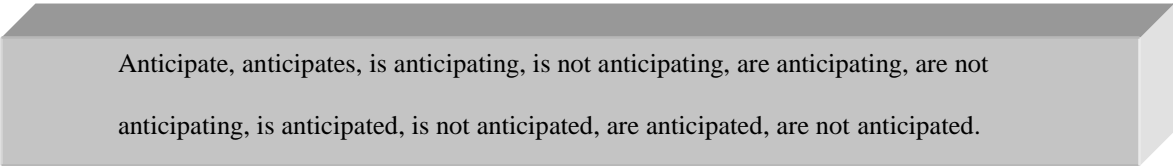
To measure the forward-looking orientation and relevance dimensions, the researcher creates a forward-looking keywords list (the proposed measures for each of the OFR quality dimensions is discussed in details in chapter Three, section 3.7). The first step is to use three keyword lists from prior research as preliminary lists; these include Hussainey et al. (2003), Morgan (2008) and Muslu et al. (2010). Table 2.2 details the preliminary list, which includes 73 words.

Table 2.2: Preliminary Forward-Looking Keywords List

Common keywords among the three lists	Anticipate, Estimate, Expect, Intend, Intention, Will.
Morgen (2008) only	Contemplate, Continue, Projection.
Muslu et al. (2009) only	Aim, Assume, Commit, Following (month; quarter; years; period), Future, Project.
Hussainey et al. (2003) only	Accelerate, Await, Confidence, Confident, Envisage, Eventual, Forthcoming (month; quarter; years; period), Likely, Look-ahead, Look-forward, Novel, Optimistic, Planned, Planning, Prospect, Remain, Renew, Scope for, Scope to, Shall, Shortly, Soon, Subsequent (month; quarter; year; period), Unlikely, Well-placed, Well-positioned.
Common keywords between Morgan (2008) and Muslu et al. (2009)	Plan, Target.
Common keywords between Hussainey et al. (2003) and Morgan (2008)	Outlook, Predict, Should.
Common keywords between Hussainey et al. (2003) and Muslu et al. (2009)	Coming (month; quarter; year; period), Foresee, Hope, Incoming (month; quarter; year; period), Next (month; quarter; year; period), Seek, Upcoming (month; quarter; year; period).

Table constructed by author.

Importantly, following Hussainey (2004) in eliminating verbs that may come in the past context, the use of verbs as keywords is restricted into certain conjugations that always come only in the forward-looking context. This approach improves the accuracy of the content analysis in capturing only forward-looking sentences. These conjugations are illustrated using the verb "anticipate":

> Anticipate, anticipates, is anticipating, is not anticipating, are anticipating, are not anticipating, is anticipated, is not anticipated, are anticipated, are not anticipated.

The use of these conjugations avoids capturing sentences including "anticipate" in the past context, for instance "was anticipated", "were anticipated", "was anticipating", and "were anticipating".

The second step in constructing the forward-looking keywords list involves reading a sample of five OFR statements for potential keywords that were not previously identified in the preliminary list. This step reveals a new keyword that was not previously included in relevant lists – "investment" – which is used in the forward-looking context in OFR statements. Therefore, the refined list consists of 74 keywords.

Additionally, reading a sample of OFR statements highlights an important observation: successive years always denote a forward-looking orientation. Meanwhile, including these years may cause issues when coding sentences including both quantitative and forward-looking keywords. To illustrate, the software may consider the following sentence as quantitative and forward-looking, when in fact it is qualitative and forward-looking:

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> The privatisation of state-owned Connexxion is expected in *2007* (Arriva – OFR, 2006).

To overcome this issue, after constructing the quantitative keywords list explained in the next section, a report of all sentences containing both forward-looking and quantitative keywords is obtained through the software. Afterwards, 100 sentences were randomly selected in order to analyse this problem at a deeper level. Results show the following: firstly, 43% of the sentences are qualitative, yet are considered as quantitative by the software because of the inclusion of the year number. Secondly, 30% (out of 43%) of the sentences contain the next successive year number. Thirdly, firms use the term "next year", or "following year" to indicate an event in the next successive year. The following example illustrates this:

> This total offer of 3,400 items will be rolled out to additional stores over the *next year*
>
> (Sainsburys – OFR, 2008).

Notably, firms usually include another forward-looking keyword in addition to the successive year in numbers (e.g. 2007), as the following example illustrates:

> In *2007*, a further ten leadership teams *are expected* to participate in a well-being program (Unilever –
>
> OFR, 2006).

Fourthly, firms use numerical years to indicate a plan beyond one year, and 13% of such sentences do not include another forward-looking keyword, as seen in the following example:

The contract has been extended to March *2011* (Kcom Group – OFR, 2008).

Fifthly, by observation, the numerical years usually used are those from a five-year time period. Drawing on the above observations, two trade-offs are available. The first involves overlooking the successive years as forward-looking keywords. Such an approach would result in losing 13% of forward-looking sentences, which in turn is likely to affect both the forward-looking and the forward-looking quantitative dimensions.

At the other end, including the four future years as keywords whilst ignoring the year immediately following the report's current year would result in getting 12% noise only in the quantitative dimension.[7] Accordingly, evaluating these two alternatives drives the decision in favour of the second. Therefore, only four successive years will be included as forward-looking keywords. For example, for 2006 OFR statements, 2008, 2009, 2010 and 2011 are included as forward-looking keywords.

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[7]Notably, there is no quantitative dimension in the aggregated score; however, the qualitative dimension is calculated as 1 – the quantitative dimension.

After refining the preliminary forward-looking keywords list based on the modifications highlighted in step number two, the researcher writes a separate command file[8] for each year in the pilot study. The QSR N6 then is run and the 45 OFR statements are coded accordingly. After getting the reports generated by the software, the next step is to test the reliability of each of these keywords individually.

In determining the benchmark for our reliability test, the researcher refers to Hussainey et al.'s (2003) study. The authors include a word as forward-looking if it denotes a forward-looking sentence in at least 67% of the sentences. This benchmark is not chosen on a specific base, but it is a subjective benchmark (Hussainey, 2004). However, they contend that this benchmark allows the computer software to correctly identify only 55% of forward-looking sentences actually included in the annual report narrative sections. This means, 45% of the forward-looking sentences are missed, which presents a crucial limitation. This would significantly affect the accuracy of the results and may question any conclusion derived from the empirical tests.

In an effort to promote and improve the computer's ability to capture a forward-looking sentence, the researcher increases the benchmark for the reliability test to 90% instead of Hussainey et al. (2003)'s of 67%. As detailed later in the validity tests, chapter Three, setting the benchmark at 90% promotes the software ability to successfully identify forward-looking sentences.

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[8] To increase the speed of coding, the researcher writes a command file. The command file is a batch of order to tell the software how to code the text based on the keywords list. The command file is written once, and can then be reprocessed endless times.

When comparing a sample of the manual and computerised content analysis, results show that the proposed keywords list successfully captures 97% of actual forward-looking sentences. This conclusion enforces the validity of the results driven using this modified computerised content analysis. Accordingly, a word is included in the final forward-looking keyword list if at least 90% of the sentences including such keywords discuss future-related events. This approach is known as a meaning-oriented approach (Krippendorff, 1980).

Table 2.3 shows the results of the reliability test of the refined keywords list. Column 1 lists the refined keywords list (74 words). Column 2 indicates the number of sentences in which the word occurs in a forward-looking context. Column 3 indicates the total number of sentences checked. For each word, a random sample of 30 sentences is checked. Those words, which occur less than 50 times in the whole sample are fully checked without sampling. Column 4 shows the occurrence percentage of each word. This is the result of dividing column 2 over column 3.

Looking at Table 2.3 indicates that 26 words always occur in a forward-looking context, i.e. percentage of occurrence –column 4- is 100%. Additionally, nine words usually occur in a forward-looking context. These are words meeting or exceeding the pre-determined benchmark of 90%. The reliability test of the refined keywords list leads to the identification of 35 keywords, which indicate a forward-looking sentence in at least 90% of the sentences in which such keywords appear.

Nonetheless, to further strengthen the reliability of the keywords, words occurring between Hussainey et al. (2003)'s benchmark (67%) and that of the current study (90%) are investigated further. These count for seven words: "remain", "investment", "renew", "should", "hope", "intention" and "prospect". For each keyword, a sample of 30 sentences where such keywords come in a forward-looking context is examined. The extent to which such words are accompanied by other forward-looking keywords from the approved list is calculated. Table 2.3 reports the results of these reliability checks.

Table 2.3: Reliability Test of the Refined Forward-Looking Keywords List

Forward-Looking Keywords	Number of Sentences Detected	Total Number of Sentences	Percentage
[Looks|looking|look][forward|ahead]	1	1	100
Anticipate	30	30	100
Estimate	30	30	100
Intend	30	30	100
Expect	30	30	100
Predict	26	26	100
Seek	30	30	100
Year ahead|years ahead	16	16	100
Will	30	30	100
Aim	30	30	100
Future	30	30	100
Well-positioned|well-placed	4	4	100
Outlook	18	18	100
Could	30	30	100
[(Up)(forth)(in)coming||next|subsequent|following] [month]	30	30	100
Shortly	16	17	94.11
Goal	28	30	93.33
Likely|unlikely	28	30	93.33
Shall	11	12	91.66
Confident	11	12	91.66
Eventual	10	11	90.90
Soon	9	10	90
Potential	27	30	90
Continue	27	30	90
Remain	26	30	86.66
Investment	23	30	76.66
Renew	6	8	75
Should	21	30	70
Hope	11	16	68.75
Intention	30	44	68.18
Prospect	20	30	66.66
Target	20	30	66.66
Envisage	3	5	60
Objective	17	29	58.62
Accelerate	11	19	57.89
May	17	30	56.66
Believe	16	30	53.33
Projection	6	12	50
Scope for|scope to	9	18	50
Assume	7	19	36.84
Effort	11	30	36.66
Current	10	30	33.33
Plan	10	30	33.33
Novel	7	30	23.33
Approximately	7	30	23.33
Project	5	30	16.66
Guidance	4	49	8.16
Contemplate	0	0	0
Await	0	0	0
Convince	0	0	0
Optimistic	0	0	0

Table constructed by author. Column 1 lists the 74 forward-looking keywords included in the refined list. Column 2 shows the number of sentences detected where the keyword comes in the forward-looking context. Column 3 lists the total sentences. Column 4 presents the percentage of sentences where the keyword comes in the forward-looking context. [next\|subsequent\|following] [Month] means next month, subsequent month, and following month.

Table 2.4: Doubtful Forward-Looking Keywords

Doubtful Forward-Looking Keywords	Number of Sentences Having Another Forward-Looking Keyword.	Total Sample	Percentage of Sentences Including Another Forward-Looking Keyword
Intention	18	30	60
Remain	28	30	93.33
Renew	5	6	83.33
Should	27	30	90
Prospects	16	20	80
Hope	5	11	45.45
Investment	28	30	93.3

Table constructed by author. Column 1 presents doubtful forward-looking keywords; words that range between the current study's benchmark (90%) and Hussainey et al. (2003)'s (67%). Column 2 shows the number of sentences where another forward-looking keyword accompanies the doubtful forward-looking keyword. Column 3 shows the total number of sentences included in the sample. Column 4 presents the percentage of other forward-looking keywords; it denotes the percentage of sentences where another forward-looking keyword accompanies the doubtful one.

Table 2.4 shows that, in most cases, all keywords except "hope" are accompanied by other forward-looking keyword(s). The following example clarifies this point:[9]

> It is the ***intention*** to grow ***future*** dividends on an annual base in line with underlying earnings growth, maintaining dividends per share at approximately 60% of adjusted earnings per share (Vodafone – OFR, 2006).

When the researcher firstly examines the presence of the word "Intention" in a forward-looking context, the ratio is 68%, which falls between the current study's benchmark (90%) and Hussainey et al.'s (2003) (67%). Then the probability that this word is accompanied by another forward-looking word that meets the current study's benchmark is examined. It is found that, "intention" is accompanied by another forward-looking word (e.g. "future") in 60% of cases.

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[9] For more examples on the other doubtful keywords see Appendix 3.

Accordingly, it was decided to exclude "intention" from the final list since it is captured through "future". On the other hand, when the researcher follows the same process, the researcher decides to include "hope" in the final forward-looking list because it is not usually accompanied by another forward-looking word (45%). The following example illustrates a case where "hope" comes solely in a forward-looking context.

> To aid this process we appointed a Code Compliance Officer to hear formal complaints, confidentially if requested, and we *hope* that our annual Supplier Viewpoint Survey encourages suppliers to give us more feedback on our relationships (Tesco – OFR, 2006).

The preceding steps lead to a final list of 31 forward-looking keywords, as reported in Table 2.5.

Table 2.5: Final Forward-Looking Keywords List

Forward-Looking Keywords	Percentage
[Looks|looking|look][forward|ahead]	100
Anticipate	100
Estimate	100
Intend	100
Expect	100
Predict	100
Seek	100
Year ahead, years ahead	100
Will	100
Aim	100
Future	100
Well-positioned, well-placed	100
Outlook	100
Could	100
[(Up)(forth)(in)coming||next|supsequent|following] [month]	100
Shortly	94.12
Goal	93.33
Likely, unlikely	93.33
Shall	91.67
Confident	91.67
Eventual	90.91
Hope	68.75

Table constructed by author. Column 1 lists the final forward-looking keyword; column 2 shows the probability of the word to occur in a forward-looking context.
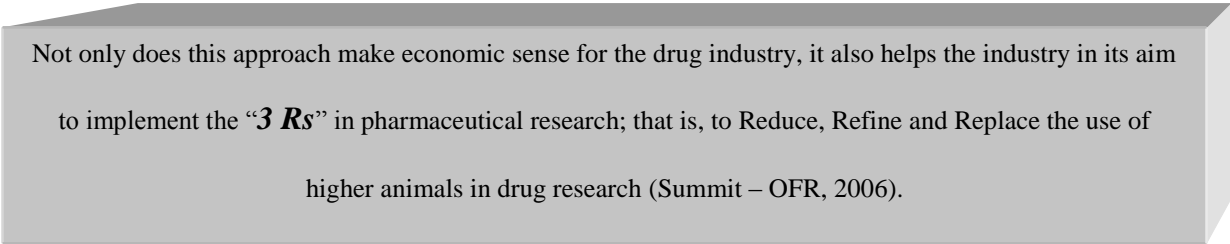
2- Quantitative Keywords List

As discussed earlier, the proportion of forward-looking quantitative information is used to measure the forward-looking orientation of OFR statements. This sub-section elaborates the steps involved in developing the quantitative keywords list. The same steps followed for the forward-looking keywords list are followed for the quantitative list. Hussainey and Walker (2008) and Muslu et al.'s (2010) lists are used as the preliminary list and then, a random sample of five OFR statements is read to add any new keyword(s). Therefore, the preliminary quantitative list consists, firstly, of alphanumeric words in writing ranked from one to twenty and in numerical characters supplemented with at least one of the following symbols/letters: (,), L, p, m, −, x, ,, ., €, £, $, US$, %. Secondly, the list contains units such as hundred(s), million(s), billion(s) and trillion(s). Thirdly, it contains keywords that refer to currencies such as; pence, yen, dollar, euro, and other words like percent and percentage. Fourthly, it contains all alphanumeric words (both in numerical characters and writing) and number-related keywords such as "half", "quarter", "double", "triple", and "quadruple".

As far as the second step is concerned, reading a sample of OFR statements reports a couple of observations and therefore, suggests some amendments to the preliminary keywords list. The first observation shows that tables included in OFR statements usually have headings containing symbols/letters; for example, "%", "£", or "Million(s)", and then figures listed in the table below.

Accordingly, Hussainey and Walker's (2008) suggestion of considering a number as a keyword only if it is supplemented with some symbols/letters will result in miscoding numbers included in tables as qualitative information. Based on this conclusion, any number will be recognised as a quantitative keyword. The second notable issue from reading the OFR statements is the inclusion of some numbers that initially do not represent quantitative information in the context of the OFR, such as year numbers (e.g. 2006). Consider the following example:

> Not only does this approach make economic sense for the drug industry, it also helps the industry in its aim to implement the "*3 Rs*" in pharmaceutical research; that is, to Reduce, Refine and Replace the use of higher animals in drug research (Summit – OFR, 2006).

The issue now is to find a way to avoid capturing these numbers. In relation to year numbers (for example 2006, 2007, 2007, and 2009), there is no way to make the software neglect them. The second problem is how the software will differentiate between a number when it comes in the OFR quantitative context and when the same number does not reflect quantitative information (e.g. a product number). Efforts to overcome these conflicts are exerted while checking the reliability of the refined keywords list.

Step three is focused on checking the reliability of keywords identified through steps one and two. To resolve the conflicts explained in step two, 30 quantitative sentences are randomly selected and read by the researcher. The target is to detect the extent to which this problem affects the reported results. Results show that 24% of the sentences are considered as quantitative, even though they are not, because of the previously discussed unavoidable noise. The trade-off is now between the merits of automating the search process and the relatively limited noise effect (i.e. 24%). The predicted noise will apply evenly to all OFR statements, and thereby cancels the effect of the unavoidable noise on the sample level. The proper decision is in favour of accepting the minor noise in return for the paramount rewards of the computerised quantitative keywords list. Therefore, the final quantitative keywords list consists firstly of numbers (0, 1, 2, 3, 4, 5, 6, 7, 8, and 9) supplemented with at least one of the following symbols/letters: (,), L, p, m, -, x, ,, , £, $, US$. Secondly, number-related keywords (zero, hundred(s), million(s), billion(s), trillion(s), half, quarter, double, doubled, triple, and quadruple). Thirdly, currency (pence, cent, dollar, pound, sterling) percentage(s), %.

In an attempt to measure the extent to which OFR statements are balanced and neutral, two further keyword lists – bad news and good news – must be identified.

3- Bad News Keywords List

Following the same steps discussed previously, a preliminary list of bad news including 92

keywords from prior research is developed (i.e. Abrahamson and Amir, 1996; Henry, 2008;

Henry and Leone, 2009; Hussainey and Walker, 2008; Kothari et al., 2009 and Schleicher

and Walker, 2010). Table 2.6 presents the preliminary keywords list.

Table 2.6: Preliminary Bad News Keywords List

Common Keywords	Difficult, Difficulties, Difficulty, Disappoint, Disappoints, Disappointing, Disappointed, Disappointment(s), Fail(s), Failed, Failing, Failure, Negative(s), Negatively, Unfavourable, Weak, Weakens, Weaken, Weaknesses, Weakening, Weakened, Weaker, Worsen, Worse, Worst, Worsening.
Henry (2008)	Below, Challenge(s), Challenging, Challenged, Decline(s), Declining, Declined, Decrease(s), Decreasing, Decreased, Deteriorate(s), Deteriorating, Deteriorated, Down, Drop(s), Dropping, Dropped, Fall(s), Falling, Fallen, Fell, Hurdle, Hurdles, Less, Least, Low, Lower, Lowest, Obstacle(s), Penalty, Penalties, Risk(s), Risky, Shrink(s), Shrinking, Shrunk, Slump(s), Slumping, Slumped, Smaller, Smallest, Threat(s), Uncertain, Uncertainty, Under, Unsettled.
Hussainey and Walker (2008)	Arrears, Awful, Complex, Dangerous, Deadfall, Debit, Disaster, Discrepancy, Dissatisfied, Frustrated, Hard, Harsh, Inferior, Insufficient, Mistake, Not easy, Not pass, Not success, Pessimistic, Saddened, Scarcity, Shortage, Shortfall, Static, Terrible, Tough, Undesirable, Unhelpful, Unpleasant, Unsuccessful, Upset.
Abrahamson and Amir (1996)	Concern(s), Concerned, Crash, Hazardous, Inability, Inadequate, Missed, Problem(s), Shortage, Sluggish, Suffered, Tough, Troubled, Unable, Unfortunately, Unprofitable, Unrealised.
Common between Abrahamson and Amir (1996) and Hussainey and Walker (2008)	Accident, Adverse, Adversely, Bad, Bankruptcy, Crisis, Deficit(s), Deficits. Delay(s), Delayed, Lack, Lose, Loss, Losses, Loser, Losing, Poor.
Common between Abrahamson and Amir (1996) and Henry (2008)	Depresses, Downturn, Deterioration.

Table constructed by author.

While reading a random sample of five OFR statements, six new keywords are identified as bad news keywords, which were not previously considered in the related literature. These words are "bane", "impair", "dismiss", "contested", "infringement", and "modest". It is worth mentioning that the computer program is written in a way that detects the keyword in whatever form it may take.

Afterwards, the reliability of each keyword is evaluated using a sample of 30 sentences covering different industry sectors for each keyword. Similar to the reliability test conducted in the construction of the forward-looking keywords list, the extent to which the keyword appears in an overall bad news context is identified. Table 2.7 delineates the results of the keywords reliability check. Columns 1 & 5 list the refined keywords list (98 words). Columns 2 & 6 show the number of sentences in which the words occur in a bad news context. Columns 3 & 7 report the total number of sentences checked. For each word, a random sample of 30 sentences is checked.

Those words, which occur less than 50 times in the whole sample, are fully checked without sampling. Columns 4 & 8 show the occurrence percentage of each word. This is the result of dividing column 2/6 over column 3/7. Note that some of the words checked were not found to reflect a bad news context in any of the words checked. In such a situation, columns 2 & 6 shows 'zero' whereas columns 3 & 7 report the total number of sentences checked.

Following the same reasoning explained in deriving the final forward-looking keywords list, a keyword is included as a bad news one if 90% of the sentences associated with this keyword are bad news. Out of the 132 keywords, only 16 keywords always come in a bad news context. Another 11 keywords indicate bad news in a minimum of 90% of the sentences in which these keywords appear.

Table 2.7: Results of Reliability Test of the Refined Bad News Keywords

Bad News Keywords	Number of Sentences Detected	Total Number of Sentences	Percentage	Bad News Keywords	Number of Sentences Detected	Total Number of Sentences	Percentage
Disappoint	3	3	100	Modest	3	30	10
Unfavourable	8	8	100	Down	2	22	9.090
Downturn	14	14	100	Banning	1	12	8.333
Deteriorate	8	8	100	Small	1	30	3.333
Drop	5	5	100	Disaster	0	0	0
Obstacle	4	4	100	Discrepancy	0	0	0
Dissatisfied	1	1	100	Harsh	0	0	0
Insufficient	2	2	100	Inferior	0	0	0
Unsuccessful	3	3	100	Mistake	0	0	0
Inability	14	14	100	Saddened	0	0	0
Unfortunately	1	1	100	Noteasy|Not pass	0	0	0
Lack	7	7	100	Pessimistic	0	0	0
Unknown	5	5	100	Scarcity	0	0	0
Hinder	9	9	100	Shortage	0	0	0
Not enough	1	1	100	Static	0	0	0
Contested	2	2	100	Tough	0	0	0
Risk	29	30	96.666	Unhelpful	0	0	0
Uncertain	29	30	96.666	Unpleasant	0	0	0
No assurance	29	30	96.666	Upset	0	0	0
Delay	29	30	96.666	Crash	0	0	0
Decline	27	28	96.429	Hurdle	0	0	0
Negative	20	21	95.238	Least	0	0	0
Penalty	16	17	94.118	Slump	0	0	0
Difficult	28	30	93.333	Shrink	0	0	0
Fail	28	30	93.333	Shrank	0	0	0
Adverse	28	30	93.333	Unsettled	0	0	0
Loss	27	30	90	Arrears	0	0	0
Deficit	11	15	73.333	Awful	0	0	0
Worse	3	5	60	Danger	0	0	0
Problem	3	5	60	Dead	0	0	0
Weak	11	20	55	Debit	0	0	0
Challenge	12	22	54.545	Disaster	0	0	0
Decrease	16	30	53.333	Deteriorate	0	0	0
Suffer	1	2	50	Inadequate	0	0	0
Crisis	5	12	41.666	Missed	0	0	0
Fell	2	5	40	Slug	0	0	0
Threat	8	20	40	Trouble	0	0	0
Fall	15	42	35.714	Unable	0	0	0
Low	10	30	33.333	Unrealised	0	0	0
Impair	5	15	33.333	Bankruptcy	0	0	0
Poor	6	20	30	Frustrated	0	0	0
Severe	10	35	28.571	Under	0	30	0
Complex	7	27	25.926	Terrible	0	1	0
Shortfall	1	4	25	Undesirable	0	2	0
Accident	1	4	25	Hazardous	0	1	0
Concern	2	12	16.666	Unprofitable	0	1	0
Infringement	5	30	16.666	Bad	0	10	0
Below	1	7	14.285				
Dismiss	4	29	13.793				
Depressed	3	23	13.043				
Hard	1	8	12.5				
Less	1	10	10				

Table constructed by author. Columns 1 and 5 list the 98 bad news keywords included in the refined list. Columns 2 and 6 show the number of sentences detected where the keyword comes in the bad news context. Columns 3 and 7 list the total sentences. Columns 4 and 8 present the percentage of sentences where the keyword occurs in a bad news context.

To fortify the reliability of the keywords, words lying between Hussainey et al. (2003)'s benchmark (67%) and the current research's benchmark (90%) are further investigated. Only one keyword lies in this range: "deficit". A sample of 30 sentences in which "deficit" comes in a bad news context is drawn. The researcher then investigates whether this word is accompanied by other bad news keyword(s) from the approved list. The investigation shows that 18.1% of sentences in which "deficit" represents a bad news context include other bad news keyword(s). Accordingly, the trade-off is between including the word "deficit" in the final bad news keywords list while having an error of 27%, or excluding the word "deficit" and losing, in this case, 45% (73%-18%) of bad news sentences including the word "deficit". The decision is in favour of including "deficit" as a bad news keyword. Table 2.8 presents the 28 keywords constituting the final bad news keywords list.

Table 2.8: Final Bad News Keywords List

Bad News Keywords	Percentage	Bad News Keywords	Percentage
Disappoint	100	Not enough	100
Unfavourable	100	Contested	100
Downturn	100	Risk	96.67
Deteriorate	100	Uncertain	96.67
Drop	100	No assurance	96.67
Obstacle	100	Delay	96.67
Dissatisfied	100	Decline	96.43
Insufficient	100	Negative	95.24
Unsuccessful	100	Penalty	94.13
Inability	100	Difficult	93.33
Unfortunately	100	Fail	93.33
Lack	100	Adverse	93.33
Unknown	100	Loss	90
Hinder	100	Deficit	73.33

Table constructed by author. Columns 1 and 3 list the final bad news keywords, columns 2 and 4 show the percentage, which indicates the probability that the word will come in a bad news context.

The reliability of results may contrast with the common view fundamentally held regarding certain words as bad news keywords. The ultimate example[10] of these words is the word "decrease", which is blindly recognised in the consciousness as negative. However, the decrease could be in cost, and therefore become favourable. Thus, "decrease" is not always a bad news keyword. The reliability check shows that "decrease" denotes a bad news context in only 53% of the sentences. Below is an example where "decrease" comes in a good news context:

Interconnect costs *decreased* by 0.3%, as the termination rate cuts in the current and previous financial years more than offset the effect of higher voice usage (Vodafone – OFR, 2006).

In the OFR context, the word "drop" always represents a bad news and perhaps substitutes "decrease" in terms of its bad news implication. For example:
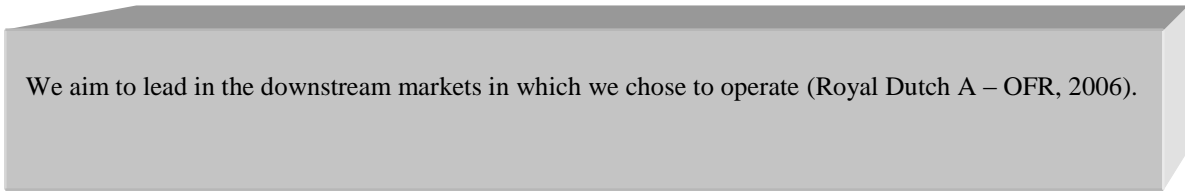
Prices *dropped* sharply in the first couple of months of 2007, but have since recovered, and at the time of writing remain around the 2006 Brent average (Dana – OFR, 2006).

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[10]Other examples of words that are generally perceived as bad news keywords when in fact they are not are presented in Appendix 4.

This conclusion supports the argument that one cannot apply a keyword list designed for use in one specific context to another. Similarly, one cannot use vocabulary lists imbedded in computer software without checking the reliability of such lists with regards to the unique information context being investigated. Most prior studies have this limitation (e.g. Henry, 2008; Kothari et al., 2009; Ernstberger and Grüning, 2010; and Li, 2010a).

4-   Good News Keywords List

The second keywords list necessary to measure the balance and neutrality quality dimension is the good news keywords list. Importantly, a distinction is held between "*positive*" and "*good*" news; such a distinction has not been introduced before in the extant literature (i.e. Henry, 2008; Hussainey and Walker, 2008; Schleicher and Walker, 2010). In the underlying study, positive news is that which merely represents good intentions but does not directly entail any procedures taken by management to achieve or ensure such good intentions. The following example clarifies this point:

We aim to lead in the downstream markets in which we chose to operate (Royal Dutch A – OFR, 2006).

The above example shows that "Royal Dutch A" does not mention any procedures to accomplish its aim. Therefore, it is good news but without established procedures, and will thus be considered as positive news by the interested parties. At the other end, good news reflects either "an actual event", or "procedures taken that are expected to turn into achievements for the firm in the future".

In constructing the good news keywords list, the starting point is identifying keywords identified in the prior literature. Therefore, based on Henry (2008) and Hussainey and Walker (2008), the preliminary list consists of 64 good news keywords, as shown in Table 2.9. Notably, the program is written to allow the capture of all forms a keyword may take (e.g. positive and positively).

Table 2.9: Preliminary Good News Keywords List

Common keywords	Achievement, Better, Strong, Beat, Encouraging, Excellent, Good, Higher, Improved Increase, Opportunity, Positive, Success, Up.
Henry (2008) only	Above, Accomplish, Accomplishes, Accomplishing, Accomplished, Accomplishment, Accomplishments, Best, Certain, Certainty, Definite, Deliver, Delivers, Delivered, Delivering, Enjoy, Enjoys, Enjoying, Enjoyed, Exceed, Exceeds, Exceeded, Exceeding, Expand, Expands, Expanding, Expanded, Expansion, Greater, Greatest, Grow, Grows, Growing, Grew, Grown, Growth, Larger, Largest, Leader, Leading, More, Most, Pleased, Progress, Progressing, Record, Reward, Rewards, Rewarding, Rewarded, Rise, Rises, Rising, Rose, Risen, Solid.
Hussainey and Walker (2008) only	Accelerate, Activist, Adequate, Affirmative, Ahead, Constructive, Desirable, Easy, Enhance, Enough, Favourite, Fine, First class, First-rate, Healthier, Healthy, Helpful, High-quality, In time, New, Novel, On-time, Optimistic, Peak, Satisfactory, Simple, Sufficient, Superior, Win, Winner.

Table constructed by author.

Secondly, nine more words are added to the preliminary list from reading a random sample of five OFR statements. These are: "launch", "gain", "save", "innovate", "develop", "rolled out", "introduce", "steady", and "outstanding".

The third step involves testing for the reliability of each keyword while differentiating between positive and good news information using a random sample of 30 sentences. Additionally, how often a keyword comes in an overall good news context is evaluated. Table 2.10 presents the results of the reliability test. Columns 1 & 5 list the refined keywords list (84 words). Columns 2 & 6 show the number of sentences in which the words occur in a good news context. Columns 3 & 7 report the total number of sentences checked. For each word, a random sample of 30 sentences is checked. Those words, which occur less than 50 times in the whole sample are fully checked without sampling. Columns 4 & 8 show the occurrence percentage of each word. This is the result of dividing column 2/6 over column 3/7. Note that, some of the words checked did not appear to reflect a good news context in any of the words checked. In such a situation, columns 2 & 6 shows 'zero' whereas columns 3 & 7 report the total number of sentences checked.

Through the snapshot glimpse offered by Table 2.10, one can notice that unlike forward-looking and bad news keywords lists, the reliability percentage is generally lower in the case of good news keywords. Only three keywords are 100% in terms of denoting a good news sentence, and four keywords range from 90% to 100%. Accordingly, it was decided to decrease the minimum acceptable percentage to 80%. Therefore, for a word to be included in the good news keywords list, this word should reflect a good news context in at least 80% of the sentences in which the word appears. By doing this, the keywords list contains 23 good news keywords.

To further strengthen the keywords list, words lying between Hussainey et al. (2003)'s benchmark (67%) and the current study's benchmark (80%) are examined again to determine whether these words are usually accompanied by another good news keyword(s). These words are: "good", "win", "better", and "strong". Further examination of these words shows that these words do not usually come with another supporting good news keyword(s). Consequently, the trade-off is between the noise these words may cause (if they are to be considered as keywords) and the sacrifice of some good news sentences (if these words are to be excluded from the keywords list); this suggests that it is prudent to consider these words as good news keywords.

Table 2.10: Results of Reliability Test of the Refined Good News Keywords List

Good News Keyword	Number of Sentences Detected	Total Number of Sentences	Percentage	Good News Keyword	Number of Sentences Detected	Total Number of Sentences	Percentage
Rolled out	2	2	100	Develop	13	30	43.33
Steady	16	16	100	Enjoy	10	24	41.66
Introduce	30	30	100	Helpful	12	30	40
Gain	28	30	93.33	Great	12	30	40
Pleased	27	30	90	Innovate	12	30	40
Launch	27	30	90	Easy	10	30	33.33
Save	27	30	90	Accomplish	2	6	33.33
Improve	26	30	86.66	Best	10	30	33.33
Ahead	25	30	83.33	Enough	5	16	31.25
Grow	25	30	83.33	Health	9	30	30
Rise	25	30	83.33	Deliver	8	30	26.66
Opportunity	25	30	83.33	High-quality	8	30	26.66
Adequate	25	30	83.33	Solid	4	16	25
Record	24	30	80	Beat	1	4	25
Expand	24	30	80	Reward	7	30	23.33
Up	24	30	80	Superior	6	28	21.42
Good	23	30	76.66	High	6	30	20
Win	23	30	76.66	Outstanding	3	16	18.75
Better	22	30	73.33	Sufficient	3	30	10
Strong	21	30	70	More/most	2	25	8
Progress	19	30	63.33	Certain	1	30	3.33
Large	18	30	60	Helpful	1	30	3.33
Positive	18	30	60	Above	1	30	3.33
Success	17	30	56.66	Favourite	0	30	0
Lead	17	30	56.66	Fine	0	4	0
Accelerate	17	30	56.66	Definite	0	30	0
Simple	17	30	56.66	First class/rate	0	30	0
Peak	15	27	55.55	Activist	0	30	0
Exceed	16	30	53.33	Affirmative	0	30	0
Achieve	16	30	53.33	Desirable	0	7	0
Construct	16	30	53.33	On/in time	0	1	0
Increase	14	30	46.66	Optimistic	0	1	0
Novel	14	30	46.66				

Table constructed by author. Columns 1 and 5 list the 73 good news keywords included in the refined list. Columns 2 and 6 show number of sentences detected where the keyword comes in the bad news context. Columns 3 and 7 list the total sentences. Columns 4 and 8 present the percentage of sentences where the keyword comes in a bad news context.

"Strong" is often accompanied by another keyword(s). The associated error of "strong" is 30%. Meanwhile, in 73.3% of sentences where "strong" appears, there is another keyword(s). Thus, these sentences will still be coded as good news sentences if we drop "strong" from the keywords list, and avoid the 30% error. Table 2.11 lists the detailed percentages of each keyword.

Table 2.11: Doubtful Good News Keywords List

Doubtful Good News	Number of Sentences Containing Another Good News Keyword	Total Sample	Number of Sentences Containing Another Good News keyword
Win	7	30	23.33
Strong	22	30	73.33
Good	16	30	53.33
Better	8	30	26.66

Table constructed by author. Column 1 presents doubtful good news keywords; words that range between the current study's benchmark (80%) and Hussainey et al. (2003)'s (67%). Column 2 shows the number of sentences where another good news keyword accompanies the doubtful keyword. Column 3 shows the total number of sentences included in the sample. Column 4 presents the percentage of other good news keywords, and denotes the percentage of sentences where another keyword accompanies the doubtful one.

In conclusion, this process yields a final list of 19 good news keywords, as presented in Table 2.12.

Table 2.12: Final Good News Keywords List

Keyword	Percentage	Keyword	Percentage
Rolled out	100	**Rise**	83.33
Steady	100	**Opportunity**	83.333
Introduce	100	**Adequate**	83.333
Gain	93.33	**Record**	80
Pleased	90	**Expand**	80
Launch	90	**Up**	80
Save	90	**Good**	76.67
Improve	86.667	**Win**	76.67
Ahead	83.33	**Better**	73.33
Grow	83.333		

Table constructed by author. Columns 1 and 3 list the final good news keywords; columns 2 and 4 show the percentage probability of the word to come in a good news context.

Some keywords typically might indicate good news but not in the OFR context.[11] The word "Success" is a clear example. "Success" is a word that implies achievement, but when it comes to OFR review, reliability results show that this is only 56% true. Consider the following example:

> ***Successful*** companies will be those that enhance their productivity in the discovery and development of new and differentiated medicines designed to meet the growing demand (Astrazeneca – OFR, 2006).

In this example, "success" comes in a neutral context. The next example presents "success" when it comes in a bad news context.

> "The board has identified the following factors as principles potential risks to the ***successful*** operation of the business. "Sainsbury-OFR 2007

5- Scope Keywords List

To test for comprehensiveness, the main concern is to investigate whether firms disclose information about each of the topics/sub-topics suggested by the OFR framework (see Table 2.13) totalling 15 items, regardless of the extent of each a topic is disclosed. In this subsection, a keywords list that facilitates the process of evaluating firms as to the scope of topics disclosed is developed.

In view of the fact that there is no prior developed scope keywords list for OFR statements, the first step is to identify the topics suggested by The Accounting Standards Board (ASB). Secondly, a sample of 15 OFR statements, representing the 15 different firms included in the

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[11] See examples of other keywords in Appendix 5.

pilot study, is carefully read to identify how the main topics are disclosed in OFR statements and identify the proper keyword lists. Thirdly, as a reliability test, a sample of coded OFR statements is drawn to ascertain that these proposed keywords capture the topics and subtopics detailed in Table 2.13. Following these steps, it is evident that the scope keywords list is 100% able to address what it should. Table 2.13 lists the topics and sub-topics along with the keywords used to code them. Reliability and validity tests are elaborated and thoroughly discussed in chapter Four, sections 4.2, 4.3 respectively.

Table 2.13: Scope Keywords List

Topic	Sub-Topic(s)	OFR Paragraph Number	Keywords
Nature of the Business	Market (industry). Competitive environment. Regulatory environment. Objectives. Strategies.	27(a)	Market, industry, market place. Competitor, competitors. Rules, laws, regulation(s), regulatory. Objective(s), goal(s). Strategy, strategies.
Development of Performance	Present and future.	27(b)	Financial performance, Financial review, key performance trend(s), results.
Resources, Risks, Relationships	Resources. Commercial and financial risks. Customers, suppliers, strategic alliances, creditors.	27(c)	Resources, tangible resources, intangible resources, employees. Commercial risk(s). Financial risk, currency risk, interest rate risk, commodity risk, credit risk. Relationship(s), customers, suppliers, alliances, creditors.
Position of the Business	Disclosure about financial instruments. Accounting policies used in the financial statements. Capital structure (balance between equity and debt, capital instruments used, currency, regulatory capital, interest rate structure, funding plans, and reasons for such capital structure). Treasury policies (effect of cost of interest on profit, and impact of interest rate changes). Cash flows (in and out), with appropriate segmental analysis. Liquidity of the entity.	27(d)	Financial instrument derivatives. Accounting policy, accounting policies. Capital structure, interest rate structure, funding plans. Treasury policy, treasury polices, treasury. Cash flow. Liquidity, leverage, debt, borrowing(s).

Table constructed by author using information from OFR reporting statement (2006). The table lists the OFR disclosure framework used to measure the comprehensiveness quality dimension. Columns 1 and 2 display the main and sub-elements, column 3 shows the keywords used to computerise the content analysis.

2.2.3   Study Two: The association between DQ and CG mechanisms

The second strand of the current research examines the association between disclosure quality and corporate governance mechanisms. It identifies those governance mechanisms that are efficient in improving disclosure quality, and those that need further improvement and consideration. The second study (chapters Five and Six) successfully meets the fourth research objective and provides an answer to the related research question number three, on what are the corporate governance and firm characteristics that influence disclosure quality in the UK?

Chapter Five sets out 14 research hypotheses to answer the third research question. These hypotheses are concerned with the relationship between 14 corporate governance mechanisms and disclosure quality. Chapter Six tests these hypotheses and concludes with those corporate governance mechanisms and firm characteristics that influence disclosure quality in the UK. The reaming part of this sub-section lists the research hypotheses and drafts the research method employed to test these hypotheses.

2.2.3.1 Regression Model:

In testing the above listed hypotheses, the second study uses an ordinary least square regression model (OLS) to investigate the relationship between disclosure quality and 14 corporate governance mechanisms. It is important to bring into discussion here the justification for using OLS model.

OLS model is considered optimal in examining the associations between DQ and CG. The reasoning for using OLS is backed by several justifications.

Firstly, this is in line with the majority[12] of studies examining the association between disclosure quality and corporate governance mechanisms. Secondly, disclosure quality is not considered as endogenous variable in similar studies (e.g. Ho and Wong, 2001; Eng and Mak, 2003; Celik et al., 2006; Beak et al., 2009; and Jiang et al., 2010). To check whether there are omitted variables in the model, the Ramsey test is used. This is a test for the omitted variables in the model (Goldstein, 1992). Makhija and Patton (2004) also utilise the Ramsey test to check the omitted variables in their study where they investigate the association between ownership structure and disclosure. Conducting The Ramsey (RESET) test using powers of the fitted values of quality score shows a significant F value of 1.27 with a probability of 0.284. Accordingly, it could be argued that the threat of omitted variables in the model is minimised. Consequently, the threat of endogeneity is minimised.[13] Thirdly, OLS model requirements (linearity assumptions) and, more interestingly, normality, are perfectly met in the present study (see Appendix 7). Fourthly, OLS permits investigation into the cross sectional effect of the variables of interest. Given these reasons, there is no valid justification to waive from the OLS model or to favour other models over OLS.

The relationship between different corporate governance mechanisms and disclosure quality is predicted through an OLS regression model as illustrated in section 6.3. Descriptive statistics is presented in Table 6.2 and discussed in Section 6.3.1. Univariate analysis is covered in Section 6.3.2. The main analysis is discussed in Section 6.3.3. Finally, Robustness tests are elaborated in Section 6.3.4.

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[12] Refer to Appendix 6, only one study (i.e. Hussainey and Al-Najjar, 2011) uses fixed effect model to examine the association between disclosure quality and corporate governance mechanisms. However, conducting Haussman test suggests that fixed effect model does not offer the best estimates since Chi square is very small and insignificant. Some other studies use two-stage least squares (2SLS). However, such instrumental variables (IV) method is fraught with some limitations as explained later in chapter Eight.

[13] The endogeneity problem is discussed in details in the following section.

2.2.4   Study Three: The Joint effect of DQ and CG Mechanisms on VF

The third strand of the underlying research answers the forth research question of whether firm value is jointly affected by disclosure quality and certain corporate governance mechanisms in the UK large firms. This research question is linked to the fifth research objective, which is addressed in the third study (chapters Seven and Eight). In chapter Seven, 15 research hypotheses are theoretically developed to test the effect of disclosure quality, corporate governance mechanisms, and the joint effect of both on firm value in the UK. Chapter Eight tests these hypotheses and concludes with answering the fourth research question.

2.2.4.1 Endogeneity and the Use of Fixed effect Model

In general, firm value has always been considered as an endogenous variable in the literature (e.g. Brown and Caylor, 2006; and Benson and Davidson, 2010). The following sub-section describes the nature of endogeneity and approaches used to mitigate it.

An endogenous variable is correlated with the error term in the model; in contrast, an exogenous variable is one that is not correlated with the error term in the model (Larcker and Rusticus, 2010). Moreover, endogeneity has always been a concern in studies linking corporate governance, disclosure quality and firm value (Ammann et al., 2011). Core (2001, p. 442) demonstrates this observation: "corporate finance theory predicts that shareholders endogenously optimize disclosure policy, corporate governance, and management incentives in order to maximize firm value".

Endogeneity problems in management and financial accounting have only recently been posited as an important issue affecting results' validity (Chenhall and Moers, 2007). Its prominence stems from it influences on the proper model estimation method (Lent, 2007). In the main, endogeneity can be expressed differently depending on its causes. In other words, it is defined through its causes. In general, there are two main causes lead to endogeneity problems, namely; omitted variables, simultaneity, and equilibrium conditions. When endogeneity is caused by omitted variables, this means the explained (dependent) and explanatory (independent) variables have systematic relationships with other variable(s) that are not included in the model (i.e. omitted variable(s)) (Chenhall and Moers, 2007). In such a case, the explained variable is mistakenly considered as exogenous while in fact is it an endogenous variable. Most extant literature of firm value suffers from the omitted variable problem. It considers corporate governance mechanisms in isolation from disclosure or considers disclosure in isolation from corporate governance.

The second cause of endogeneity is simultaneity. Simultaneity occurs when the causal relationship between an explained and explanatory variable runs both ways. In this case, "one or more of the explanatory variables are jointly determined with the explained variable" (Chenhall and Moers, 2007, p. 182). Another definition posits, "simultaneity occurs when both the dependent and the independent variable are determined together by another variable" (Lopes and de Alencar, 2010, p. 461).

In the present study, theoretically, corporate governance could affect firm value, and firm value can also cause the firm to change its control devices. However, the current study employs the fixed effect model to mitigate the simultaneity problem. The fixed effect model controls for unobserved firm-specific heterogeneity and, thus, any firm fixed effects are cancelled (McConnell et al., 2008). Consequently, any relation that holds thereafter cannot be attributed to an endogeneity issue (Brown et al., 2011). Additionally, the current study uses industry-median adjusted Tobin's Q to reflect firm value. Using the industry-median adjusted Tobin's Q, rules out the potential for simultaneity (Brown and Caylor, 2006).

The literature also addressees the sever implications of endogeneity, for example, Larcker et al. (2007, p. 984) point out that "this econometric problem will produce inconsistent estimates for both the coefficients and standard errors". Additionally, Chenhall and Moers (2007, p. 174) argue that:

"In essence, endogeneity leads to biased and inconsistent estimators within equations used to test theoretical propositions, which make inferences problematic and consequently reduces the confidence we have in drawing conclusions from research".

Moreover, "results can only be interpreted as partial correlations without identification of causality" (Beiner et al., 2006). Up to this point of the discussion, after defining possible endogeneity forms (i.e. causes) and acknowledging underlying caveats, it is important to find out how this problem is resolved in the extant literature.

Researchers tackle the endogeneity problem in different ways. Chenhall and Moers (2007) argue that if endogeneity is backed by an omitted variable which cannot be included in the model for any reason (e.g. data availability problems or because this variable is hardly observable), there are two ways to resolve this situation. The first is to include a proxy for the omitted variable to substitute the original one in the model. This approach is referred to as a "plug-in solution to the omitted variables problem" (Chenhall and Moers, 2007, p. 187). However, one problem with this practice is how accurately the proxy represents the omitted variable. The second way of dealing with the omitted variable is to use the Instrumental Variables (IV) method (Chenhall and Moers, 2007; and Larcker and Rusticus, 2010). Arguably, "instrumental variables are variables that are correlated with the explanatory variable and uncorrelated with the omitted variables (structural error term)" (Chenhall and Moers, 2007, p. 187).

Concerning simultaneity, one view holds that the theory should guide the model structure as to the direction of the causal relationship (Lent, 2007). In corporate governance literature, the relationship is found to be from corporate governance to firm value and not vice versa (e.g. Beiner et al., 2006). In general, if simultaneity is likely to be present, IV methods are used to overcome such a problem using a multiple equation model (i.e. multiple equations instead of only one equation used in case of omitted variables). In a typical application of the IV method, a set of exogenous variables are selected firstly, then the researcher uses two-stage least squares (2SLS) or three-stage least squares (3SLS) depending on how many instruments are required in the analysis (Chenhall and Moers, 2007; and Larcker and Rusticus, 2010).

While a vast number of studies in the accounting research context use the IV method (e.g. 2SLS and 3SLS), yet, such method is fraught with severe limitations that have been overlooked in the extant empirical literature. The ultimate crucial limitation is inaccurate identification of IV due to the notion that it is "impossible" or a kind of "magic" to find variables that fulfil the definition of an instrumental variable (Larcker et al., 2007; Chenhall and Moers, 2007; and Lent 2007). Nonetheless, most researchers (about 80%) fail to justify their choice of IV and why they believe such variables exhibit a lower correlation with the structural equation error term than the endogenous regressor variable (Larcker and Rusticus, 2010).

In conclusion, the IV method does not solve endogeneity in corporate governance research (Brown et al., 2011). Surprisingly, in their review article, Larcker and Rusticus (2010, p. 187) document that:

> *"When the instrument is only weakly correlated with the regressor, IV methods can produce highly biased estimates when the instrumental variable is even slightly endogenous. In those cases, it is likely that IV estimates are more biased and more likely to provide the wrong statistical inference than simple OLS estimates that make no correction for endogeneity".*

Lent (2007, p. 198) goes a far step further in dealing with endogeneity, adding "I argue that researchers should be courageous enough to set aside endogeneity concerns when their research question is important".

Based on the above discussion, it is not easily justifiable to concede OLS to SLS regression and be confident that endogeneity has been resolved unless IV perfectly meets the aforementioned requirements, which are argued to be a formidable obstacle in practice.

With IV methods being deeply contested, a lot of research is being done in the corporate governance field –more specifically in market value relationships– without mitigating endogeneity and just considering it as a research limitation (e.g. Klapper and Love, 2004; Larcker et al., 2007; and Hassan et al., 2009). However, recently, few studies have adopted an alternative method to overcome possible endogeneity problems. Primarily, a fixed-effect panel data technique is being used as a substitute to the IV method due to the extensive criticism of the latter.

The introduction of panel data techniques to mitigate endogeneity dates back to Himmelberg et al. (1999), yet, it had not gained as wide an application as the Instrumental Variables method. One likely reason for this is availability of data which meets the requirements of panel data techniques (Lent, 2007). This was the exact argument used by Klapper and Love (2004) in justifying their results' subjectivity to endogeneity problems.

One of the few studies using the fixed-effect panel data analysis is Himmelberg et al. (1999), which used fixed-effect to test the relationship between managerial ownership and firm value, and find that the fixed effect technique provides consistent estimates of the residual in the endogenous variable (market value). Another pioneering study is Palia (2001), which examined the link between various corporate governance mechanisms and firm value and concludes that among three estimation methods, namely; ordinary least square (OLS), random effect regression, and fixed effect regression, fixed-effect model is the optimal estimation methodology in overcoming endogeneity.

Bebchuk et al.'s (2009) study employs a fixed-effect technique in testing the association between corporate governance and firm value. Similarly, Cheung et al. (2010) use a panel regression model with fixed effect to address endogeneity in the association between firm value and disclosure level. Lopes and de Alencar (2010) also use the fixed-effect technique to resolve the endogeneity problem apparent in the association between disclosure and cost of capital.

Henry (2010) employs the fixed effect model to mitigate endogeneity in the association between firm value. Similarly, Bozec et al. (2010) argue that fixed effect technique is efficient in handling endogeneity associated with governance and firm value. Most recently, Braga-Alves and Shastri (2011) tackle endogeneity between corporate governance, firm value, and firm performance through a fixed-effect model.

The fixed-effect model cancels out the impact of time-invariant omitted variables (Bebchuk et al., 2009). It also controls for company-invariants (such as macroeconomic movements) that influence firm value (O'Sullivan and Diacon, 2003). Additionally, it controls for unobserved firm-specific heterogeneity by considering changes in each of governance mechanisms and disclosure quality as well as changes in firm value rather than levels. Therefore, any firm fixed effect is canceled (McConnell et al., 2008). Consequently, any relation that holds thereafter cannot be attributed to an endogeneity issue (Brown et al., 2011). The only limitation of this approach is its reliance on within-firm variation solely to derive results (Brown et al., 2011), yet it still gives robust regression estimates (Henry, 2008). Drawing on the above discussion, the fixed-effect technique is the least contentious and most appropriate method for mitigating the endogeneity problems.

In conclusion, the extant literature points out that fixed-effect panel data analysis is the best approach available to mitigate endogeneity. Arguably, if data is not available to run fixed-effect, endogeneity should be "a low-ranking priority" (Lent, 2007), and researchers should focus on more apparent research problems such as measurement of variables, because using improper remedies such as IV will be worse than accepting the inherent endogeneity (Larcker and Rusticus, 2010). Indeed, since fixed-effect panel data requirements are available for the current study. Therefore, following the recent research trend of studying endogeneity with regards to the effect of corporate governance on firm value (e.g. Brown et al., 2011), the current study uses the fixed-effect panel data technique to overcome endogeneity-associated problems.

Up until this point, the researcher has been particularly concerned to identify the endogeneity-associated problems and ways the extant literature suggesting in addressing such concerns. Of special interest is the use of fixed effect regression model. To be more confident about the use of panel data (more specifically fixed effect) instead of OLS, following Palia (2001), the current study compares three estimation methods, OLS, random effect, and fixed effect estimations.

In doing so, a Lagrangian Multiplier test is conducted which compares OLS estimations versus random effect estimations. Results recommend the use of random effect over OLS, this is clear with $Chi^2 = 85.27$, at the 1% significance level. Then, Hausman test of fixed versus random effects estimations is conducted. To decide between fixed or random effects a Hausman test is run where the null hypothesis is that the preferred model is random effects vs. the alternative the fixed effects. It basically tests whether the unique errors (ui) are correlated with the regressors, the null hypothesis is they are not.

Results of Hausman tests provide evidence to support the use of fixed effect over random effect technique. Chi^2 = 617.49, at the 1% significance level. Accordingly, and in line with Palia (2001), the fixed effect is the optimal estimation method to mitigate endogeneity.

In addition to using the fixed effect model, the current study also tackles endogeneity in general, and particularly the omitted variables problem, through three more approaches. First, following Beiner et al. (2006), the study considers an extensive set of corporate governance mechanisms. Second, following Cheung et al. (2010) and Lopes and de Alencar (2010), the study examines an extensive set of control variables to minimise the omitted-variables bias. Third, the study considers the joint effect of disclosure quality and corporate governance to mitigate omitted-variables bias.

2.2.4.2 Examining the Joint Effect of DQ and CG

Although many researchers examine the association between corporate governance and firm value, few studies examine the link between disclosure quality, corporate governance and firm value. To the best of the researcher's knowledge, the underlying study is the first to investigate the joint effect of disclosure quality and corporate governance on firm value. The trend of examining the joint effect of two variables on a third one is new in the accounting literature (e.g. Ernstberger and Grüning, 2013; and Cormier and Magnan, 2014).

One of the ways to improve the overall firm governance is to improve the transparency of disclosure (Nowland, 2008). Meanwhile, disclosure and transparency is one of the main principles of the Organisation for Economic Co-operation and Development (OECD) principles of corporate governance, which is internationally recognised as an effective framework for corporate governance (2004).

In addition, the corporate governance ranking in Russia developed by the Brunswick Warburg investment bank assigns the biggest weight to the disclosure and transparency aspect (Rutherford and Costello, 1999). Nonetheless, greater transparency prompts corporate governance. Furthermore, transparency is hoped to reduce the diversion of cash flow to the management and the controlling shareholders (Coffee, 1999). Additionally, corporate governance may improve operational transparency by improving the ability of shareholders to discern the quality of management and the true value of a firm (Chung et al., 2010). Beekes and Brown (2006) report a positive relationship between better-governed firms and disclosure[14] informativeness. They posit that better corporate governance structure leads to more informative disclosure, and definitely influences market efficiency. Their results suggest that if the quality of corporate governance affects the quality of disclosure, then corporate governance will be valued more highly by the market. In this vein, Beekes and Brown (2006) implicitly refer to the importance of considering disclosure quality when evaluating the influential nature of corporate governance with regards to the market valuation.

Surprisingly, although the link between disclosure and corporate governance is well established in the literature, and the effect of disclosure quality on firm value is paramount at least, in the theory, very few studies have examined some proxies for disclosure quality in conjunction with corporate governance when assigning the effect of corporate governance on firm value (Cheung et al., 2010; Shue et al., 2010; Al-Najjar et al., 2011; and Nekhili et al., 2010).

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[14] The disclosure here is price-sensitive announcements.

Generally, those studies have many caveats, including the use of proxies for quality disclosure (i.e. Cheung et al., 2010), the restriction to only one type of disclosure (i.e. Shue et al., 2010; Al-Najjar et al. 2011; and Nekhili et al. 2010), the use of a small set of governance mechanisms (Chueng et al., 2010), or utilising a composite measure of governance (Al-Najjar et al., 2011). In conclusion, the empirical evidence on the joint effect of disclosure and corporate governance structure on firm value is limited and suffers from many limitations.

Generally, Larcker et al. (2007) attribute the mixed results to a modest level of reliability and validity in examining governance measures (few individual mechanisms or composite measure). In line with this reasoning, the mixed results regarding the link between disclosure quality and firm value are likely to hold inaccurate quality measurements.

The third research objective; determining the extent to which disclosure quality and corporate governance mechanisms are substitutes or complements is achieved through model number 3. Following Henry (2008), and Ernstberger and Grüning (2013), the current study generally proposes three different scenarios. First, if the coefficient of the interaction is insignificant, this indicates that the effect of disclosure quality on firm value does not vary with the existence of a certain corporate governance mechanism. This means that, disclosure and corporate governance are different ways of conveying the same information, then firms having higher disclosure quality but lower governance quality should exhibit roughly the same value as firms with higher disclosure quality and governance quality. Similarly, firms that have higher governance quality should have roughly the same value irrespective of their level of disclosure quality.

Second, a positive significant interaction coefficient indicates a complementary effect between disclosure quality and a certain corporate governance mechanism. Stated differently, disclosure quality and governance quality produces related information that is 'reinforcing' (i.e. if there is a multi-applicative effect), then firm value would be the greatest for firms that have high disclosure quality and governance quality.

Third, a negative significant interaction coefficient indicates a substitutive effect between disclosure quality and a certain corporate governance mechanism. If disclosure quality and governance quality convey related information, but some of the information is common to both, i.e. 'partially additive', then firm value for firms that have high levels of disclosure quality and governance quality should be higher than firm value when firms have high levels of disclosure quality but with low governance quality or firm value. In this case, there is a partial substitution effect and the interaction term should be negative and statistically significant. To sum up, results of the present study determines which of these three possibilities is present in the data by allowing for an interactive effect in our model.

In sum, drawing on the previous discussion, the current study regresses industry-median adjusted Tobin's Q on disclosure quality, 14 corporate governance mechanisms, and the interaction between disclosure quality and each of the corporate governance mechanisms to investigate the joint effect, and lastly control variables using the following fixed-effect model (for i firms over t years). The model is discussed thoroughly in section 8.3.2.3. The detailed tests and results are reported in chapter Eight. Particularly, univariate analysis is presented section 8.3.1, Multivariate analysis is discussed in section 8.3.2, and the robustness tests in section 8.3.3.

2.3   Summary and Conclusion

This chapter provided a coherent discussion about the research methodology undertaken in the current research. It started by elaborating different research philosophy, with an in depth discussion of the logical positivism, its historical emergence, assumptions, merits and, limitations. Second, the chapter discussed the relevant theories in place with a focus on the agency theory, which formulates the assumptions and hypotheses of the current research. Third, the chapter presented different research methods employed to reach out to scientific answers for the pre-stated research questions and meets the research objectives in statistically proper procedures, which allows for results generalisation.

The research method sub-section is sub-divided into three main sections, each of which is devoted to discuss the featured methodological issues of each of the three studies under examinations in the current research. The first study covered in chapters Three and Four uses mainly the content analysis approach. The second study covered through chapters Five and Six employs mainly an OLS regression model. Lastly, the third study utilizes a fixed effect regression model. The following figure 2.2 summarises the research methodology applied in the underlying research.

Figure 2.2 Research Methodology

Research Philosophy-Logical Positivism

Theoretical Framework – Agency Theory

Research Design- Quantitative Techniques

Research Methods

Study One: Developing DQ Score	**Study Two: Association between DQ & CG**	**Study Three: Firm value, DQ, CG**
Content Analysis Approach **Pilot Study-Main Study**	**Ordinary Least Square Regression (OLS)**	**Panel Data: Fixed Effect Model**
Sample Selection		**Model 1 Independent Variables: DQ and Controls**
Preparing the Text for Coding		**Model 2 Independent Variables: CG and Controls**
Identifying the Text Unit of Analysis		
Constructing Keyword Lists		**Model 3: DQ, CG, Interaction Terms and Controls**
Reliability and Validity Tests		

Research Question No. 1	**Research Questions No. 2, 3**	**Research Question No. 4**
Research Objective No. 1 & 2	**Research Objective No. 3 & 4**	**Research Objective No. 5**

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Chapter Three : Disclosure Quality: Definitions, Prior Measures and the Proposed Framework

3.1 Overview

The separation between ownership and management creates agency problems, particularly information asymmetry problems where market participants believe that managers tend to behave to their own benefit (Jensen and Meckling, 1976). Accordingly, any mechanism intended to narrow this information asymmetry gap is profound to the success of the financial market (Ronen and Yaari, 2002). One of the most effective mechanisms in bridging such a gap is keeping investors informed through disclosure. This chapter responds to continuing calls for a sound definition of disclosure quality and proposes a valid disclosure measure.

The chapter starts with section 3.2 by explaining the importance of disclosure quality and more specifically, the importance of high quality disclosure. Then, the chapter proceeds and introduces disclosure concepts in general and the concept of disclosure quality in particular in section 3.3. Additionally, section 3.4 works to build a rich understanding of difficulties encountered in measuring disclosure quality and various proxies used. It also provides a synthesised review of prior attempts to measure disclosure quality in section 3.5. An overview of the framework used as the base for developing the proposed disclosure quality, the OFR, is introduced in section 3.6. The proposed framework for measuring disclosure quality is discussed in section 3.7. The details for the calculations of the aggregated disclosure score is discussed in section 3.8. The overlap and the differences between the Business Review and the OFR are then elaborated in section 3.9. Finally, section 3.10 summarises and concludes.

Disclosure, in general, is critical for the functioning of an efficient capital market (Healy and Palepu, 2001). It is defined as "any deliberate release of financial information, whether

numerical or qualitative, required or best practice, or via formal or informal channels" (Gibbins et al., 1990, p. 122). Arguably, while this definition is explanatory, it abstracts disclosure into the provision of financial information only. However, firms usually disclose various types of non-financial information as well, including strategic information about the firm –for instance, new market entrance plans, intentions to expand into new product lines, and so on. In this vein, other researchers (e.g. Armitage and Marston, 2008) recognise a broader scope of information when defining disclosure, arguing that disclosure involves the provision of information of all types by a firm, both to the public in general and to restricted groups of information users in particular (e.g. analysts and creditors).

From a legal point of view, there are two types of disclosure, namely mandatory and voluntary/best practice. Mandatory disclosure is the type of information firms are legally required to provide through regulated annual reports and accounts including the financial statements, footnotes and other regulatory filings (Healy and Palepu, 2001). Mandatory disclosure is determined either by company status as set out by law, for example, company law in the UK, or enforcement by professional regulatory bodies in the form of standards such as Generally Accepted Accounting Standards (GAAP) required by the Financial Accounting Standards Board (FASB) in the US. The third channel of mandatory disclosure is that which makes disclosure necessary for listing on various stock exchanges (Marston and Shrives, 1991), for instance, the Securities Exchange Act of 1933 and Securities Exchange Act of 1934.

The primary motive for such regulations is to manage and judge the management's stewardship function on behalf of and for the interest of shareholders (Burton, 1981; Kam, 1986). Another motive is to ensure the provision of sufficient information to keep shareholders informed and enable them to make better-informed decisions (FASB, 2009).

Information reported by firms in excess of the minimum requirements is classified as best practice disclosure (Marston and Shrives, 1991). For example, in the UK, the Companies Act imposes minimum requirements "Business Review" while the Accounting Standard Board (ASB) set out recommendations for best practice disclosure. ASB (2007, p. 2) clarifies the difference as such:

"Best practice - the degree to which companies are reporting above and beyond the legal requirements and have adopted the recommendations in the ASB's Reporting Statement on the (OFR).

Compliance - how UK companies are performing in the light of the requirement under the Companies Act 1985 to provide a Business Review within the directors' report".

Another distinction between mandatory and voluntary disclosure is based on the nature of the narrative. Generally, narratives in the annual reports are divided into two categories (Beattie et al., 2008). The first comprises descriptive narratives, which present specific data; examples include: the directors' report, the corporate governance report and the remuneration report. The second comprises story-telling narratives. These include the chief executive's review, the financial executive's review, and the OFR statement. Based on the examples given by Beattie et al. (2008, p. 186), for each type of narrative, usually, mandatory disclosure takes the form of descriptive narratives (e.g. the directors' report) while best practice disclosure is considered as story telling narrative (e.g. the OFR statement).

 Management usually discloses additional information through various means, including press releases, conference calls, monthly newsletters, and field visits with existing and potential institutional investors (Graham et al., 2005). Other disclosure channels include management forecasts, internet reporting, and interim reports. Additionally, intermediaries

such as financial analysts, industry experts, and the financial press represent other channels for disclosure (Healy and Palepu, 2001).

3.2   Importance of Narrative Disclosure

The thesis focuses on one of the most important areas in financial reporting: narrative disclosure. Narrative disclosure attracts accounting researchers for a number of reasons. Firstly, additional disclosure is valuable as it:

> "*Can generate change by bringing hitherto ungathered or unnoticed information and issues to the attention of directors and company managers. Secondly, it can also provide information that company stakeholders and external commentators can use to put pressure on the company to raise standards*" (Williamson, 2003, p. 523).

In this sense, "disclosure strategies then provide a potentially important means for corporate managers to impart their knowledge to outside investors even if capital markets are efficient" (Healy and Palepu, 1993, p. 1). Secondly, such disclosure is crucial in reducing information asymmetry among the market participants, as well as between managers and investors (Dhaliwal et al., 2011). It is particularly useful as a means to manage users' impressions about the firm's annual performance (Beattie et al., 2008). As such, providing high-quality additional disclosure helps in correcting firms' mis-valuation in the stock markets as well as in increasing institutional interest and liquidity of their stocks (Healy et al., 1999, p. 488).

Generally, a better information environment is associated with higher market valuation (Lang et al., 2004). Accordingly, additional disclosure adds more credibility to financial statements and enhances investors' perception of the firm; in turn, such perception is reflected in firm value (Healy et al., 1999). Narrative disclosure is said to be the most powerful communication tool (Bhasin and sheikh, 2013). Importantly, the above-mentioned assumptions rely heavily on the quality of information disclosed to the market. Investors are

expected to value disclosure if it is of high quality and not just "cheap talk" from management.

Content analysis (i.e. analysing words), either manually or using the computer, is extensively used in the literature (Li, 2010) and, therefore, is acceptable as a fair approach in analysing disclosure in the academia. To a great extent, the empirical literature finds that words reflect reality. This is apparent from the following empirical evidence. Hussainey and Walker (2009) use some forward-looking keywords to analyse UK narratives and conclude that forward-looking information improves a market's ability to anticipate future earnings changes in high growth firms. Stated differently, forward-looking words used in Hussainey and Walker's (2009) study give an indication of the reality (future earnings changes). A second example of the empirical evidence that words largely reflect reality is Clatworthy and Jones's (2003) study. Using bad news and good news keywords, Clatworthy and Jones (2003) find that companies with improving performance concentrate on good news. Therefore, words reflecting good news disclosed in the UK narratives actually reflect the company's real situation. The third evidence is presented by Abrahamson and Amir (1996). They use a words-based content analysis approach to analyse the president's letter. Results suggest that the letter contains information that may be used to assess the future performance of the firm.

In conclusion, the empirical literature finds evidence that words reflect reality and even more, could be used to anticipate future performance. For further details on content analysis, see Li (2010).

An important point to bring into the discussion of disclosure quality is the difference between 'incremental information' and 'impression management'. Both terms are alternative justifications for disclosing additional information in excess of the minimum requirements.

Mainly, the first approach views narrative disclosure positively. The second, views narrative disclosure as an "opportunistic behaviour whereby managers exploit information asymmetries between them and firm outsiders through engaging in biased reporting" (Merkl-Davies and Brennan, 2007, p. 3).

Incremental information is defined as value relevant voluntarily disclosed information intended to help in overcoming information asymmetry (Merkl-Davies and Brennan, 2007). Incremental information is based on the assumption of an efficient market. The efficient market hypothesis assumes all market participants have rational expectations about future returns. In turn, investors usually are able to deduct biased reporting (Merkl-Davies and Brennan, 2007). This would result in higher cost of capital and reduced share price performance. As managers' compensation is linked to stock price performance, managers have no economic incentives to engage in impression management and would prefer to provide incremental information to advocate their positions (Baginski et al., 2000; 2004).

On the other side, the term 'impression management' is taken from social psychology. It is defined as "a field of study within social psychology studying how individuals present themselves to others to be perceived favourably by others." (Hooghiemstra 2000, p. 60). In other words, it means influencing how others think about you through pretending.

In the disclosure context, many researches provide definitions for impression management. However, the definition provided by Godfrey et al. (2003) seems to be the simplest, and more precise. They define impression management as the process of influencing outsiders' impressions of firm performance by manipulating the content and presentation of information in corporate documents with the purpose of distorting readers' perceptions of corporate achievements in favour of the management (Godfrey et al., 2003). This definition implies that like earnings management, management have the intention to deceive users of

financial reports. Accordingly, impression management has the potential for the same serious risk of adverse capital misallocations as earnings management (Merkl-Davies and Brennan, 2007).

It has been argued that the opportunity for impression management in corporate reports is increasing over time (Merkl-Davies and Brennan, 2007). The most obvious evidence for this belief is that narrative disclosures have become longer and more sophisticated over the last few years (Merkl-Davies and Brennan, 2007; and Banghoj and Plenborg, 2008). Impression management is based on weak market efficiency where investors are unable to assess managerial bias in the short term, and, consequently, managers engage in impression management to influence the firm's share price (Merkl-Davies and Brennan, 2007). More particularly, impression management occurs in less regulated narrative disclosures, which focus on interpreting financial outcomes (Niamh et al., 2009). This situation will certainly lead to capital misallocations and increased compensation for managers, via stock options (Adelberg 1979; Rutherford 2003; and Courtis 2004).

Although these two approaches "impression management" and "incremental information" provide alternative justifications for best practice disclosure, however, most studies examine disclosure on the basis of the "incremental information" approach (e.g. Healy and Palepu, 2001). The reason for the adoption of the "incremental information" approach by many research, is the widespread use of the agency theory in explaining motivations for best practice disclosure (Lang and Lundholm, 1993). As discussed previously in chapter One, Jensen and Meckling (1976) models the agent- principle relationship and contend that managers have advantages over shareholders by virtue of having access to information not available to other users. This situation creates an information asymmetry problem. One of the most common approaches to mitigate information asymmetry is voluntarily providing more information to shareholders (e.g. Bartov and Bodnar, 1996; and Jones, 2007).

There is a fear that, additional disclosure may be provided on the basis of "impression management", (i.e., managers provide information that deceive users of financial reports). Because confidence in words might be questioned, continuous efforts have been exerted from well recognised Accounting boards -such as the Accounting Standard Board (ASB) in the UK, and The International Accounting Standard Board (IASB)- to provide guidance and recommendations for preparing the narratives in order to promote the quality of financial reporting (e.g. Reporting statement (OFR), 2006 and Management Commentary (2010)). The higher the quality of words disclosed the higher the confidence in the disclosure. Moving from this point, the underlying research develops a disclosure quality measure. Such measure is based on the recommendations for a best practice disclosure presented in the OFR statement (2006).

Drawing on the influential role of disclosure in capital markets, the study seeks to investigate disclosure over three main axes. These are measurement, determinants, and impact aspects of disclosure. The current chapter and chapter Four deals with the measurement of disclosure quality, chapters Five and Six handle determinants of disclosure quality, and chapters Seven and Eight test firm value as an example of one impact of disclosure quality.

The thesis measures and examines the determinants and economic consequences of the quality of disclosure in annual reports. Other measures for economic consequences include: cost of capital, informativeness of stock prices, and investors' ability to better anticipate future earnings changes. These measures provide areas for future research as discussed later in chapter Seven, section 7.3, and in chapter Eight, section 9.5.

The decision to focus on annual reports is justified by two reasons. First, these reports are considered as a very important official means of disclosure (Marston, 2008) and as an influential source of information about a firm's performance for investors (Marston and

Shrives, 1991). Second, the literature finds a high and significant positive correlation between annual report disclosures and other forms of disclosure (Botosan and Plumlee, 2002).

In addition to focusing on one channel of disclosure (i.e. annual reports), the current research takes an even sharper focus by being restricted only to the OFR statement included in annual reports. One of the aims of this research is to introduce a new measure for disclosure quality. To this end, it is suggested that a reliable and solid generally accepted conceptual frameworks should be used (Botosan, 2004). Looking at UK narrative, the OFR is the only part that is based on a framework stating the best practice recommendations for a high quality disclosure.

3.3   Disclosure Quality Definitions

Marston (2008) suggests that disclosure in general is perceived as an abstract concept, which is difficult to measure directly. In this sense, disclosure is viewed as a latent variable.[15] In other words, it is not amenable for observation and direct measurement. Hence, it needs to be indirectly observed through the sample values of an observed variable(s).

Disclosure quality definitions could be categorised based on their perspectives as either investor-or- firm-driven. One investor-driven quality definition contends that disclosure quality is the accuracy of investors' beliefs about stock prices following disclosure (Diamond and Verrecchia, 1991). In a related definition, Hopkins (1996) defines disclosure quality as the extent to which current and potential investors can read and interpret the information easily. One of the concerns in opertionalising these definitions are related to the difficulty inherent in measuring investors' perceptions of disclosure quality.

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[15]Bollen (2002) defines a latent variable as an observed variable that is influenced by unobservable causes and is difficult to measure.

From a firm-driven perspective, King (1996) defines disclosure quality as the degree of self-interested bias in the disclosure. It is extremely difficult to measure the management's bias in the information disclosed, as suggested by King's definition. Another definition in this context holds that disclosure quality involves "the firm's ongoing ex-ante commitment to provide disclosure" (Core, 2001, p. 48). Unfortunately, both definitions are indirect and hence, there is a problem in quality measurement.

Beattie et al. (2004) maintain a more comprehensive definition where they define disclosure quality as a complex, multi-dimensional, context-sensitive and subjective concept. Due to such obvious difficulty in developing a meaningful and operational measure of disclosure quality, researchers commonly use various proxies for disclosure quality. The following section discusses these proxies in detail.

3.4 Proxies for Disclosure Quality

Disclosure quality has always been (e.g. Core, 2001) and continues to be (e.g. Berger, 2011) a hot research question that captures researchers' interests. Measuring disclosure quality has been regarded as a problematic issue in the literature due to the lack of a clear definition of disclosure quality (Beyer et al., 2010). It is argued that, developing a quality measure is extraordinarily difficult (Botosan, 1997; 2004). This is also evidenced by the continuous attempts in the literature to measure disclosure quality.

Botosan (2004) identifies three reasons for such difficulty. The first is the difficulty in defining what constitutes quality. The Accounting Standard Board (ASB), as a part of its role to promote high quality financial reporting, has issued a Reporting Statement (2006), see section 3.7 for a detailed discussion of this statement. The objective of this statement is to specify the best practice for disclosing an OFR statement (ASB, 2006, Objectives, para. 1).

The current research uses the recommendations set out by the ASB as a basis for defining disclosure quality (see section 3.7 for the full discussion). As stated in ASB (2007, p. 2) "*…the recommendations in the ASB's Reporting Statement on the OFR, which the FRC believes is the most up-to-date and authoritative source of best practice guidance*". Accordingly, the first difficulty argued by Botosan (2004) is eliminated.

The second reason for the said difficulty in measuring disclosure quality, is the need for researchers to recognise that effective frameworks for assessing quality are usually context specific (i.e. measures for disclosure quality of the OFR statements differs from that of the press release). The current research admits this notion and recognises that the proposed quality measure works only for annual reports narratives, rather than other disclosure channels. It is also restricted to English language financial reports. The third reason addressed by Botosan (2004) is the difficulty inherent in the practical implementation of the scoring procedure. Problems in implications could arise because of lack of information, excessive judgement, or prohibitive costs. In order to develop a practical measure for disclosure quality, the underlying research eliminated -as much as possible- the personal judgement through using computerised content analysis as detailed earlier in chapter Two (figure 2.2). Additionally, all steps for scoring disclosure are clearly mentioned in detail. Finally, the computerised content analysis is used heavily, and a minimal use of manual content analysis is included in the scoring procedures.

The literature does not provide effective guidance on the measurement of disclosure quality, and yet, it leaves the researcher to defend their choice based on the relative advantages of each approach (Artiach and Clarkson, 2011). In conclusion, measuring disclosure quality is a challenging task. Despite the difficulty encountered in developing a measure for disclosure quality, such a notion does not eliminate continuous attempts to measure disclosure quality.

The inherent difficulty of defining disclosure quality has led to the use of several proxies.[16] This section reviews prior literature on proxies for disclosure quality. The review implies that there are primarily four approaches used to proxy for disclosure quality, namely; objective ratings, subjective ratings, other measures, and using the quantity (i.e. level) of disclosure.

Figure 3.1, which is derived from literature review conducted by the researcher, illustrates these different approaches. These four approaches include, objective ratings discussed in sub-section 3.4.1, subjective ratings discussed in sub-section 3.4.2, other measures discussed in sub-section 3.4.3, and disclosure quantity discussed in sub-section 3.4.4.

Figure 3.1: Proxies for Disclosure Quality

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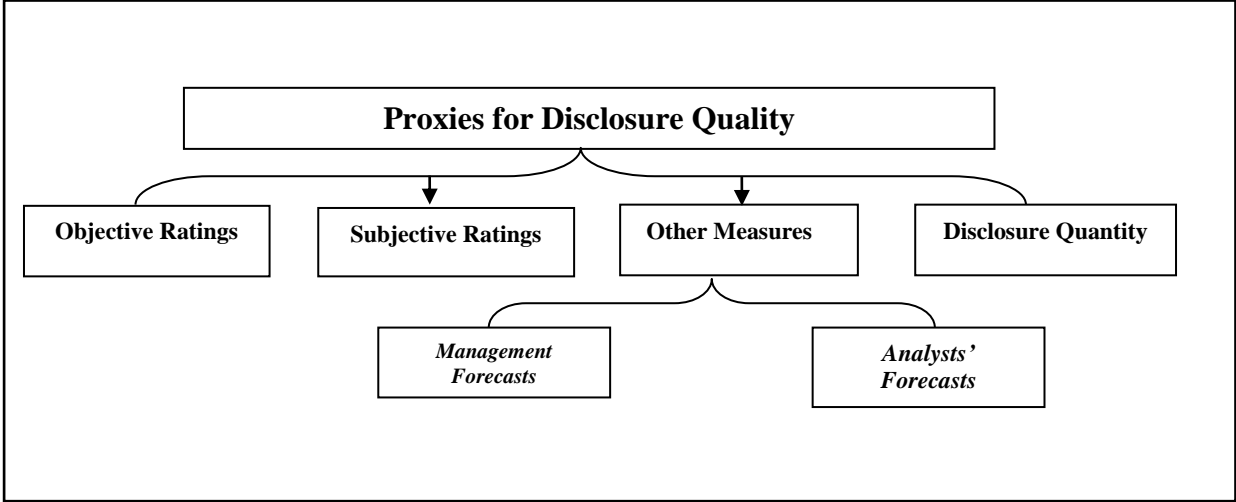
[16] For a comprehensive review of these proxies, see Healy and Palepu (2001), Core (2001), Beyer et al. (2010) and Berger (2011). Recent papers on the measurement of corporate narrative reporting include Brown and Tucker (2011) who introduce an algorithm based on word counts to measure the usefulness of year-over-year MD&A modifications. However, Roulstone (2011) suggests that Brown and Tucker's (2011) measure needs further refining.

3.4.1 Objective Ratings

The first approach is objective ratings. It involves assigning a disclosure score through objective ratings. An objective index is usually based on a checklist of items where a score is given for each item disclosed, without counting the occurrence times of such information. This approach is referred to as the "occurrence" (Joseph and Taplin, 2011). Occurrence enables the variety of disclosure to be compared across different firms (Beattie and Thomson, 2007). Figure 3.2 illustrates the steps typically followed in developing a disclosure score through objective ratings.

Figure 3.2: Steps for Developing Disclosure Score through Objective Ratings
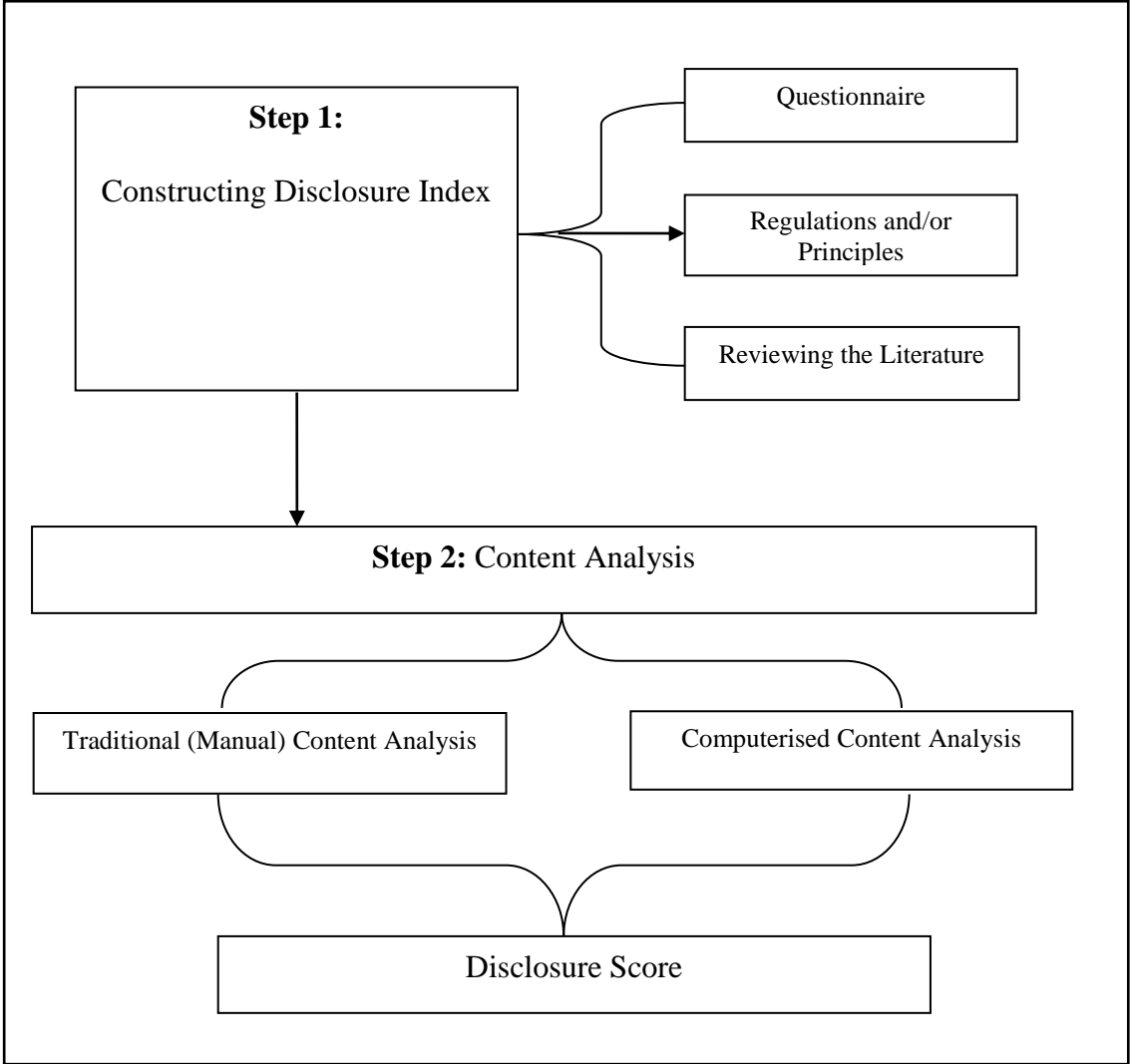
The first step involves constructing a disclosure index. The index is a list of criteria against which the disclosure information is evaluated to reach a disclosure score. To construct these indices, some studies use questionnaires to determine important or relevant disclosure items, for instance, Ho and Wong (2001) and Willekens et al. (2005). Others depend on some principles or regulations in constructing their disclosure indices. For example, Celik et al. (2006) construct their own disclosure score based on Financial Accounting Standards Board (FASB) requirements; Abraham and Cox (2007) use principles of risks in the UK[17] to construct their disclosure index; McChlery et al. (2011) use Statement of Recommended Practice (SORP) and the OFR to evaluate the quality of voluntary information disclosed on oil and gas reserves. They use a score from zero to three to represent the quality of information disclosed based on SORP and OFR dimensions.

Another approach utilised by some scholars involves developing self-constructed disclosure indices in the light of reviewing the literature. Examples of such studies include Mangena and Pike (2005), Barako et al. (2006), Marshall and Weetman (2007); O'Sullivan et al. (2008), and Laksmana (2008). Self-constructed indices are either weighted or un-weighted. Weights are given based on financial analysts' perceptions of certain items in the statements. It is argued that a weighted disclosure index reflects the perceived disclosure required by investors (Healy and Palepu, 2001). An alternative view argues that weighted disclosure indices do not alter the results significantly because firms disclose important items as much as they disclose unimportant items (Ho and Wong 2001; and Mangena and Pike, 2005). Notably, self-constructed disclosure scores could be biased unless clear justification is provided for the elements included in the proxy.

Lastly, another group of studies uses disclosure indices developed and empirically tested in prior research. Such studies contend that, those indices have been tested and are more likely

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[17]The Orange Book Management of Risk—Principles and Concepts (HM Treasury, 2004)

to be perceived as reliable and valid indices. However, care should be taken here, especially, if these indices were developed in specific contexts or country conditions. Examples of these studies include: Peters et al. (2001) who use the disclosure score of Peters (2000); Evans (2004) who relies on Botosan's (1997) disclosure score; Leventis and Weetman (2004) who use Meek et al.'s (1995) index; Boesso and Kumar (2007) who use the disclosure score developed by Boesso (2003); Lim et al. (2007) who use Meek et al.'s (1995) disclosure score; Donnelly and Mulcahy (2008) who use the disclosure score of Eng and Mak (2003); and Li et al. (2008) who rely on Haniffa and Cooke (2005).

After building the checklist (disclosure index), the second step in developing a disclosure score is determining the extent of information disclosed. In other words, this step analyses the content of disclosure, bearing in mind that the step involves only evaluation of the occurrence of each piece of information in the checklist, with no attention being given to the frequency of occurrence. In doing so, all prior research uses content analysis that is either traditional (manual) (e.g. Chen et al., 2008; Dedman et al., 2008; Cheung et al., 2010; Stephen et al., 2014) or, recently, computerised (e.g. Kothari et al., 2009; Hussainey and Al-Najjar, 2011).

A disclosure index could be designed for an overall corporate disclosure score (i.e. Botosan, 1997; Ho and Wong, 2001; Willekens et al., 2005; Cheng and Courtenay, 2006; Luo et al., 2006; Barako et al., 2006;Wang et al., 2008; and Jiang et al., 2010). Otherwise, the index might be specific to certain types of corporate disclosure, such as oil and gas reserves (e.g. McChlery et al., 2011). Research and Development disclosure (Swift, 2014), Corporate social responsibility disclosure (i.e. Hasseldinea et al., 2005; Gibson and O'Donovan, 2007; Beck et al., 2010; Elsayed and Hoque, 2010; Campbell and Slack, 2011; Cowan and Deegan, 2011; Elijido-Ten, 2011; Khan et al., 2013; Wegener et al., 2013; Cormier and Magnan,

2014; and Grigoriset al., 2014), intellectual capital disclosure (i.e. Li et al., 2008; Striukova et al., 2008), and corporate governance disclosure (i.e. Bauwhede and Willekens, 2008; Laksamana, 2008; Ernstberger and Gruning, 2010; Cheung et al., 2010, and Bhasin and Shaikh, 2013).

This approach (objective ratings) focuses on one dimension of quality (occurrence). In other words, it abstracts quality in one dimension and uses it as a proxy for the overall quality concept. Opponents of this approach maintain that "occurrence" as a quality dimension should not be evaluated in isolation from its information content (Beattie et al., 2004). Arguably, it is not proper to evaluate the overall quality based only on one individual dimension and overlooking others, such as the qualitative characteristics of the information (Healy and Palepu, 2001). Another caveat of this approach is the subjectivity in the development and application (Artiach and Clarkson, 2011) of the developed index. In addition, such scores are difficult to be replicated because of the personal judgement of the researcher(s) involved and the intensive labour nature of the coding process, which affects the reliability of findings and limits the sample size (Artiach and Clarkson, 2011). Conversely, the main advantage of objective ratings is the applicability to a wide cross section of firms (Artiach and Clarkson, 2011).

3.4.2 Subjective Ratings

The second approach to proxy for disclosure quality involves subjective ratings. Subjective ratings are pre-assigned disclosure scores. The most well-known example of subjective rating is the Association for Investment Management Research − Financial Analysts Federation (AIMR-FAF) database (e.g. Dunn and Mayhew, 2004; Felo et al., 2009; Zhao et al., 2013). Notably, the use of AIMR-FAF is dated, since in 1995 the Financial Analysts Federation discontinued the rating (Hussainey et al., 2003). This measure uses key financial

analysts to develop ranking lists for US firms in each industry sector. More specifically, it represents an annual survey by assigning aggregate subjective ranks for both mandatory and voluntary disclosure in annual and quarterly financial reports, as well as in firms' investor relations. Other types of subjective ratings are summarised by Hussainey (2004). These include Financial Post ratings (Sutley, 1994), Australian Stock Exchange ratings (Brown et al., 1999), SEC ratings (Barron et al., 1999), Society of Management Accountants of Canada (SMAC) ratings (Richardson and Welker, 2001), Actualidad Economica Ratings (Blasco and Trombetta, 2002) and Centre for International Financial Analysis and Research (CIFAR) ratings (Hope, 2003a, b). Hussainey (2004) contends that these studies do not specify whether these ratings are based on investigating firms' publications, or whether they just reflect analysts' and accountants' general opinions regarding the firm's disclosure policy.

Opponents of this approach believe that it is based on the subjective judgement of the financial analysts (Healy and Palepu, 2001; and Cheung et al., 2010). This might therefore bias the sample toward firms followed by the analysts (Botosan, 1997). Luo et al. (2006) add that, this measure is a noisy proxy for disclosure quality. Finally, the composition of the analysts committees varies by industry and time period (Artiach and Clarkson, 2011). The main advantage, however, of this kind of scores is that the disclosure scores are based on a broad range of disclosure channels which in turn, allow for a more comprehensive evaluation of the best practice disclosure quality of the firm (Artiach and Clarkson, 2011).

It is worth noting that the first approach (objective ratings) and the second (subjective ratings) approach to proxy for disclosure quality suffer from many limitations, as discussed earlier in the relative sections. Mainly, objective ratings evaluate the overall quality based only on the occurrence of information while ignoring other quality dimensions (Healy and Palepu, 2001). The most apparent limitation of the second approach is the subjective judgement involved, which limits the reliability of the score (Cheung et al., 2010).

3.4.3 Other Measures

The third approach to proxy for disclosure quality encompasses other measures such as management earnings forecasts (e.g. Chen et al., 2008; Li, 2010b[18]). Advantages of management earnings forecasts include being accurately measured, as this represents either a point or a range of earnings and revenues; additionally, it is easy to determine the precise timing of disclosure, which enables testing for motivations and the consequences of disclosure (Healy and Palepu, 2001). Despite these merits, one limitation of management forecasts is that they do not provide an accurate proxy for subjective un-verifiable types of disclosure such as customer satisfaction (Healy and Palepu, 2001). Additionally, Cheung et al. (2010) cast doubt on the ability to generalise results derived from management forecasts with regards to other kinds of best practice disclosure. A second example for other measures includes the Institutional Brokers' Estimate System (I/B/E/S). It represents analysts' forecasts of firms' future earnings (e.g. Frankel et al., 2006). The main limitation of (I/B/E/S) is that it entails a great deal of subjective judgement (e.g. Frankel et al., 2006).

3.4.4 Disclosure Quantity

Unlike the afore-mentioned three approaches, the fourth approach involves using disclosure quantity[19] as a proxy for quality. This approach assumes that the importance of information is reflected by the extent of its disclosure (Beattie and Thomson, 2007). Cerbioni and Parbonetti (2007, p. 504) argue that "all existing studies retain only the quantity of disclosure (or the disclosure level)".

In doing so, the most common approach in the literature to measuring disclosure quantity is the frequency of forward-looking information disclosed (i.e. Hussainey et al., 2003;

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[18] Li (2010b) uses management forecasts on earnings and capital expenditures as a proxy for voluntary disclosure quantity and uses the accuracy of management forecasts as a proxy for disclosure quality.
[19] Literature also uses the term "disclosure level" as being equivalent to disclosure quantity.

Gietzmann, 2006; Schleicher et al., 2007; and Stephen et al., 2014). Prior studies justify the use of forward-looking information in many ways.

Firstly, forward-looking information conveys value-relevant information for investors, which in turn improves the market's ability to anticipate future earnings (i.e. Amir and Lev, 1996; Hussainey et al., 2003; Schleicher et al., 2007; and Hussainey and Walker, 2009). Gietzmann (2006) also finds that firms with timely and forward-looking information face higher share price volatility. This reflects investors' abilities to anticipate future earnings, which reflects the relevance of forward-looking information. Secondly, firms with effective corporate governance systems release more forward-looking information (O'Sullivan et al., 2008). Investors view forward-looking information as more credible (Athanasakou and Hussainey, 2010). Thirdly, Bozzolan et al. (2009) use the level of forward-looking information to reflect the quality of best practice disclosure and report that analyst forecast accuracy is positively related to the frequency of forward-looking information disclosed. Fourthly, Muslu et al. (2010) find that the level of forward-looking information improves the ability of stock prices to predict future earnings information. Fifthly, Morgan (2008) examines the precision of forward-looking information in terms of Management Discussion and Analysis (MD&A), and concludes that quantitative forward-looking information is more precise than qualitative forward-looking information. At the other end, Baginski et al. (2014) document that, managers use positive forward-looking information to protect their employment. They report that managers influence shareholders during the proxy contest periods by increasing the number of forward-looking disclosures. They notice subsequent decreases in the post contest periods.

Although disclosure quantity is extensively used in the literature to reflect disclosure quality, such an approach is a controversial issue and is highly criticised as being improper and inaccurate (Beattie et al., 2004; Beretta and Bozzolan, 2004a). Simply disclosing more

information does not make disclosure more understandable or relevant (Beretta and Bozzolan, 2004b). Accordingly, owing to the well-acknowledged use of the proportion and/or frequency of forward-looking information to reflect disclosure quantity, the current study defines disclosure quantity as "the proportion of forward-looking information disclosed in narrative statements". This definition of disclosure quantity is used hereafter in this research.

Notably, a distinction is made between "frequency" and "proportion" of forward-looking information. The first term reflects the number of occurrences while the second refers to a percentage relating the number of occurrences to the overall length of the disclosure statement. The researcher argues that using the "proportion" rather than the "frequency" is more precise because it considers and controls for the length of the disclosure statements.

To conclude, the four approaches used in the extant literature as proxies for disclosure quality are prone to various limitations. The most significant one relates to the improper measures used, which yield misleading inferences (e.g. Beretta and Bozzolan, 2004a; and Ernstberger and Grüning, 2010). Consequently, such proxies should not be viewed as a solid substitute for a quality-based measure.

Based on the preceding discussion, it becomes clear that developing a measure for disclosure quality is important for a number of reasons (Beattie et al., 2004). First, a practical and reliable measure for evaluating disclosure quality makes inter-firm, inter-industry and international comparisons and benchmarking feasible. Second, measuring quality helps to provide reliable answers to different research questions related to disclosure quality. For example, Mouselli et al. (2011) find that firms with high levels of disclosure quality engage less in earnings management. However, the authors use only one dimension of information quality –the proportion of forward-looking statements – as a proxy for disclosure quality.

This gives an incomplete understanding of the association between disclosure quality and earnings quality. Therefore, there is still a need to develop a reliable disclosure quality measure to provide complete answers to many research questions. The next section provides an overview of these attempts.

3.5 Prior Attempts to Measure Disclosure Quality

Despite the importance of a disclosure quality measure, little efforts have been made to provide tentative frameworks that could be regarded as first steps toward developing a well-structured model for a disclosure quality measure. These include Beattie et al. (2004) and Beretta and Bozzolan (2004a; 2008).

The first framework (Beattie et al., 2004) is a mixture of the first approach (the occurrence) and a new attempt to measure quality through evaluating some informational characteristics of disclosure. The second and third frameworks (Beretta and Bozzolan, 2004a; 2008) are mixtures of the third approach (the proportion of forward-looking information) and also evaluate some informational characteristics of the disclosure context. The three frameworks are discussed respectively.

Beattie et al. (2004) represent the first pioneering attempt to develop a disclosure quality measure. They claim that disclosure quality is a function of multiple dimensions. The first quality dimension is disclosure quantity, measured by the actual amount of disclosure relative to the amount expected given the company's size and complexity (Beattie et al., 2004). The second dimension is the spread, which represents percentages of disclosures spread across different topics. Such topics were identified based on the Jenkins report, which was developed in the US to improve business-reporting quality. The remaining dimensions are captured through percentages of sentences representing the time orientation (historical or

forward-looking), financial orientation (financial/non-financial), and quantitative orientation (quantitative/ qualitative). Beattie et al. (2004) argue that identifying several dimensions of the disclosed information should have reasonably widespread support as a measure for disclosure quality. Through this approach, they claim to overcome the problem of using one information dimension – "occurrence" – as extensively appears in the literature. They add that, given the complexity and subjectivity inherent in measuring disclosure quality, no specific quality measure should be supported or otherwise rejected.

Nevertheless, the framework suggested by Beattie et al. (2004) possesses several limitations. First, it lacks the proper foundation needed to support and strengthen it (Botosan, 2004; Bramer and McMeeking, 2010). The disclosure quality definition proposed by Beattie et al. (2004) is not supported by regulatory bodies or well recognised framework of disclosure quality. Second, there are doubts concerning the generalisation ability of their study due to the small sample size (only 12 firms in the food industry sector). Third, Beattie et al. (2004) overemphasise quantity as a quality component.[20] Fourth, they highlight that "the contribution to quality made by assigning attributes[21] is rather unclear and might depend on the type of topic being disclosed" (Beattie et al., 2004, p. 233). Fifth, they believe that their coding scheme involves inherent subjectivity.

Notably, Beattie et al. (2004) do not justify their "key" assumption that firms disclosing more information are more likely to have a greater level of quality. This assumption is highly questionable. Firms may disclose more information, yet such information could lack accuracy. Nonetheless, the idea of incorporating dimensions of information disclosed is of

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[20] As highlighted in the previous paragraphs, the quality score firstly counts percentages of sentences disclosed relative to a benchmark. The score also contains percentages of disclosures in each topic, and the quantity is then involved again in determining the percentages of disclosures representing time orientation, financial and non-financial, and finally qualitative versus quantitative dimensions.
[21] Beattie et al. (2004) use the term "attributes" interchangeably with "quality dimensions".

interest and could be considered as a first step towards developing a comprehensive quality-based disclosure measure.

The second attempt to develop a disclosure quality measure is developed by Beretta and Bozzolan (2004a). They propose a framework for analysing firms' risk communication processes. This framework captures four dimensions. The first dimension is the content of information disclosed. This dimension reflects the quantity of disclosure based on pre-determined topics. Such topics were selected using the guidance on voluntary risk reporting issued by professional bodies (i.e. AICPA, 1994; CICA, 2002; FASB, 2001; and ICAEW, 2003), as well as some suggestions by practitioners (Bell et al., 1997; and De Loach, 2000). The second dimension is the economic sign reflecting whether the information disclosed represents a positive or a negative situation. The third dimension is the type of measures used. This dimension intends to divide information into four sub-categories: financial qualitative information, non-financial qualitative information, financial quantitative information, and non-financial quantitative information. The fourth dimension is the outlook orientation of risk communication. Outlook orientation reflects both the time orientation of the information disclosed (information may refer to present state or future projections) and the approach of management towards risk (disclosed information could simply communicate general hypotheses or expectations concerning the future, or provide information concerning management programmes or action to be taken in order to face the exposed risks).

Beretta and Bozzolan (2004a)'s framework has attracted considerable attention in the literature. Botosan (2004) holds that Beretta and Bozzolan (2004a) are unable to provide justification for the assumption that quality is a function of the four stated dimensions. She adds that a framework for measuring risk disclosure quality should begin with a well-supported and convincing discussion of the information dimensions that define disclosure quality.

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Accordingly, Botosan (2004) suggests that a disclosure quality framework should be based on the IASB (1989) framework. The IASB (2010) framework identifies two main qualitative dimensions of information indented to enhance the usefulness of information to economic decision-makers, and therefore might be used as a reflection for disclosure quality. These two dimensions are relevance and faithful presentation. Yet, the identified information dimensions are highly subjective and could hardly be measured without employing some kind of counting approach (Botosan, 2004). Additionally, it is too abstract to be operationalised (Beretta and Bozzolan, 2004b).

Unlike Botosan (2004), Shevlin (2004) believes that the dimensions of the proposed framework are all reasonable, arguing that these dimensions are representative of disclosure quality. Yet, he maintains that applicability to a large sample size might be difficult.[22] Nevertheless, he accepts that the index, conceptually and operationally, represents a major step forward in the construction of a measure that researchers can use in best practice disclosure research.

In conclusion, one could argue that it is difficult to have a disclosure quality measure that is completely free of counting. However, a multi-dimensional, comprehensive quality measure certainly appears to be superior to merely counting the disclosed items. As a response to Botosan's (2004) claim that disclosure quality should be defined in relation to a specific research question, Beretta and Bozzolan (2008) introduce the third framework for measuring disclosure quality, where they refined their prior risk framework.

Here, Beretta and Bozzolan (2008) define disclosure quality as the efficiency of forward-looking information in improving financial analysts' capabilities to evaluate the value-creation strategy and expected financial results of a firm. Notably, such an assumption

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[22]This is because Beretta and Bozzolan (2004a) use manual content analysis; however, such limitation will be covered in the current measure since it is basically based on computerised content analysis.

narrows the quality definition of best practice disclosure and restricts it to forward-looking information. Beretta and Bozzolan (2008) believe that disclosed information is considered to be of high quality if it leads to better inferences from analysts and supports better estimates of future earnings.

They argue that a disclosure quality framework should be a multi-dimensional one that jointly combines, first, disclosure quantity[23] and, second, richness of information. Richness is defined as a function of both width and depth. Disclosure width deals with the question of how information is disclosed. It encapsulates, first, disclosure coverage (COV) and, second, disclosure dispersion (DIS). Coverage refers to the extent of disclosure of relevant topics. This is equivalent to the use of a disclosure index (the occurrence) approach. It is statistically measured as the percentage of topics filled in by at least one piece of information out of the total number of topics. It ranges from zero to one and assumes its maximum value when a firm makes a disclosure over each of the topics considered. Dispersion, in contrast, is the spread of disclosure across different topics. It is measured in terms of the concentrated disclosed items. Consequently, width[24] is the average of coverage and dispersion.

Disclosure depth, which is the second component of disclosure richness discussed in the above paragraph, addresses the question of what information is disclosed. Beretta and Bozzolan (2008) define three information dimensions, which help define disclosure depth. The first is the outlook profile which reflects the time dimension; for example, forward-looking information. The second is the information measurement type; that is whether information is qualitative or quantitative, financial or non-financial. The final information dimension is the economic sign of the information disclosed. Information disclosed could

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[12]Quantity is measured by the relative number of disclosed items, adjusted for size and industry using ordinary least square (OLS) regression.

[24] Width *(WIDi) = ½ (COVi + DISi)*.

indicate positive or negative news statements. The three dimensions constitute the depth of disclosure richness. Together disclosure quantity and richness constitute disclosure quality.

Beretta and Bozzolan (2008) compare between using their suggested quality model and a quantity score. The quantity score is based on the proportion of forward-looking disclosures. Beretta and Bozzolan (2008)'s results hold that disclosure quantity and quality are not correlated, and thus quantity cannot be regarded as a proxy for disclosure quality. They conclude that researchers should be cautious in interpreting results based on quantity measures.

When comparing Beretta and Bozzolan (2004a)'s framework with that of Beattie et al. (2004), many differences become apparent. Firstly, Beattie et al. (2004) provide a general framework applicable to various types of disclosure. Beretta and Bozzolan (2004), however, develop a framework specifically designed for risk disclosure, which with some modifications could be applicable more generally. The second difference is that Beretta and Bozzolan (2004a) extend the quality dimensions suggested by Beattie et al. (2004) by adding the economic sign. The two frameworks, however, share spread and density dimensions.

Despite covering some limitations of Beretta and Bozzolan (2004a)'s framework, other limitations still exist in Beretta and Bozzolan's (2008) revised disclosure quality framework. The most important of these is the lack of a well-conceived foundation for identifying specific quality dimensions.

It is also noted that the three frameworks overemphasise "quantity" in calculating the "quality" scores. In fact, they include the quantity dimension twice – once as an independent quality dimension, and then again in counting the frequency of specific information, for instance the number of sentences that are forward-looking, financial, and so on. Consequently, a problem relating to double counting arises. However, in the proposed

quality measure, disclosure quantity (i.e. the length of the OFR statement) is not included as a separate dimension in the score (see section 3.7), and thus, such type of double counting does not affect the proposed disclosure measure.[25]

Nonetheless, one could contend that content analysis in general might include a double counting problem. For example, a sentence reflecting a forward-looking context could be at the same time reflecting a qualitative context. In this way, the sentence will be counted twice, once as a forward-looking sentence and another as a qualitative sentence. However, such a situation –if applicable- is not avoidable, all prior attempts have the same limitation, and it does not, therefore, limit the contribution of these attempts.

To conclude, prior attempts to develop best practice disclosure quality measures have many limitations. First, there is no clear definition for the concept of disclosure quality. Second, there is no justification for the assumption that disclosure quality is a function of the stated disclosure quality dimensions; thus, Botosan (2004) argues that any measure for disclosure quality should start with a well-supported and convincing discussion of the information dimensions proposed by a regulatory framework. Third, some of these measures are restricted to one type of disclosure (i.e. risk disclosure in Beretta and Bozzolan, 2004a, and forward-looking disclosure in Beretta and Bozzolan, 2008). Finally, these measures overemphasise quantity in their way of calculating disclosure quality.

Arguably, an approach, which overcomes existing limitations in the literature, is expected to represent a step further for developing a sound quality measure (Beyer et al., 2010). Beyer et al. (2010) contend that:

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[25] The researcher would like to thank Kate Howie for reviewing the formulas used in the calculation of the aggregated score and assuring that the double counting problem of the score does not contaminate the proposed quality score.

"A sensible economic definition of voluntary disclosure/financial reporting quality and direct derivation of measures from that definition is missing from the literature. This lack of an underlying economic definition hinders our ability to draw inferences from this work, and we recommend that future research address this issue" (p. 311).

Additionally, Beattie et al. (2004) stress the importance of developing a disclosure quality measure that overcomes the limitations of the current attempts. They argue that" (2004, p. 233):

"It is emphasised, however, that the present study is exploratory in nature and hence the suggestions made are tentative and incomplete. Further research that builds on and extends the ideas presented in this paper is essential. The incorporation of type-based quality dimensions, and (perhaps more importantly) topic/type quality dimensions, will further refine the composite quality index".

Such continuous calls for developing disclosure quality measures -other examples include Berger (2011) - suggest that the literature recognises the limitations of the current attempts, which do not fulfill the research gap of presenting disclosure quality measure, and admit the need for further research, which mitigates these limitations to provide a more improved disclosure quality measure.

The most apparent limitation that the current study attempts to mitigate is the lack of a solid framework for defining disclosure quality. Botosan (2004) contends that depending on a well-known framework provides the foundation needed to support a proposed framework for disclosure quality. Moreover, Botosan (2004) lists three main challenges, which could hinder the development of a sound disclosure quality measure (see discussion in section 3.5). Accordingly, a proposed framework for assessing disclosure quality, which considers these challenges, brings the literature closer to measuring disclosure quality.

Therefore, with the absence of a well-established model for evaluating disclosure quality, and with the apparent limitations of various proxies for disclosure quality, there is still a

need for a multi-dimensional measure for disclosure quality (Beattie et al., 2004; Shevlin, 2004; Beretta and Bozzolan, 2008) which is backed by a valid framework (Botosan, 2004).

3.6 Operating and Financial Performance Statement: An Overview

Botosan (2004) recommends that improved disclosure quality measures should use a well-established and convincing framework that clearly defines disclosure quality and introduces proper measures for dimensions of information. As a response to Botosan' (2004)'s recommendation, and in order for the current research's proposed framework to gain credibility and overcome limitations of previously suggested frameworks for measuring disclosure quality, OFR best practice framework (ASB, 2006) is the prime base for developing the proposed disclosure quality measure.

This decision to use OFR as the guiding foundation for the proposed disclosure quality measure is triggered by two reasons. Firstly, the OFR is broader in scope than other disclosure frameworks (e.g. Management Commentary (MC)). The OFR incorporates "balance" as a principle of disclosure quality, which is not covered in MC. Other quality dimensions are common between OFR and MC either explicitly or implicitly. As such, this allows for wide application and generalisation of the proposed quality framework. Secondly, MC became effective only recently, on 8 December 2010 (IASB, Management Commentary, 2010, para. 41). Thus, there is not enough time span to test for the application of MC, findings based on a one-year analysis will hardly be generalisable.

Given the time at which the present study commenced (2009), the current research considers the OFR (2006) as the prime basis for developing a valid disclosure quality measure.

An OFR statement is defined as:

> "A narrative explanation provided in or accompanying the annual report, of the main trends and factors underlying the development, performance and position of an entity during the financial year covered by the financial statements, and those which are likely to affect the entity's future development, performance, and position" (ASB, 2006, Definitions, para. 3).

The OFR Reporting Statement was originally issued by the ASB in July 1993. The statement was founded to guide firms as to the best practices in disclosure by providing a framework within which the directors discuss the main factors underlying their firm's performance, as well as their financial position.

Generally, it is noticed that disclosure of narrative information has been increased in UK large listed companies over time (Beattie et al., 2008). As stated in the OFR reporting statement (2006, Introduction, para. 2):

> "Following a recommendation in the final report of the Company Law Review (CLR) Steering Group (2001), and the Government response on The White Paper 'Modernising Company Law' (2002), the Government decided to require quoted companies to prepare and publish OFRs. In May 2004, the Government issued proposals on the detailed implementation of this new requirement in a consultation document 'Draft Regulations on the OFR and Directors' Report'. The consultation document contained draft secondary legislation to implement a new statutory OFR as well as certain provisions of the EU Accounts Modernisation Directive requiring an enhanced review of a company's business (the Business Review) in the directors' report. Following consultation, the final OFR Regulations were passed into law in March 2005, taking effect for financial years beginning on or after 1 April 2005".

> "The Government also gave the ASB a statutory power to make reporting standards for the OFR. In November 2004, the ASB issued Reporting Exposure Draft (RED) 1 'The OFR'. Following consultation, Reporting Standard (RS) 1 was issued in May 2005" (ASB, 2006, Introduction, para. 3).

> "On 28 November 2005, the Chancellor of the Exchequer announced the government intention to remove the statutory requirement on quoted companies to publish OFRs on the grounds that the central requirements on the Business Review are largely identical to those of the statutory OFR and the government has a general policy not to impose regulatory requirements on UK businesses over and above the relevant EU directive requirements. Regulations to repeal the requirement for the OFR were laid in December 2005 and came into force on 12 January 2006" (ASB, 2006, Introduction, para. 4).

"The statutory underpinning *for RS1 has been removed as a result of the removal of the statutory requirement for the OFR. As a consequence, RS 1 has now been formally withdrawn and the ASB has 'converted' RS 1 into a statement of best practice on the OFR, which is set out in this document. In preparing this statement, the ASB has sought to limit the changes to those required as a consequence, of the repeal of the OFR legislation, and to make the language consistent with a voluntary statement of best practice rather than a standard. Given the extensive consultation that took place in developing RS 1, and the need to continue to give entities guidance in preparing OFRs, the ASB is issuing this as a final Reporting Statement, rather than engaging in a further round of consultation"* (ASB, 2006, Introduction, para. 5).

The prime objective of an OFR reporting standard is "to specify the best practice for disclosing OFRs prepared so as to assist members to assess the entity's strategies and the potential for those strategies to succeed. Although not clearly defined by the statement, it is implicitly understood that the members[26] are the current shareholders" (ASB, 2006, para. 1).

It worth noting that although the main target user group for the OFR is current and potential investors, this does not exclude other stakeholders such as suppliers, customers, and creditors who may need relevant information necessary for their decision making process (ASB, 2006, para. 7). In doing so, the OFR describes some general principles that implicitly identify required attributes for high quality information. Importantly, "the quality of the information produced is of central importance to the extent to which OFRs are likely to generate positive changes in company behaviour" (Williamson, 2003, p. 523).

There is an overlap between OFR and the Business Review, however, the main difference is that the enhanced Business Review or simply Business Review is a legislative requirement by Companies Act 2006 whereas, OFR is a best practice statement of best practice. The overlap between Business Review and OFR is implicitly recognised by the companies Act as highlighted in the following paragraph:

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[26] It is explicitly stated in the exposure draft of Reporting Standard 1 OFR that "The [draft] Reporting Standard requires directors to prepare an OFR addressed to investors, setting out their analysis of the business, with a forward-looking orientation in order to assist investors to assess the strategies adopted by the entity and the potential for those strategies to succeed" (ASB, 2004, Summary, para. b).

"The Companies Act 1985 requires that the Business Review is identified as part of the directors' report. The Government has confirmed that it is acceptable to cross-refer in the Business Review section of the directors' report to information contained in a voluntary OFR (or other parts of the annual report), provided that they are published together in a way that users can easily refer to both sections" (ASB, 2006, p. 25, parg. 3.3).

The Accounting Standards Board identifies the overlap between the Business Review and the OFR in a table form. For convenience, discussion of such overlap is discussed in section (3.9) after presenting the proposed quality measure.

3.7 The Proposed Disclosure Quality Measure

Section 3.6 discussed alternative disclosure quality frameworks and decides on the most suitable framework (OFR reporting statement). Based on the conclusions outlined earlier, this section defines the concept of disclosure quality. Afterwards, an attempt is made to operationalise the quality definition through identifying a reliable measure for each quality dimension.

3.7.1 Disclosure Quality: A proposed Definition

OFR involves principles for best practice disclosures. Such statement defines what constitute disclosure quality. This statement is considered as "…….the most up-to-date and authoritative source of best practice guidance" (ASB, 2007, p. 2). The first is a general principle holding that "the OFR should set out an analysis of the business through the eyes of the board of directors" (ASB, 2006, para. 4). The remaining principles identify very specific dimensions for the quality of information disclosed. These include: forward-looking orientation, relevance, supplement and complement the financial statements, comprehensiveness, understandability, balance and neutrality, and comparability over time

(ASB, 2006, para. 6,8,13,16,22,24). These specific principles are discussed in the next section.

Based on the OFR framework identification of what constitutes a best practice disclosure in an OFR statement, the researcher defines a best practice disclosure quality as "the totality of inherent qualitative characteristics of information in the OFR best practice statements that enable it to increase users' ability to assess firms' strategies and the potential for those strategies to succeed". This proposed measure of disclosure quality represents a sum of the desired information dimensions recommended by the Accounting Standards Board (2006). These include; forward-looking orientation, relevance, supplements the financial statements, complement the financial statements, comprehensiveness, understandability, balance and neutrality, and comparability.

3.7.1.1   Forward- looking Orientation

The ASB holds that an OFR statement should have a forward-looking orientation (ASB, 2006, Summary, para. b). Lev and Zarowin (1999) document a systematic decline in the usefulness of historical information in the financial statements to investors over the past 20 years. They argue that the decline is represented in the weakening association between capital market values and earnings, cash flows, and book values over this period of time. This suggests that investors do not use historical information as a basis for valuing firms.

Vanstraelen et al. (2003) find that forward-looking information increases analysts' accuracy of forecasts, whereas historical information does not affect the accuracy of analysts' forecasts. Lang and Lundholm (1996) report that analysts rely on value relevant information in deriving their forecasts. Such findings support Lev and Zarowin's (1999) notion that the value relevance of historical information is decreasing.

The principle of forward-looking orientation contends that, an OFR statement prepared by directors should be "addressed to members, setting out their analysis of the business, with a forward-looking orientation in order to assist members to assess the strategies adopted by the entity and the potential for those strategies to succeed" (ASB, 2006, Summary, para. b). In this sense, forward-looking information is critical in two ways. First, it provides a key tool to evaluate management's ability to successfully run the business in the future. Second, it plays a profound role in shaping the firm's competitive position. Investors will always value firms that have a promising future, and thus forward-looking information affects firms' status in the stock markets, either positively or negatively. Forward-looking information is highly relevant to users (IASB, Conceptual Framework, 2010), and therefore the greater the portion of forward-looking information, the more relevant the statement (Hussainey et al., 2003; Gietzmann, 2006; Bozzolan et al., 2009).[27]

Nevertheless, not all forward-looking information indicates high-quality disclosures, since information could be future-oriented but inaccurate. For forward-looking information to shape a firm's competitive position effectively, it should be reasonably accurate. This raises a problematic point, in the sense that it is not easy to assess accuracy. Therefore, instead of evaluating the accuracy of forward-looking information, it may be easier to evaluate its verifiability.

Theoretically, verifiability means, "the information presented is capable of being tested, either by observation or experiment" (IASB, Management Commentary, 2010, para. BC44). Although the ASB does not present verifiability as a separate principle in OFR statements, it does require directors to write a cautionary statement for forward-looking information, which they think, is not easily verifiable. Such a requirement for a cautionary statement on forward-looking information that is difficult to verify indicates that not all forward-looking

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[27] Relevance as a separate quality dimension will be discussed in the following sub-section.

information can be easily verified (ASB, 2006, para. 10). This point leads to further examination of the verifiability concept in the coming paragraphs.

Empirically, forward-looking information reflects the expected impact on company performance; this provides a "measure" of such an impact that is verifiable and, hence, more effective at improving the accuracy of forecasts (Bozzolan et al., 2009). Moreover, investors consider quantitative information to be more precise, useful, and credible (Botosan, 1997). Mercer (2004) argues that greater quantitative precision in management forecasts improves investors' assessments of the credibility of management disclosure. Arguably, forward-looking quantitative information is the most precise forecast of future performance, while qualitative forward-looking information is deemed to be vague (Morgan, 2008).

In that vein, quantitative information in general is more verifiable than qualitative information. Stated differently, when a firm discloses the basis for an expected factor, such as income, and details of its calculation, this in turn indicates that such information bears a higher degree of quality than if the firm makes a qualitative statement about the expected income. Additionally, such information becomes easily verifiable in the future by third parties.

Hutton et al. (2003) provide empirical evidence on this notion. This study investigates whether supplementary disclosures affect the forecast news and whether they affect the credibility of forecasts. The study focuses on the supplementary narratives for earnings forecasts. The authors classify these supplementary disclosures to qualitative "soft talk" or verifiable forward-looking statements.

Hutton et al.'s (2003) results reveal that soft talk, such as discussion on reasons behind a forecast, does not increase credibility while a verifiable forward-looking statement, such as sales forecasts, does increase credibility. This study suggests that quantitative rather than qualitative forward-looking information is more credible.

Based on the above discussion, quantitative forward-looking information is more accurate and could be easily verified by other stakeholders such as financial analysts. Therefore, the proposed disclosure quality measure assumes that the higher the proportion of forward-looking quantitative information, the higher the quality of the disclosure.

3.7.1.2 Relevance

It is argued that "the OFR should focus on matters that are relevant to the interests of members" (ASB, 2006, para. 6). In applying this principle, The ASB displays a disclosure framework for the OFR statements in which it recommends key elements to be disclosed for users in an effort to assist them in their firms' performance evaluation. However, management shall decide on the level of details given under each element based on each firm's circumstances. The researcher summarises and categorises these elements in Table 3.1. Accordingly, an OFR disclosure framework captures relevance as a quality dimension by definition.

Information is considered relevant "if it is capable of making a difference in the decisions made by users" (IASB, Conceptual Framework, 2010, p. 17). Looking at Table 3.1, which presents the OFR disclosure framework, it is evident that each topic and sub-topic could make a difference in users' decisions in their capacity as capital providers and can be used in making predictions about the eventual outcomes of past, present or future events or their effects on future cash flows. Accordingly, the OFR statement is basically relevant.

Table 3.1: Topics and Sub-Topics of OFR Disclosure Framework

Topic	Sub-Topic	Paragraph Number
1. **Nature of business**	• Market (industry). • Competitive environment. • Regulatory environment. • Objectives. • Strategies.	27(a)
2. **Development of performance**	• Present and future.	27(b)
3. **Resources, risks and relationships**	• Resources. • Commercial and financial risks. • Customers, suppliers, strategic alliances, creditors.	27(c)
4. **Position of the business**	• Disclosure about financial instruments. • Accounting policies used in the financial statements. • Capital structure (balance between equity and debt, capital instruments used, currency, regulatory capital, interest rate structure, funding plans, and reasons for such capital structure) • Cash flows (in and out), with appropriate segmental analysis. • Treasury policies (effect of cost of interest on profit, and impact of interest rate changes). • Liquidity of the entity.	27(d)
5. **KPIs**	• Definition, calculation method, assumptions, source of data.	38

Table constructed by author using information from OFR reporting statement (2006).

Nonetheless, the International Accounting Standards Board (IASB) provides a more specific definition of relevance, stating that "financial information is capable of making a difference in decisions if it has predictive value, confirmatory value or both" (IASB, Conceptual Framework, 2010, para. QC6).

Information is said to have a predictive value "if it can be used as an input to processes employed by users to predict future outcomes" (IASB, Conceptual Framework, 2010, para. QC8). On the other hand, "information is said to have a confirmatory value if it provides a feedback about (confirms or changes) previous evaluations" (IASB, Conceptual Framework, 2010, para. QC9). Additionally, information that has predictive value usually has confirmatory value.

The IASB (Conceptual Framework, 2010, para. QC8) maintains that, forward-looking information always has a predictive value, yet some other information could also have a

predictive value if such information is used to predict the future. This is consistent with the empirical evidence. Amir and Lev (1996) argue that forward-looking information conveys value relevance to external users. Beest et al. (2009) believe that the predictive value is the most important indicator of relevance. They use the extent of forward-looking information as one of the measures of predictive value. Muslu et al. (2010) show that the level of forward-looking information reveals useful information to the stock market by increasing the ability of current stock returns to predict future earnings.

Athanasakou and Hussainey (2010) conclude that investors view forward-looking performance disclosures as credible. Disclosure credibility refers to "investors' perceptions of the believability of a particular disclosure" (Mercer, 2004, p. 186). This definition highlights that the credibility of forward-looking disclosure –as a type of disclosure- depends on investors' perceptions. However, Mercer (2004) contends that investors' perception is not the only factor affecting disclosure credibility. Other factors affecting the perceived credibility of forward-looking information include disclosure channel, precession of estimates, time horizon, amount of supporting information, and inherent plausibility.

While there is no definite conclusion on which disclosure channel is more credible, psychological research suggests a link between the disclosure venue and credibility of disclosure (Mercer, 2004). Mercer also argues that a more precise point estimate is more credible than range estimates. Moreover, short-term forecasts are more credible than long-term forward-looking information. Additionally, detailed statements supporting the forecasts increase the credibility of forward-looking information. Finally, "the content of management's prior disclosures affects the inherent plausibility of its subsequent disclosures" (Mercer, 2004, p. 193). In conclusion, credibility of forward-looking information is difficult to assess as it depends on various factors, which normally differ across firms.

Therefore, while credibility of forward-looking information is not unconditionally ensured, however, the afore-mentioned discussion suggests that at both the regulatory and academic levels, relevance of forward-looking information is not a debatable issue.

In conclusion, in an effort to generalise the proposed measure so that it is applicable worldwide, the detailed definition of relevance suggested by the International Accounting Standard Board will be considered and the argument that the OFR is relevant by itself will not be adopted. In closing, the proposed measure uses the proportion of forward-looking information disclosed – the most widely used measure for the predictive value – to reflect the relevance dimension.

3.7.1.3 Supplement and Complement the Financial Statements

The third OFR principle maintains that disclosure of high quality should supplement the financial statements. In doing so, "the OFR should where relevant; provide additional explanations of amounts recorded in the financial statements, [and] explain the conditions and events that shaped the information contained in the financial statements" (ASB, 2006, para. 15). Conditions, events, and more explanations of numbers reflect qualitative information. Clearly, the ASB then calls for more qualitative information to supplement the quantitative information already addressed within the financial statements.

While quantitative information is valued in the verification sense – post verification of forward-looking information after it became a historical event– qualitative information is valued by analysts for being more informative and gives wider scope for understanding the firm's environment.

Empirically, prior studies reveal that financial analysts – as important annual reports users – value qualitative information and rely more heavily on it rather than quantitative information

(Previts et al., 1994; Rogers and Grant, 1997; Bricker et al., 1995; Nielsen, 2005; and Orens and Lybaert, 2007; 2010). Bell (1984) examines the extent to which analysts' use of information is affected by alternative forms of information (qualitative and quantitative) in chairman statements. He finds that financial analysts give more weight to qualitative information when evaluating research and development firms. Breton and Taffler (2001) examine the drivers of UK financial analysts' stock recommendations. They considered the content of 105 analysts' reports and then linked the content of the reports with "buy", "sell", and "hold" recommendations. They find that analysts rely heavily on non-financial, soft, qualitative information when making their stock recommendations. Drawing on the theoretical background of the OFR, and the empirical evidence, it appears prudent to measure the supplement the financial statements dimension via the proportion of qualitative information disclosed.

In complementing the financial statements, it is argued that "OFR should provide useful financial and non-financial information about the business and its performance that is not reported in the financial statements" (ASB, 2006, para. 14). Notably, the definition of additional disclosure, in general, is the release of any piece of information that is not required to be disclosed (Celik et al., 2006). In other words, narrative statements will always provide information not included in the financial statements.

More significantly, the topics and sub-topics disclosed under OFR -discussed in the previous sub-section- is useful financial (e.g. present and future performance- the second topic in table 3.1) and non-financial information (e.g. market, competitive environment, objectives- the first topic in table 3.1) about the business and its performance that is not reported in the financial statements. This is the same way OFR defines complementing the financial statements. Accordingly, including this quality dimension independently in the proposed quality measure would result in a duplicated score. Based on these propositions,

complementing the financial statements will not be included in the proposed disclosure quality measure as a quality dimension.

3.7.1.4 Comprehensiveness

Comprehensiveness is defined as the inclusion of relevant key issues (ASB, 2006, para. 20). Since the word "comprehensive" can be variously interpreted, it has been made clear that comprehensive does not mean the coverage of all possible matters. The ASB believes that the objective of the OFR statements is quality, not quantity, with regards to the content. Consequently, "the inclusion of too much information may obscure judgements and will not promote understanding" (ASB, 2006, para.20). The reporting statement suggests the disclosure of relevant key topics covering firm performance.[28]

Given the comprehensiveness definition discussed above, it can be measured through a score reflecting the spread of topics disclosed. Since it is a quality measure, and this research is not concerned with quantity, the researcher will check whether these topics are disclosed or not, regardless of the number of sentences discussing each topic. It is calculated as the number of topics addressed in an OFR statement divided by 15. The '15' reflects the maximum number of topics that could be disclosed. Note that, originally, there were 16 key elements, but the 16th element is the presence of KPIs. Since KPIs capture the comprehensiveness dimension in the proposed measure, it is excluded it from the list to avoid double counting.

3.7.1.5 Understandability

The ASB does not provide a definition of understandability; it only demonstrates that "the OFR should be comprehensive and understandable" (ASB, 2006, para.16). However, the IASB Conceptual Framework (2010, para. BC3.40), defines understandability as the quality

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[28] These items are listed in Table 3.1 the main topics are 5 (listed in column 1 of the table, and the sub-topics are 16 (listed in the column 2).

of information that enables users to comprehend its meaning. The IASB Conceptual Framework (2010, para. QC30) argues that understandability is enhanced when information is classified, characterised and presented clearly and concisely. Although it seems that the definition of understandability is simple and direct, it is not. Arguably, the classification and presentation of information has to do with comparability but not understandability. In other words, information could be clearly classified into categories but still not easy to understand. This could be the reason why the IASB (2008) does not suggest a measure for understandability and claims that comparability enhances understandability.

Beest et al. (2009) believe that the extent of graphs used in financial statements could be used to measure understandability. However, using the number of graphs as a proxy for understandability seems doubtable as a method, and ignores the evaluation of other textual context in the statements. Moreover, graphs entail significant measurement distortion, which yields a bias toward favourable performance vision (Beattie and Jones, 1992; 2002). Beattie and Jones (2008) maintain that graphs are used in annual reports to give a more favourable impression about the firm than it actually warranted. Muiño and Trombetta (2009) confirm Beattie and Jones (2008)'s argument and find that there is a positive relationship between favourable distorted graphs and investors' perception of corporate performance including disclosure policies. Notably, some studies distinguish between the complexity of the information's "readability" and the capability of users to comprehend the appropriate meaning "understandability" (Smith and Taffler, 1992). The former is text-centred while the latter is user-centred and affected by the individual characteristics of the user, such as experience, educational level, and nature (whether an investor, financial analyst, or a creditor).

Based on the above discussion, readability is believed to be more valuable to users compared to understandibility as a quality dimension. A decision in favour of readability rather than

understandability can be supported on several grounds. First, readability is generally used as a proxy for understandability (Smith and Taffler, 1992). Adelberg and Razek (1984) use cloze[29] procedure to examine the understandability of accounting textbooks. They argue that the readability of information might be used as an indicator of understandability. Second, the dominant understandability measure is determined by cloze procedure, which is impractical and includes a high level of subjectivity. In addition, other controlling variables, such as educational background, might affect the measure and raise doubts as to its credibility. Finally, there is a consensus that annual report narratives suffer from a readability problem (Courtis, 1995; and Beattie et al., 2004). Empirically, annual narratives are very difficult to read (Jones and Shoemaker, 1994). Accordingly, readability is considered as a quality dimension in the proposed disclosure quality measure.

Another question that follows is how readability should be measured. Smith and Taffler (1992) review different reliability measures and justify the existence of different formulas by different measures of word length and different weighting applied to the component parts. Generally, three indexes are widely used to measure readability: FLESCH, FOG, and LIX. The researcher employs LIX[30] because it uses a particular word length as a benchmark. Additionally, the application of LIX is found as both reliable and consistent for passages using five languages (see for example Anderson, 1983; and Bjornsson, 1983). Smith and Taffler (1992) argue that, given the limitations of other formulas, the LIX index is very appropriate in terms of speed and reliability of calculations.

$$\textbf{LIX index} = W + S$$

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[29]Cloze procedure was introduced by Taylor (1953) as a measure of the effectiveness of communication (Adelberg and Razek, 1984). For more information, see Adelberg and Razek (1984), Smith and Taffler (1992), and Torres and Roig (2005).

[30]LIX was first introduced by Anderson (1983) and Bjornsson (1983) from Sweden.

Where W = percentage of words of seven or more letters, and S = average number of words per sentence. LIX measures how complex the text is in terms of word complexity and the sentence itself. The two factors of the formula are then added together. This enables diagnosis of which factor contributes more to reading difficulty in any given text (Courtis, 1987). Consequently, a low LIX index is consistent with high levels of readability.

The main limitation argued in relation to readability formulas in general, is that their validity is a concern (Sydserff and Weetman, 1999). Consequently, Sydserff and Weetman (1999) developed a new texture index, which addresses the validity aspects. An example of the problematic nature of readability formulas such as LIX is that, they do not measure understandability. As discussed earlier, in the current framework, readability of the text is the concern and not understandability. Accordingly, such limitation does not present a threat to the validity of the readability measure used (i.e. LIX index). Moreover, although the texture index developed by Sydserff and Weetman (1999) overcome criticism to readability formulas, however, it still suffers from another limitation. As maintained by Sydserff and Weetman (1999, p. 477):

"The authors recognise that satisfying validity concerns is not sufficient. As a research instrument, texture index is more time-consuming than using computer-based readability formulas".

Therefore, in comparing the merits of readability formulas, such as, objectivity, reliability, and efficiency in terms of time and costs (Sydserff and Weetman, 1999) to their limitation, and given the time consuming nature of the texture index, using LIX formula is preferable for the design of the current research.

Based on the above-presented arguments, the proposed disclosure quality measure will use the LIX index as a measure for readability. The researcher uses an on line LIX index

calculator[31] to calculate the LIX index. However, LIX is inversely related to disclosure quality. Thus, for the purpose of the analysis, the researcher instead uses 30/LIX to measure the readability.

3.7.1.6   Balance and Neutrality

OFR disclosure is not subject to auditing by the external auditor. Consequently, the likelihood that management discloses good information and avoids disclosing bad information might be high (Clatworthy and Jones, 2003). This fact is also emphasised in the OFR reporting statement, whereby "the directors should ensure that the OFR retains balance and the members are not mislead as a result of the omission of any information on unfavourable aspects" (ASB, 2006, para. 22). Thus, high quality disclosure is when the firm has a transparency concerning disclosing bad as well as good news. Therefore, based on the reporting statement definition of balance and neutral disclosure, an OFR statement should include bad news, which the firm is already affected by. One empirical difficulty arises in judging the balance and neutrality of bad to good news disclosed. Stated differently, the researcher cannot simply assume that the more bad news disclosed the better. The objective is assessing whether firms are biased against the bad news they have. Notably, prior frameworks of disclosure quality do not include the balance in their measure, nor does the ASB suggest a measure for this.

Li (2010b) claims that industry leaders face less competitive pressures compared with industry followers. She finds that the association between disclosure and competition is less pronounced for industry leaders than for industry followers. This is consistent with prior literature arguing that firms with greater market shares – namely, industry leaders – typically face lower competition (Nickell et al., 1992; and Nickell, 1996). Moreover, empirical

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[31] The program available at; http://www.standards-schmandards.com/exhibits/rix/.

evidence finds that firms with large impending performance (i.e. those with large impending year-on-year increases in sales and operating profit margins) have lower tone bias in the annual report narrative sections (Schliecher and Walker, 2010). Industry leaders will have then less resistance to disclosing bad news.

Accordingly, the current research assumes that the market leaders in certain industry sectors will have a satisfactory balance of bad to good news. That is to say that since industry leaders are neutral, and are not biased against bad news, it follows that, under normal circumstances, they will disclose a fair balance. The proportion of this balance is then used as a benchmark. Hence, the current research presumes that followers should disclose at least the benchmark proportion.

Accordingly, in measuring the balance and neutrality dimension, the leader of each industry is identified. Following Melnik et al. (2005), leadership is determined by market share. Leading firms in the sample have large impending increases in sales and profits over the sample period. Thus, the proportion balance between bad and good news released by these leaders is used as the benchmark. Followers meeting or exceeding the benchmark are scored 1. Followers falling below the benchmark are given a percentage relative to the benchmark.

3.7.1.7 Comparability

ASB (2006) recommends that OFR should be comparable over time. In particular, "disclosure should be sufficient for the members to be able to compare the information presented with similar information about the entity for previous financial years" (ASB, 2006, para. 25). Therefore, comparability is the quality of information enabling users to identify similarities in, and differences between, two sets of economic phenomena (IASB, Conceptual Framework, 2010, para. QC22). Comparability as a quality dimension works to

facilitate the identification of main trends and the analysis of the firm's performance over time (ASB, 2006, para. 25).

Clearly, if a firm provides the same set of information over time, comparability would be achieved. This idea is consistent with using financial statement format as one indicator for comparability of financial statement quality (Jonas and Blanchet, 2000). However, the proposed disclosure quality measure utilises a more specific measure of comparability. In the current research, the disclosure of key performance indicators (KPIs) is used as a measure of comparability. KPIs are "a set of measures focusing on those aspects of organisational performance that are the most critical for the current and future success of the organisation" (Parmenter, 2007, p. 18). KPIs provide insights into the principal firm activities and enable an in-depth view of firm performance. Thus, it could be used as a basis for comparing the firm's results over time. This argument is consistent with the OFR, which claims that KPIs enhance the comparability of disclosure (ASB, 2006, para. 40).

So far, literature on KPIs in general is limited. It is expected that principal KPIs will differ among different industries. Arguably, "KPIs should be measured, and should therefore be quantitative in nature" (DEFRA, 2006).

The ASB (2006) does not call for a specific set of KPIs, which firms need to disclose to conform to the best practice regarding comparability. Therefore, the number and type of KPIs disclosed is considered to be a firm's choice. Stated differently, there is no benchmark against which the disclosed set of KPIs could be compared for the same firm as well as across different firms.

Nonetheless, the ASB sets out the information that should be provided for each KPI. It is stated (ASB, 2006, para. 76) that:

"For each KPI disclosed in the OFR:
- *the definition and its calculation method should be explained;*
- *its purpose should be explained;*
- *the source of underlying data should be disclosed and, where relevant, assumptions explained.*
- *Quantifications or commentary on future targets should be provided;*
- *where information from the financial statements has been adjusted for inclusion in the OFR, that fact should be highlighted and a reconciliation provided;*
- *where available, corresponding amount for the financial year immediately preceding the current year should be disclosed and;*
- *Any changes to KPIs should be disclosed and the calculation method used compared to previous financial years, including significant changes in the underlying accounting policies adopted in the financial statements, should be identified and explained."*

As noted from the above paragraph, when disclosing KPIs, the best practice is to disclose at least five elements of information regarding each KPI, namely, 1- Definition and calculation method, 2- Purpose, 3- Source of data, 4- future target, and 5- comparison with the previous financial year. There are two information elements about KPIs, which the ASB has suggested as a best practice in disclosing KPIs, which are:

6- *Any changes to KPIs should be disclosed and the calculation method used compared to previous financial years, including significant changes in the underlying accounting policies adopted in the financial statements, should be identified and explained.*

7- *Where information from the financial statements has been adjusted for inclusion in the OFR, that fact should be highlighted and reconciliation provided.*

However, when scoring KPIs in the current research, only the above mentioned five information elements will be considered. The other two information elements about KPIs are excluded due to their inapplicability and assessment difficulty. This is explained more in the coming paragraphs.

If point number (6) is to be considered, in this case, a company disclosing a change to a certain KPI would be given one; however, how can one judge that there was a change in the KPI's calculation but not disclosed? There are two main reasons behind the difficulty of identifying the change in each KPI's calculation. First, there is an interrelationship between point 1 (i.e. the definition and calculation method for each KPI should be explained) and point (6). To identify whether there was any change in the KPIs's calculation (point 6), one needs to compare the calculation methods for each KPI over two years. With many firms not disclosing the calculation method (almost 40% of the sample), one cannot evaluate the change for all firms in the sample. Accordingly, judging on whether there was any change in the KPI's calculation method would be inapplicable. Second, to judge on such comparison, one needs information about years 2005 and 2010 which are not included in the sample and, even if available, this process would include extensive human (manual) coding and would be ineffective in terms of both time and costs. One of the main advantages of the current proposed approach for measuring quality is the minimal use of manual coding and employing a computer-based content analysis approach. This should facilitate its use in other research areas as well as in the practice field by analysts and interested regulatory bodies. Therefore, it is not wise to include point number 6 in the scoring because this will hinder the applicability of the proposed quality measure.

Similarly, the same logic applies to point 7 (i.e. where information from the financial statements has been adjusted for inclusion in the OFR, that fact should be highlighted and reconciliation provided). A firm, which discloses the adjustment, will take 1. However, unfortunately, there is no way to identify the case where a firm has adjusted information from the financial statement but did not disclose it. Therefore, point number 7 is inapplicable and hence is not included in the score calculation.

Importantly, the researcher assessed point numbers 6 and 7 (i.e. whether there are some firms disclosing information about a change on the KPIs calculation method or about any adjustment to the financial statements' figures). Almost, no firm has mentioned any of these points (i.e. 6 & 7). Therefore, if these two items were applicable and considered, all companies would take zero in these two information elements. Consequently, there is no problem for the score being calculated based on 5 rather than 7 items.

Accordingly, in an effort to evaluate the comparability of OFR statements, the underlying study scores each OFR statement in relation to KPI disclosure based on the fulfilment of these five items. Each item is given a score of "1". For a company disclosing only one item, it takes 0.2 (i.e. 1 divided by 5); a company that discloses the five items takes 1 (i.e. 5 divided by 5); and a company which fails to disclose any of these items takes zero (zero divided by 5). This approach allows evaluating the usefulness of the KPIs disclosed.

The evaluation is done for the firm as a whole, not for each KPI. Stated differently, if the company satisfied these five elements in at least one KPI but not for all KPIs disclosed, the company will be given 1 (5/5), even though not all these elements were not met in the other KPIs. The decision not to calculate the quality score for each KPI and then to calculate the average quality score of KPIs for each firm is based on the following justifications. First, this approach is very time consuming, impractical, needs very intensive manual coding, and will be a limitation to the proposed measure. This is because one of the advantages of the applied approach is that it is easy to be replicated and practical in time and cost, and would limit the applicability of the quality score.

Second, this approach is also inaccurate and has many limitations in the following sense: the ASB did not state an optimal number for KPIs disclosed, i.e. it is the company's choice to disclose how many KPIs. Therefore, a company may define two KPIs only; for example, if

this company did the two perfectly (5 items), it will take 1(5/5). Consider now another company, disclosing 5 KPIs; three of them are reported perfectly, and two are not; in this case, therefore, this company will take a smaller score than the first company although it is reporting three KPIs perfectly and the first company reports only two KPIs perfectly. Moreover, this approach will no doubt consider the number of KPIs disclosed and, with the absence of guidance in this regard and because including too many KPIs is a limitation (ASB, 2009), calculating the quality score for each KPI would result in imprecise scoring.

Accordingly, the KPI score is a continuous score ranging from zero for a company that does not disclose any of the above stated items to 1, representing a company which discloses the above stated five items.

The researcher manually read and analysed the KPI section in each annual report and scores each firm as to what extent it discloses the five items stated by the ASB in relation to KPIs disclosure, in the manner explained above. Examples of the calculation procedures are provided in Appendix 1.

In summary, derived from the above-discussed OFR principles, this research suggests a multi-dimensional and comprehensive definition for a best practice disclosure quality. The current proposed disclosure quality measure, therefore, captures seven information dimensions. Three of these dimensions are quantity-based, namely, proportion of forward-looking quantitative information, proportion of forward-looking information, and proportion of qualitative information.

As discussed previously in section (3.5), it is hard to develop a quality measure totally free of a kind of quantity or counting (Botosan, 2004). Beattie et al. (2004, p. 230) also highlight this point, arguing that: "companies that say relatively more can be expected to provide disclosure of higher quality, all other things being equal. However, relative amount is only

one quality dimension". To conclude, the main limitation of most prior studies is using the mere quantity as a proxy for quality. In the underlying study, the researcher uses disclosure quantity as an unavoidable component of the overall quality score and not as a proxy for disclosure quality.

Table (3.2) lists the quality dimensions (OFR principles) and the related measures used to evaluate each of these dimensions.

Table 3.2: OFR Quality Dimensions and the Related Measures

OFR Principle(s)	Measures of Quality Dimension(s)
Forward-looking orientation	Forward-looking quantitative information.
Relevance	Forward-looking information.
Supplement the financial statements	Qualitative information
Comprehensiveness	Scope of topics disclosed.
Balanced and Neutral	Bad news relative to good news.
Comparability	KPIs.
Readability	LIX Index.

Table constructed by author.

3.8   The Aggregated Disclosure Quality Score

In this section, the researcher elaborates the prime methodological approach employed in calculating the aggregated disclosure quality score. The proposed disclosure score is derived through a series of sequential steps, chapter Two section 2.2.2.2 discusses these steps in details (see Figure 2.1). In summary, these steps include sample selection, preparing the text for coding, defining the analysis text unit, constructing keyword lists all of which are elaborated in section 2.2 of chapter Two. The upcoming section presents the model used to calculate the disclosure quality and details the calculations method.

The aggregated quality score is a function of seven measures (refer to Table 3.2) for a list of these measures) representing seven quality dimensions (forward-looking orientation, relevance, supplement the financial statements, comprehensiveness, Balance and neutrality, and comparability). The definition and measurement of each of those dimensions are presented in chapter Three, section (3.7.1).

The proposed disclosure quality measure is articulated in the following formula:

$$QUALITY = \% \ FLQ + \% \ FL + \% \ QUAL + SPREAD + \% \ BGL + KPIs + 30/LIX$$

Where;

FLQ = the proportion of forward-looking quantitative sentences. This is a continuous variable from 0-1, reflecting the forward-looking orientation of OFR statements. It is calculated as the number of forward-looking quantitative sentences scaled by the number of forward-looking sentences in OFR statements.

FL = the proportion of forward-looking sentence. This is a continuous variable from 0-1, reflecting the relevance of the OFR disclosure. It is calculated as the number of forward-looking sentences in an OFR statement divided by the total number of sentences in the OFR statement.

QUAL = the proportion of qualitative sentences. This is a continuous variable from 0-1. It reflects to what extent an OFR statement supplements the financial statement. It is calculated as the number of qualitative sentences divided by the overall number of sentences in an OFR statement.

SPREAD = the scope of topics disclosed. This is a continuous variable from 0-1, representing the comprehensiveness quality dimension. It is calculated as the number of topics addressed in an OFR statement divided by 15. The '15' reflects the maximum number of topics that could be disclosed. Note that, originally, there were 16 key elements, but the 16th element is the presence of KPIs. Since KPIs capture the comprehensiveness dimension in the proposed measure, it is excluded it from the list to avoid double counting.

BGL = this is a continuous variable from 0-1, reflecting the balance and neutrality of the disclosure. It is measured as the proportion of bad to good news sentences given the industry leader percentage of bad to good news. Examples in Appendix 2 show the calculations in detail.

KPIs = this is a continuous variable from 0-1, reflecting the comparability dimension. It is calculated as the number of disclosed items about KPIs relative to the number of items that should be disclosed (i.e. 5). The minimum score of zero shows a company which fails to disclose any of the required 5 items (zero divided by 5). A maximum score of 1(i.e. 5 divided by 5) represents a company that discloses the five items. Examples in Appendix 1 show the calculation in detail.

LIX = the readability score assigned by the computer software. LIX is inversely related to disclosure quality. Thus, readability is measured through the inverse of LIX. The researcher firstly tried 1/LIX, however, the magnitude of this figure is too small compared to other quality dimensions. Therefore, the researcher finds that (30/LIX) is the best to standardise the overall quality score (see descriptive analysis Table 3.3). This is a continuous variable from 0-1, reflecting the readability dimension.

Notes on the Calculation of the Aggregated Score:

1-Frequency versus Proportion:

The proportion and not just the frequency of any measure (e.g. FL, qualitative, etc.) is used to control for the size of the OFR statement. Using the frequency will not allow to control for the OFR statement size. Consider the following example of two OFR statements:

The first (A) consists of 1000 sentences, of which 200 are forward-looking sentences.

The second (B) consists of 100 sentences, of which 40 are forward-looking.

Calculating the forward-looking measure using frequency

Firm (A): 200 sentences   Firm (B): 40 sentences

Judging on the frequency (i.e. ignoring the length of the OFR statement) shows that firm (A) is more forward-looking oriented.

Calculating the forward-looking measure using Proportion

Firm (A): 200/1000 = 0.2 i.e. 20% of the OFR statement is forward-looking oriented.

Firm (B): 40/100 = 0.4 i.e. 40% of the OFR statement is forward-looking oriented.

Judging on the proportion (i.e. considering the length of the OFR) shows that firm (B) is more forward-looking oriented than firm (A).

In conclusion:

Frequency leads to mistakenly considering firm (A), as more forward-looking oriented than firm (B), i.e. receives a higher score in this quality dimension. Accordingly, the proportion of each measure results in evaluation that is more accurate because it controls for the length of an OFR statement.

2-Calculation of FL versus FLQ

FL (capturing the relevance dimension) =

$$\frac{\text{Number of Forward-Looking Sentences in an OFR Statement}}{\text{Total Number of Sentences in an OFR Statement}}$$

FLQ (capturing forward-looking dimension) =

$$\frac{\text{Number of Forward-Looking Quantitative Sentences in an OFR Statement}}{\text{Number of Forward-Looking Sentences in an OFR Statement}}$$

As noticed from these two formulas, both the nominator and the denominator are different and there is no double counting in either measure.

3- Appendix (3) shows three examples on how each of the above dimensions are calculated and how the aggregated score is reached. The first example shows a very low quality score (eleventh lowest firm). The second example presents a below average quality. The third firm displays the highest quality score.

3.8.1 Descriptive Statistics of the Quality Dimensions

The following Table 3.3 provides some statistics for the overall quality score and for individual quality dimensions.

Regarding the overall quality score (*QUALITY)*, the greater the score achieved, the higher the disclosure quality level. The mean and median are 3.619 and 3.624 respectively. The maximum quality score attained is 4.528, while the minimum is 2.481. This implies a wide variation in disclosure quality among firms. Where some firms provide the market with high-quality disclosures and others opt to disclose at low quality.

Table 3.3: Descriptive Statistics of the Individual Quality Dimensions

Variable	Mean	Std. Dev.	Minimum	25%	Median	75%	Maximum
QUALITY	3.619	0.391	2.481	3.383	3.624	3.901	4.528
FL	0.156	0.044	0.019	0.123	0.154	0.185	0.306
FLQ	0.390	0.119	0.097	0.311	0.380	0.468	0.796
QUAL	0.582	0.090	0.295	0.526	0.585	0.643	0.927
SPREAD	0.752	0.116	0.333	0.667	0.733	0.867	0.933
BGL	0.843	0.229	0.08	0.690	1	1	1
30/LIX	0.497	0.039	0.417	0.469	0.492	0.517	0.769
KPIs	0.395	0.250	0	0.2	0.4	0.6	1

(QUALITY) is the disclosure quality score, *(FLQ)* denotes forward-looking qualitative dimension, measured by the frequency of forward-looking quantitative information scaled by the frequency of forward-looking sentences. *(FL)* is forward-looking dimension, measured by the proportion of forward-looking information. *(QUAL)* is the qualitative dimension measured through the proportion of qualitative information. *(SPREAD)* is the spread of key topics addressed. This is the number of actual topics disclosed divided by the maximum number of topics that could be disclosed (i.e. 15). *(BGL)* is the proportion of bad to good news given the industry leader percentage. *(LIX)* is the readability score assigned as numbers by computer software. *(KPIs)* reflects the comparability dimension and is calculated as the number of disclosed items about KPIs relative to the number of items that should be disclosed (i.e. 5).

Table constructed by author based on the quality score calculations as discussed in Section 3.7.1.

In analysing the individual quality dimensions, it is worth noting that there is no optimal level or benchmark – for most of the individual dimensions – either proposed by the ASB or supported by the academic research. Exceptions include, first, the spread dimension, which reflects the comprehensiveness of the disclosure statement. The optimal level is 1 (i.e. 15/15). Second, KPI score which measures the comparability over time. The optimal score is one where the company discloses 5 items about KPIs (i.e. definition and calculation, purpose, source of data, future target, and comparison with the previous financial year). Each of these five items takes a score of one when disclosed, the KPI score is the sum of items disclosed divided by the maximum items that should be disclosed (i.e. 5).

It is probable that the selection of quality dimensions is a managerial decision based on many inputs such as the firm's size, industry type and objectives. Yet generally, the higher the score is, the better the firm is at fulfilling the quality dimension.

Table 3.3 shows that forward-looking information *(FL)* reports a mean and a median of 15.6% and 15.4% respectively. On average, 16% of firms' OFR focus on the future. The lowest relevant OFR statement has almost 2% future-oriented information whilst the most relevant statement devotes 31% of its disclosure to the firm's future aspects. The forward-looking quantitative information *(FLQ)* dimension shows a mean of 39% and a median of

38%. Given the use of forward-looking quantitative information as a measurement for the verifiable forward-looking information dimension, it is arguable that 39% of firms' future-oriented information is verifiable. This suggests that firms are interested in being viewed as providing a verifiable future-oriented picture of the firm's status. The maximum percentage is as high as 80% and the minimum is 10%. Notably, there is a wide range of dispersion among firms in terms of how verifiable their OFR statements are.

Table 3.3 reveals that more than half of the OFR statement is in a qualitative form, indicated by a mean and a median of 58.2% and 58.5% respectively. Such percentages suggest that OFR successfully supplement the information provided in financial statements. The maximum supplementation level is as high as 92.7% and the lowest is 29.5%.

The spread of disclosure *(SPREAD)* has a mean of 75.2% and a median of 73.3%. Some firms in the sample provide a highly comprehensive disclosure, implied by a maximum score of 93% (those are firms which disclose 14 topics out of the benchmark, i.e. 15). Other firms provide a less comprehensive disclosure covering only 5 topics (almost achieving a 33% comprehensiveness level).

The balance dimension *(BGL)* reports a mean of 84.3%. Bearing in mind the approach used in calculating the balance dimension,[32] a fairly balanced disclosure is expected when the score is 1. Therefore, on average, firms in the sample do not provide a good level of balanced disclosure and are biased in favour of good news. This is consistent with Clatworthy and Jones (2003) and Dedman et al.'s (2008) findings using UK samples. More significantly, some firms have a very low score of 0.08. Readability measured by *(30/LIX)* shows a mean of 0.497 and a median 0.492 respectively. According to Courtis (1987; 1995), a LIX score of 60 represents a very difficult readability level. Therefore, generally, OFRs are

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[32] See chapter Two, section 2.7.5

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very difficult in terms of the readability aspect. The minimum score is 72 LIX, which reflects an easy text, whereas the maximum score of 39 LIX implies increased difficulty.

The final individual dimension is *(KPIs)*. It reflects the comparability of disclosure over time as suggested in ASB (2006, para.40). It is a continuous variable ranging from 0 to 1. The statistics show that the mean and median are 0.395 and 0.4 respectively. This indicated that on average, firms disclosed only two items about KPIs. During the manual content analysis, the researcher finds that these two items are usually the definition of the KPI and a comparison of the current year results with the previous financial year. The maximum score attained is 1. Only five observations (i.e. 0.9%) meet the OFR best practice regarding KPIs and disclose the five suggested items. The minimum score is zero, 68 observations (i.e. 12.6%) fail to provide any of the five items about KPIs suggested by the OFR best practice reporting statements.

In sum, the individual quality dimensions vary across the sample. However, notable conclusions can be drawn. The first is the high degree of difficulty in terms of readability of the OFR statements. Secondly, OFR statements in general are biased towards good news. Accordingly, the ASB is advised to highlight to firms the preference of making their disclosures easily readable. Additionally, the findings reveal that UK firms tend to be biased against the disclosure of bad news.

The first column of Table 3.4 lists the OFR principles/quality dimensions. The second column displays the corresponded measure for each quality dimension. The first and second columns correspond to Table 3.2. Column 3 shows explicitly the calculation method for each measure.

Table 3.4: Summary of the Proposed Disclosure Quality Measure

OFR Principle(s)	Measures of Quality Dimension(s)		Calculation Method		Magnitude	
Forward-looking orientation	Forward-looking quantitative information.	Section 3.7.1.1	Number of Forward-Looking Quantitative Sentences in an OFR Statement / Number of Forward-Looking Sentences in an OFR Statement.	Section 3.8	Continuous variable from 0-1.	Section 3.8
Relevance	Forward-looking information.	Section 3.7.1.2	Number of Forward-Looking Sentences in an OFR Statement / Total Number of Sentences in an OFR Statement.	Section 3.8	Continuous variable from 0-1.	Section 3.8
Supplement the financial statements	Qualitative information	Section 3.7.1.3	Number of Qualitative Sentences in an OFR Statement / Total Number of Sentences in an OFR Statement.	Section 3.8	Continuous variable from 0-1.	Section 3.8
Comprehensiveness	Scope of topics disclosed.	Section 3.7.1.4	Number of topics disclosed / Maximum number of topics to be disclosed (i.e. 15).	Section 3.8	Continuous variable from 0-1.	Section 3.8
Balanced and Neutral	Bad news relative to good news.	Section 3.7.1.6	The proportion of bad to good news given the industry leader percentage.	Section 3.8	Continuous variable from 0-1.	Section 3.8
Comparability	KPIs.	Section 3.7.1.5	Number of items disclosed on KPIs / Maximum number of items to be disclosed (i.e. 5).	Section 3.8	Continuous variable, 0-1	Section 3.8
Readability	LIX Index.	Section 3.7.1.5	30/LIX, LIX is electronically calculated according to the formula discussed in Section (3.7.1.5).	Section 3.8	Continuous variable from 0-1. Where 0 indicates a very difficult to read text and 1 is very easy text.	Section 3.8

Table constructed by author.

Adding up those individual scores gives the aggregated quality score as explained in the examples provided in Appendix 2. Appendix 2 corresponds to column three in the above table. Quality dimensions in the above table are presented in the same consequence of Appendix 2.

3.9 The Overlap between Business Review and OFR

After presenting the proposed quality measure, this section discusses the link/overlap between the Business Review (BR) and the OFR reporting statement. Table 3.5 drafts such overlap; columns 1 and 2 are extracted from the ASB press release of 2008. Column 3 is not provided by the ASB; rather, the researcher provides it for a more clarified picture on the overlap between the (BR) and the OFR. It shows the quality dimensions/principles common between the two statements. Column 1 lists the elements of the BR; column 2 shows the section and/or paragraph reference of the Companies Act and the OFR respectively; column 3 lists the OFR quality dimension corresponding to each BR element.

Table 3.5: The Overlap between the BR and the OFR

Companies Act 2006: Elements of the Business Review	Section/Paragraph References:		OFR Quality Dimensions/ Principles
For all companies (other than those subject to the small companies' regime), the Business Review must contain:	**Companies Act Sections**	**OFR Paragraphs**	
A fair review of the business and information to enable users to assess how directors have performed their duties under section 172 of the Companies Act 2006 (duty to promote the success of the company)	417(2) 417(3)(a)	22, 30-32, 36-37	The comprehensiveness dimension: first topic* (Nature of the business).
A description of the principal risks and uncertainties facing the company	417 (3)(b)	27(c), 52 c\azxfty-56	The comprehensiveness dimension: third topic* (Risks).
A comprehensive analysis of the development and performance of the business during the financial year	417 (4)(a)	27(b), 30-32, 43-46	The comprehensiveness dimension: second topic* (Development of performance – past performance).
A comprehensive analysis of the financial position of the business at the end of the year	417 (4)(b)	27(d), 30-32, 50-51, 60-74	The comprehensiveness dimension: fourth topic* (Position of the business).
An analysis of the main trends and factors likely to affect the future development, performance and position of the business	417 (5)(a)	8-12, 27(b), 33-35, 47-49	1-The comprehensiveness dimension: second topic* (Development of performance – future performance). 2-The forward-looking orientation dimension.
Information regarding environmental matters and the impact of the business on the environment including any related policies and the effectiveness of those policies	417 (5)(b)(i)	28(a), 29, 35	The comprehensiveness dimension: first topic* (Competitive and regulatory environment).
Information regarding employees and social and community issues including any related policies and the effectiveness of those policies	417 (5)(b)(ii) & (iii)	28(b) & (c), 29	The comprehensiveness dimension: third topic* (Relationships-employee).
Information about persons with whom the company has contractual or other arrangements which are essential to the business of the company	417 (5)(c)	28(d), 57-59	The comprehensiveness dimension: third topic* (Relationships (e.g. customers, supplier, strategic alliances, and creditors).
Analysis using financial and Key Performance Indicators (KPIs) and, where appropriate, other KPIs, including information relating to environmental matters and employees. (Medium-sized companies need not comply with the requirements that relate to non-financial matters)	417 (6)(a) & (b) 417 (7)	38-42, 75-77	The comprehensiveness dimension: fifth topic* (KPIs).
The review must, where appropriate, include references to, and additional explanations of, amounts included in the company's annual accounts	417 (8)	13-15	Supplement the financial statements dimension.

Table is constructed by author using data from Companies Act (2006) and OFR reporting statement (2006). Refer to Table 3.1 for a list of the topics (elements) of an OFR statement.

As shown in the above Table 3.5, the Companies Act requires that BR must include forward-looking information, be comprehensive, and supplement the financial statements. Accordingly, the common elements/principles between BR and OFR statements, are forward-looking orientation, comprehensiveness, and to supplement the financial statements. Other elements of the OFR are not included in BR (i.e. relevance, balance and neutrality, understandability, and comparability). Accordingly, BR could be considered a part of the OFR; stated differently OFR as a best practice statement is wider and encompasses more principles than the mandatory BR.

Notably, the ASB release of 2008 (columns 1 and 2 of Table 3.5) gives the reader an indication that all the elements called for by the Companies Act (2006) -column 1- in the BR are identical to the elements of the OFR. Such indication is given through listing the relevant section and paragraph references –column 2. However, the ASB published a report in 2009 titled 'A Review of Narrative Reporting by UK Listed Companies in 2008/2009' which cancels this indication. This report highlights that, while most elements of the BR seem to be similar to that of the OFR, the later provides a space for best practice which is not required under the BR.

Similarly, the review report of 2007 undertaken by the ASB staff contends that (ASB, 2007, Summary of Conclusions, p. 2):

" Best practice - the degree to which companies are reporting above and beyond the legal requirements and have adopted the recommendations in the ASB's Reporting Statement on the OFR (OFR), which the FRC believes is the most up-to-date and authoritative source of best practice guidance (covered in section 2); and

" Compliance - how UK companies are performing in the light of the requirement under the Companies Act 1985 to provide a Business Review within the directors' report".

To illustrate this distinction, for example, in relation to the first element of the Business Review (i.e. a fair review of the business), "The Companies Act (2006) does not elaborate on

what is meant by a "fair review" (ASB, 2009, parg. 3.1). On the other hand, the ASB contends that, "OFR should include: description of the business and the external environment in which it operates, and the objectives of the business and the strategies for achieving these objectives" (ASB, 2009, para. 3.1). Moreover, ASB (2006, para. 32) states that "…the OFR should include discussion of matters such as the entity's major markets and competitive position within those markets…".

As a second example, The Companies Act (2006) requires that BR reports key performance indicators, while no guide given as to the required level of details about each key performance indicator. On the other hand, the ASB recommends that OFR includes some specific information about each KPI (e.g. definition, purpose, source of data, etc.).

Notably, the proposed quality measure evaluates detailed aspects of business and its external environment as required by OFR (i.e. strategy, market, regulatory and competitive environment) (refer to Table 3.1). Additionally, the proposed measure evaluates the detailed aspects of key performance indicators (see section, 3.7.1.7). Thus, the proposed quality measure evaluates the best practice disclosure based on the OFR quality dimensions.

The following Table 3.6 summarises the differences between the BR and OFR based on the ASB review report of 2009 as well as the reporting statement of OFR (2006). Based on the below differentiation between BR and OFR, it is clear that the proposed quality measure evaluates the elements of the OFR best practice statements, not merely the BR requirements. In other words, to recognise the previously discussed overlap between OFR and the BR, it is claimed that the current research provides a best practice disclosure quality measure for the OFR narrative in UK annual reports.

Table 3.6: Elements included in the OFR Reporting Statement but not in the BR

Elements/Principles of OFR not included in the Business Review	Comments
Comprehensiveness	In the Business Review, this quality dimension is mentioned only in regards to performance and position of the business with no elaboration given to the word comprehensive (ASB, 2009, para. 3.5). In OFR, this is a quality dimension for the whole statement.
Business Description: Objectives Strategies Market Regulatory environment Competitive environment Development and performance of Business and Position Financial instruments Accounting policies Capital structure Treasury policies Liquidity	None of these elements are not included in the Business Review.
KPIs Definition, purpose, source of data, future target, and comparison with the previous year.	Under the Business Review, KPIs are stated very generally as follows: (see Table 2.3). Analysis using financial and Key Performance Indicators (KPIs) and, where appropriate, other KPIs, including information relating to environmental matters and employees. (Medium-sized companies need not comply with the requirements that relate to non-financial matters).
Relevance	Not required under the Business Review.
Balance and neutrality	In the Business Review, this quality dimension is mentioned only in regards to performance and position of the business with no elaboration given to the word Balance (ASB, 2009, para. 3.5). In the OFR, this is a quality dimension for the whole statement. There is no mention for neutrality in the Business Review.
Comparability	Not required under the Business Review.

Table is constructed by author using data from Companies Act (2006) and OFR reporting statement (2006).

3.10 Summary and Conclusions

This chapter illustrated the general aspects of disclosure, particularly definitions and various proxies for disclosure quality. It also considered prior attempts to develop a measure for disclosure quality. Such attempts entail many limitations, and consequently the literature still suffers from a gap in defining a disclosure quality measure. Importantly, this chapter mainly aimed to develop a new measure for disclosure quality that overcomes the limitations of prior attempts. In doing so, the principles of OFR reporting statement issued by the ASB provide guidance on the dimensions of high-quality information.

The aggregated quality score is a function of seven measures representing seven quality dimensions. The frequency of forward-looking quantitative information scaled by the frequency of forward-looking sentences in the OFR statement reflects the forward-looking orientation dimension. The proportion of forward-looking information captures the relevance dimension. The proportion of qualitative information measures the how the disclosure supplement the financial statement. The disclosure spread reflects the comprehensiveness of the disclosure. The proportion of bad to good news given the industry leader measures the balance and neutrality of the disclosure. Comparability is measured using the usefulness of KPIs as suggested by the ASB. Finally, the LIX index measures the readability. Accordingly, the current research provides a multi-dimensional definition of disclosure quality as follows: "the totality of inherent qualitative characteristics of information in OFR best practice statements that bear on its ability to increase the users' ability to assess firms' strategies and the potential for those strategies to succeed".

The chapter also introduced the steps followed to produce a disclosure quality score; the output of the disclosure quality measure. Both traditional (manual) and computer-based content approaches are used in developing this score. A computerised content analysis is used to automate the calculation of forward-looking orientation, relevance, supplement the financial statements, comprehensiveness, understandability, and balance and neutrality. The traditional content analysis is used in evaluating the comparability of disclosure.

Chapter Four : Reliability and Validity of the Proposed Disclosure Quality Measure

4.1 Overview

Chapter Three developed a measure for DQ based on qualitative information dimensions recommended by the OFR guiding principles. It introduces the steps followed to produce a disclosure quality score; the output of the disclosure quality measure. This chapter is devoted for the reliability and validity tests of the proposed measure. Chapter Four is organised as follows. Section 4.2 introduces several tests for the reliability of the proposed disclosure score. Section 4.3 discusses the validity of the proposed disclosure score. The chapter ends by section 4.4 which summarises and concludes.

It is crucial for a new methodology to be reliable and valid if it is to gain acceptance in the literature. For a valid inference, Weber (1990) argues that the classification procedure should be reliable and valid. Reliability refers to "the ability of different people to code the same text in the same way" (Weber, 1990, p. 12). Validity refers to the extent to which the variables generated from the classification procedure represent what the researcher intends it to represent. In the coming sections, the reliability and validity of the proposed measure for best practice disclosure quality are discussed.

4.2   Assessment of Reliability of Disclosure Scores

Reliability of the content analysis is usually an issue whenever manual content analysis is used or where multiple coders are involved. Prior literature argues that content analysis is not considered reliable if it is conducted only once or only by one particular person (Neuendorf, 2002). Typically, "computational content analysis is deterministic and hence perfectly reliable. No ambiguities and uncertainties are tolerated within a computer" (Krippendorff, 1980, p. 119). Owing to the fact that the current study uses a computerised

content analysis approach, and mainly one coder is involved, reliability should not be a concern.

Despite this argument about reliability, the reliability of the computerised content analysis is based on the reliability of the coding schemes – keyword lists – designed by the researchers. This is important as the computer then processes this scheme. Sydserff and Weetman (2002) establish that researchers should be cautious about using computerised content analysis as a proxy for the manual content analysis without verifying this assumption empirically. Accordingly, the reliability of the keyword lists used in the computerised content analysis is of great importance. There are three types of reliability tests: stability, reproducibility and accuracy (Krippendorff, 1980).

The vast majority of prior studies do not utilise the three tests simultaneously. Abrahamson and Amir (1996), Beattie et al. (2004), and Beretta and Bozzolan (2008) use reproducibility, while Hussainey (2004) uses stability and accuracy. Others do not test for reliability (e.g. Henry, 2006; 2008; Morgan, 2008; Henry and Leone, 2009; Kothari et al., 2009; and Muslu et al., 2010). Interestingly, the current study applies the three types of reliability tests for all keywords lists.

The first reliability aspect is stability. Stability is defined as "the degree to which a process is invariant or unchanging over time" (Krippendorff, 1980, p. 130). Arguably, the stability of the coding procedures is guaranteed as long as it is computerised.[33] As for the stability of keyword lists, the researcher coded five OFR statements manually at one time. After a period, a sample of sentences from the five OFR statements was coded again. The resulting coding generated from the second time phase coincides exactly with those arriving the first

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[33] The researcher writes a coding program for each keyword list. Each program will yield the same scores over time for a typical OFR statement. For example, the forward-looking program for Arriva in 2006 will always show that 37 sentences represent a forward-looking context, which is almost 15% of the total OFR statements for this firm.

time round. Stability, however, is the weakest reliability indicator and should not be trusted on its own (Krippendorff, 1980).

Reproducibility is the second measure of reliability. Marston and Shrives (1991) contend that the index scores awarded to firms could be considered reliable if other researchers could replicate (reproduce) the same results. The authors maintain that whenever the score is extracted from annual reports, which remain constant over time, there is no obstacle to repetition. Nevertheless, Marston and Shrives (1991) believe that the reproducibility problem is more apparent in behavioural science. Krippendorff (1980) defines reproducibility as the degree to which a process can be replicated under different circumstances and using different coders. Again, reproducibility of the score itself produced by the computer is feasible and therefore reliable.

As to the reproducibility of the manual coding when deciding on the final keywords list, the researcher and an independent coder[34] individually coded a randomly selected sample of 30 sentences for forward-looking, bad news and good news keywords lists. With respect to forward-looking keywords, one sentence was disagreed upon; however, this disagreement was resolved. For bad news, disagreement arose over two sentences only, and such disagreements were resolved. There was no disagreement over the good news list. Consequently, drawing from Krippendorff's (1980) arguments that for a process to be reliable, the rules governing it must be explicit and applicable equally to all units of analysis, the level of reliability from a reproducibility viewpoint is generally highly satisfactory.

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[34] This is Dr Khaled Hussainey, the second supervisor, who has extensive experience in the computerised content analysis approach.

The last test of reliability is accuracy. As discussed before, the accuracy of each word in every keywords list is checked before considering it a keyword. Each keyword is examined as to whether it really indicates what it should. A word is included in the final keyword list if it appears in its relevant context in at least 90% of the sentences.[35]

In addition, the accuracy tests are extended to investigate how well the computerised coding is correlated to the manual coding. In an attempt to draw a conclusion on this, four steps are followed. At the first step, the researcher and an independent coder manually coded five OFR statements independently. At the second step, to avoid subjectivity and human errors, the manual coding of both the researcher and the independent coder was compared; the correlation between both coders was 96%. At the third step, disagreements between both coders were discussed and resolved. Two examples of disagreements are given below:

> "Almost 6,000 of our qualified drivers attended courses on customer care or defensive driving during 2009, and we also invested almost £1,000 in our vocational qualifications programme" (National- OFR, 2009).

The principal researcher coded this sentence as quantitative forward-looking since the investment indicates a forward-looking context. The researcher agreed that the sentence is quantitative; however, the researcher claimed that the sentence should not be considered as forward-looking. The sentence by itself does not show any plans or outcomes in the future. Notably, during the reliability test of the forward-looking keywords, the manual coding of a sample shows that "investment" comes in a forward-looking context only in 77% of the sentences and, thus, was excluded from the final keywords list. After the discussion, the principle coder agreed not to consider it as a forward-looking sentence. Consider the second example:

> "Rob Walker retired as CEO of Sainsbury's Bank earlier this month as planned after completing his two year contract" (Sainsbury's - OFR, 2008).

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[35] See section (4.2) for a detailed illustration of this accuracy test.

The principal researcher coded this sentence as quantitative on the grounds that it quantifies the number of years for which the CEO was employed. However, the second coder argued that it is qualitative. After the discussion, the principle researcher agreed to consider it as a qualitative sentence since no quantitative information about the firm's performance was provided.

At the fourth step, after solving disagreements, the final agreed-upon coding, is correlated with the computerised coding. Table 4.1 shows the correlation analysis between manual coding and computerised coding.

The Pearson correlation test shows that manual coding is significantly correlated with the computerised coding. The correlation for each type of coding is statistically significant at the 1% level, except for the forward-looking quantitative aspect, which is significant at the 5% level. Such rigorous correlation supports the veracity of the overall methodology employed for calculating disclosure quality scores.

Table 4.1: Pearson Correlations between Manual and Computerised Content Analysis

	Pearson Correlation	P-value
Manual forward-looking vs. computerised forward-looking	0.969***	0.007
Manual quantitative vs. computerised quantitative	0.962***	0.009
Manual forward-looking quantitative vs. computerised forward-looking quantitative	0.953**	0.012
Manual bad news vs. computerised bad news	0.981***	0.003
Manual good news vs. computerised good news	0.993***	0.001
Total manual score vs. computerised total score	0.985***	0.002

Table is constructed by author. The table shows the Pearson correlation between the manual and computerised content analysis for forward-looking, quantitative, bad news and good news coding. The last row shows the correlation between the total manual/computerised coding. ***, ** = Significant at 1%, 5% respectively.

4.3 Assessment of Validity of Disclosure Scores

The purpose of validity tests is to ensure that a study accurately reflects or assesses the specific concept that the researchers are attempting to measure; furthermore, validity provides assurances that research findings have to be taken seriously in constructing scientific theories or in making decisions on practical matters (Krippendorff, 1980). A new

methodology is welcomed if other researchers could easily implement it, and if it is a valid measure for the intended construct (Shevlin, 2004). In this section, the reasons why the proposed disclosure quality measure is believed to be valid are highlighted.

Well-known frameworks which provide guidance regarding generally accepted quality dimensions for information is a solid support for a new framework measuring disclosure quality (Botosan, 2004). A similar study (i.e. Beattie et al., 2004) validated its quality measure on the grounds that it is based on a rigorously grounded framework in the literature (Jankins framework). Accordingly, the current research's measure gains its validity basically from being based on the OFR principles.

Typically, one can validate a new methodology in many ways. Shevlin (2004) summarises three types of validation tests: first, analysing the logic underlying the proposed methodology; second, comparing the results obtained from the proposed methodology with other findings; and third, analytical analysis, which involves using empirical evidence to support the developed framework. The current study goes through logical and analytical analysis. Comparison with prior quality measures is not applicable, because prior studies only focus on one sort of disclosure (i.e. risk in Beretta and Bozzolan, 2004a; forward-looking information in Beretta and Bozzolan, 2008) or the authors themselves have restricted the comparability of their measure due to methodological limitations (i.e. Beattie et al., 2004). The present study empirically validates the proposed measure in three ways in this chapter. The first is a simple regression between disclosure quality and disclosure quantity. The quality is the dependent variable and disclosure quantity is the independent variable. The second test is a multiple regression analysis using disclosure quantity as the independent variable, with some controls. The third is a correlation analysis between disclosure quality and the number of analysts following a firm at one side, and disclosure quantity and the

number of analysts following a firm at the other. In addition, the score is further validated in chapters Five and Seven. The reminder of this section elaborates these tests.

4.3.1 Disclosure Quantity as a Predictor for Disclosure Quality

1-Simple Regression

As discussed earlier, prior studies use disclosure quantity to proxy for disclosure quality. To test this proposed association between disclosure quantity[36] and quality, the researcher uses a simple regression to examine if the quantity could be used as an explanatory variable for disclosure quality. The simple regression is intended to test whether disclosure quantity is a good predictor of disclosure quality. The simple regression is presented in the following equation:

$$QUAL = 3.580 + 0.247 \text{ QUANTTY}$$

Running the simple regression analysis yields a very poor R-square of 0.0008. This means disclosure quantity explains only 0.08% of the variation in disclosure quality, the quantity coefficient is insignificant though. Moreover, the model is insignificant with an F value of 0.520. Therefore, disclosure quantity is not a proper predictor of disclosure quality, therefore, studies using quantity as a proxy for quality are concluding imprecise inferences.

2-Multiple Regression

This test investigates whether disclosure quantity can be adequately used as a predictor for disclosure quality in the presence of control variables. Seven control variables are used. These controls are; firm size, profitability, liquidity, leverage, investment growth, risk, and analyst following. To the best of the researcher's knowledge, no prior study controls for this

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[36] Disclosure quantity is defined as the proportion of forward-looking information disclosed in OFR statements (see chapter Two, section, 4.3.2).

comprehensive set of variables. The following paragraphs highlight the definition of each control variable, source of data, and justification of variables.

Firm Size

The most widely used firm characteristic in relevant literature is firm size *(SIZE)*. It is usually regarded as a significant explanatory variable in disclosure studies (Leventis and Weetman, 2004). It is hypothesised that larger firms are more likely to disclose information at a high level of quality for various reasons. First, large firms have higher information asymmetry between managers and shareholders (Ezzamel and Watson, 1997), and therefore employ disclosure quality to mitigate agency problems (O'Sullivan et al., 2008). Second, political-cost hypothesis predicts that larger companies have a stronger incentive to enhance their corporate reputation and public image, as they are more publicly visible, and attract the attention of governmental bodies (Debrency et al., 2002). Additionally, as argued by Abdullah and Page (2009), larger firms are exposed to higher levels of media enquiry than smaller firms when they fail to comply with regulatory requirements. Consequently, large firms are more likely to conform to the OFR and provide high-quality information. Third, large firms have a greater need for capital and can therefore be expected to disclose at a higher level (Hossain et al., 1995). Fourth, large firms are more likely to afford the cost of complying with regulatory requirements, such as those of The Code (Abdullah and Page, 2009) and those of OFR. Fifth, large firms are more likely to provide information of a high quality to attract more analysts (Lang and Lundholm, 1993; Healy et al., 1999). Sixth, unlike large firms, small ones are more exposed to competitive disadvantage when they provide voluntary information (Alsaeed, 2006).

The current study measures firm size using the natural logarithm of total assets following an extensive number of studies (e.g. Ahmed et al., 2006; Brammer and Pavelin, 2006; Lim et al., 2007; Cerbioni and Parbonetti, 2007; Donnelly and Mulcahy, 2008; Laksamana, 2008; Aggarwal et al., 2009; Jaggi et al., 2009; Hussainey and Al-Najjar, 2011; and Sun and Liu 2011). The study employs the total asset Datastream item no. WC02999, this is defined as: the sum of total current assets, long-term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.

Profitability

It is well known that disclosure is a costly decision. Therefore, one can expect that profitable firms are more likely to be keen to disclose more information (Abdullah and Page, 2009). The same argument could be applied to disclosure quality. Subject to a cost-benefit analysis, more profitable firms are likely to offer disclosures of a high quality to attract more finance providers and to increase access to external funds. However, one can argue that profitability is not the most suitable definition for available funds, and this justification best fits the liquidity measure rather than profitability. Based on signalling theory, Eccles et al. (2001) argue that more profitable firms have a motivation to clearly emphasise their success to stakeholders. Therefore, these firms are more likely to disclose high levels of information to reduce information asymmetry (Eccles et al., 2001).

Consistent with many studies, (e.g. Eng and Mak, 2003; Cerbioni and Parbonetti, 2007; Kelton and Yang, 2008) profitability *(PROF)* is measured using Return on Equity (ROE). This is Datastream item no. WC08301, which is defined as: (Net Income before Preferred Dividend– Preferred Dividend Requirement) / Last Year's Common Equity * 100.

Liquidity

There are two main views on the relationship between liquidity *(LIQ)* and disclosure quality. One view suggests that firms with low liquidity are more likely to disclose information at a high quality level to justify their liquidity status (Wallace et al*.,* 1994). The other view argues that high-liquidity firms will be more influenced to disclose information to strengthen their market position, retain investors' confidence, and gain potential shareholders (Belkaoui-Riahi and Kahl 1978; and Cooke 1989). This is consistent with signalling theory that managers will disclose any information that will be perceived as a good signal of performance. Liquidity is measured using current ratio. Current ratio is the most widely used liquidity measure (e.g. Mangena and Pike, 2005; Barako et al., 2006; and Bamber and McMeeking, 2010). Current ratio is Datastream item no. WC08106, defined as: Current Assets/Current Liabilities.

Leverage

In relation to a firm's leverage *(LEV)*, disclosure can alleviate information asymmetry, thereby decreasing the borrower's apparent risk of default, and in turn reducing the cost of capital (Baiman and Verrecchia 1996; and Sengupta, 1998). Corporate information disclosure is often considered as an instrument to reduce monitoring costs for creditors. Moreover, firms having high leverage are more likely to disclose more information to minimise litigation risk (Watts and Zimmerman, 1990). Thus, a positive link could be expected between a firm's disclosure level and its indebtedness (Chavent et al., 2006).

In line with prior studies (e.g. Eng and Mak, 2003; Willekens et al., 2005; Brammer and Pavelin, 2006; Abraham and Cox, 2007; O'Sullivan et al., 2008; Jaggi et al., 2009; and Aggarwal et al., 2009), leverage is measured using the percentage of total debt – Datastream item no. WC03255 – divided by total assets – Datastream item no. WC02999. Total debt is

defined as all interest bearing and capitalised lease obligations. It is the sum of long- and short- term debt.

Investment Growth

Another firm characteristic tested in the literature is investment growth rate *(INVEST)*. A firm's information environment shapes their disclosure policy. This characteristic is used to reflect the information environment (O'Sullivan et al., 2008). Therefore, to decrease the unacceptably high level of information asymmetry faced by high-growth firms, these firms have an incentive to increase their disclosure to minimise the cost of capital (Strebel, 1996) and to improve investors' ability to predict future earnings (Hussainey and Walker, 2009). According to both agency and signalling theory, high-growth firms will disclose more information to maintain current shareholders' trust and capture potential shareholders' investments.

Following prior research (e.g. Cerbioni and Parbonetti, 2007; Beak et al., 2009; and Hussainey and Al-Najjar, 2011), investment growth is measured using the percentage of market to book value of equity. This ratio is calculated as the market value of the equity divided by the balance sheet value of the equity. Market value is Datastream item MV, which is calculated as the share price multiplied by the number of ordinary shares in issue. Book value of equity is Datastream item no. WC03501, defined as: common shareholders' investment in a company, it includes but is not restricted to: common stock value, retained earnings, capital surplus, and capital stock premium.

Risk

Beretta and Bozzolon (2004a) argue that risk *(RISK)* is positively related to disclosure – the more open to risk the firm is, the greater the need for disclosing more information. This view could be illustrated by attribution theory. Risk is captured through earning volatility, Datastream item no. 458E.

Analyst Following

Traditionally, it was not common to include the number of analysts following the firm as a control variable in disclosure and corporate governance literature (Eng and Mak, 2003 is an exception). However, the number of analyst following has been tested as a control variable in studies examining the association between disclosure and corporate governance (e.g. Cheng and Courtenay, 2006). Recently, it has also been examined as a corporate governance characteristic, yet the research on the analysts' governance role is still limited (Sun and Liu, 2011). Accordingly, the underlying study controls for the number of analysts *(ANALYST)* following a firm. The number of analysts following is obtained from FACTSET database.

The multiple regression equation is presented below:

$$QUAL = 2.012 + 0.018 \, Quantity + \sum_{k} control_{k} \, .$$

Running the multiple regression shows that the coefficient of disclosure quantity (0.018) is insignificant (0.538). Disclosure quantity thus is not a proper predictor for disclosure quality. Therefore, disclosure quantity should not be used as a proxy for disclosure quality. R square is 0.079, adjusted - R- square is 0.063. F-value is 5.49 at the 1% significance level.

In sum, the same conclusion of the simple regression applies for the multiple regression test, disclosure quantity is not a proper proxy for disclosure quality even in the presence of seven control variables. To conclude, the prevailing assumption in the literature that disclosure quantity is a good proxy for disclosure quality is imprecise.

Notably, the coefficient of the control variables and their descriptive are not discussed in this section since the main objective of this regression is to show whether disclosure quantity is a good predictor for disclosure quality, and not to investigate determinants of disclosure quality. Determinants of disclosure quality are investigated in chapter Six, where coefficients of these control variables are discussed in details (section 6.3.3). Descriptive statistics of these control variables are presented with the descriptive of corporate governance variables in Table 6.2.

4.3.2 Disclosure Quality/ Quantity and Analyst Following

The proposed disclosure quality measure is further validated by testing its relation with a variable on which agreement is settled. It is believed that more analysts will follow firms providing high-quality disclosures (Lang and Lundholm, 1993; and Healy et al., 1999) and not just firms that disclose more. Yu (2008) also finds that firms with more analyst coverage exhibit less earnings management. Stated differently, the main concern of analysts is the quality of financial reporting and not the mere quantity.

The present study conducts Pearson correlation analysis between disclosure quality and the number of analysts following a firm at one side, and disclosure quantity and the number of analysts following a firm at the other. Data for analyst followings is extracted from FACTSET. The test is conducted using the Pearson correlation test.

Consistent with the literature (e.g. Healy and Palepu, 2001; Eng and Mak, 2003; and Athanasakou and Hussainey, 2010), the Pearson correlation shows that the number of analysts is significantly and positively associated with the disclosure quality. The correlation is 0.118 at the 1% significance level. This suggests that the higher the quality of information disclosed, the more analysts follow the firm. On the other hand, the results hold an insignificant correlation between analyst following and disclosure quantity. Thus, results suggest that firms focusing on eliciting more information, with no concern given to the quality level, will find it difficult to capture analysts' interests.

It is worth noting that the proposed disclosure measure is further validated in chapters Six and Eight. Chapter Six shows evidence that determinants of disclosure quality differ from those of disclosure quantity. More interestingly, chapter Eight reports a positive association between firm value and disclosure quality, but no association is reported with disclosure quantity.

4.4 Summary and Conclusions

Chapter Four assessed the reliability and validity of the proposed disclosure quality measure developed in chapter Three. This research is the first to offer a valid and reliable disclosure quality measure that is derived from a well-recognised guiding framework (i.e. OFR). It was found that the disclosure quality measure is reliable and valid. Being valid, the current study's measure has important implications for academia. It provides the first empirical evidence that disclosure quantity is not a precise proxy for disclosure quality. It evokes the possibility of reshaping some unsettled disclosure interrelationships that are commonly mis-investigated using disclosure quantity. One stream could examine the association between corporate governance mechanisms and disclosure quality. Chapters Six and eight discuss and

examine this association. In addition, chapter Seven empirically examines the impact of disclosure quality and corporate governance on firm value.

The present study (chapters Four and Five) successfully develops five highly reliable keyword lists pertaining to narrative reporting (forward-looking, quantitative, bad news, good news and scope), which allow for the computerisation of the content analysis. This results in promoting the efficiency of the related research areas with a low-cost, time-saving approach. Moreover, this would help with undertaking large studies, and hence derive more reliable results than previous findings based on small sample manual analysis studies.

Chapter Five : Disclosure Quality and Corporate Governance Mechanisms: Review and Hypotheses Development

5.1 Overview

The previous chapter developed a new measure for disclosure quality (DQ) and concludes that disclosure quantity is not a proper proxy for disclosure quality. Bearing in mind that the literature does not provide empirical evidence on the association between disclosure quality and corporate governance (CG), but instead, uses several quantity measures as a proxy for quality, there exists a strong need to examine which CG mechanisms are associated with disclosure quality. The aim of this chapter is to fill this research gap. Chapter Five therefore, draws on two streams of research: DQ and CG.

CG is a multi-disciplinary concept, which is interpreted differently by each discipline. Such disciplines include accounting, finance, management, law, micro-economics, organisational economics, psychology, sociology, organisational theory, information theory and politics (Turnbull, 1997).

Over recent years, considerable attention has been given to the association between DQ and CG. However, the literature does not address this relationship directly; instead, prior research uses disclosure quantity as a proxy for disclosure quality. The route of this research commenced with the study of Ho and Wong (2001) as a reaction to the Asian financial crisis. They argued that the crisis was not only due to a loss of investor confidence, but to ineffective corporate governance coupled with insufficient transparency. The same notion has been re-examined in the context of US and European crises and scandals such as Enron and Parmalat (Beretta and Bozzolan, 2008). In the aftermath of the most recent international financial crisis, these ideas continue to be worthy of examination.

Disclosure and transparency is regarded as one of the corporate governance principles. These principles set forth by the international Organisation for Economic Co-operation and Development (OECD) state that "the corporate governance framework should ensure that timely and accurate disclosure is made on all material matters regarding the corporation, including the financial situation, performance, ownership, and governance of the company" (OECD, 2004, p. 22). In sum, the OECD principles of CG, which gained worldwide recognition as an international benchmark for effective CG, posit that a sound CG structure should promote the disclosure practices of a firm.

Owing to the existing gaps in the extant literature, the objective of this chapter is to present the first empirical evidence on the association between DQ and CG mechanisms. The chapter uses a multiple regression analysis to test the hypotheses and identify the CG mechanisms that are associated with disclosure quality.

5.2 Literature Review and Hypotheses Development

The trend of analysing the association between various disclosure aspects and CG is increasingly capturing the interest of researchers. No one can question the fact that financial reporting and disclosure are potentially vital means by which to communicate firm performance and governance to shareholders and outsiders (Healy and Palepu, 2001). Transparency and disclosure practice followed by firms is an important component and a leading indicator of corporate governance quality (Aksu and Kosedag, 2006). Meanwhile, this stream of research is a response to different international and European accounting crises (Ho and Wong, 2001; Celik et al., 2006; O'Sullivan et al., 2008; and Beretta and Bozzolan, 2008). Importantly, there is still a gap in analysing the relationship between DQ and CG. With the use of disclosure quantity as a proxy for disclosure quality, which has been

evidenced in the previous chapter to be inaccurate and misleading, the results of prior studies cannot be taken as unquestionable.

The extant literature on the association between DQ and CG suffers from various limitations. The first is the mixed and conflicting results, as shown in Table 5.1. With the exception of audit committee meeting frequency and threat to auditor independence, all other corporate governance mechanisms suffer from inconclusive evidence. It may be such mixed results are due to the improper measure of DQ. This proposition is consistent with the argument that "researchers investigating the determinants and consequences of disclosure quality could be wasting their efforts if the primary variable of interest is not being measured with a sufficient degree of accuracy" (Beattie et al., 2004, p. 233). The second limitation of prior research in this area, is the use of narrow proxies for corporate governance (García-Meca and Sánchez-Ballesta, 2010). Most studies focus on the board (e.g. Hussainey and Al-Najjar, 2011; and Cheung et al., 2010), audit committee (e.g. Mangena and Pike, 2005), or a few variables of both (e.g. Li et al., 2008; and O'Sullivan et al., 2008). The third limitation entails the use of a summary variable to reflect CG structure (e.g. Krishnan and Lee, 2009). This approach does not help to identify which CG mechanisms effectively improve DQ. Recently, Daines et al. (2010) call for more research to identify the most predominant corporate governance mechanisms.

The current study therefore attempts to overcome these limitations. In doing so, it uses a new measure for DQ and a comprehensive set of CG mechanisms, which are individually examined rather than summarised into one variable. This should help in providing an in-depth analysis and would be of particular interest to policy-makers and regulatory bodies.

Reviewing the key disclosure studies helps to identify fourteen CG mechanisms empirically investigated with regards to disclosure. Table 5.1 displays these studies. The review begins

with Ho and Wong's study (2001) and ends with Mendes-Da-Silva and Onusic (2014), the most recent study examining the association between DQ and CG. Appendix 6 comprehensively summarises 35 main prior studies. The following section discusses corporate governance definitions and mechanisms.

CG Mechanisms

Over the last decade, corporate governance has gained extensive attention from academic scholars both within the UK and internationally (Fraser and Henry, 2003). As pointed out earlier in chapter Two, the separation between ownership and management creates agency problems (Jensen and Meckling, 1976). CG helps to solve the agency problems (Haka and Chalos, 1990). Moreover, the expansion of capital markets in the 1990s, with increasing numbers of companies listed (i.e. there is a separation between ownership and management), and the globalisation of investors increased the need for good corporate governance mechanisms (Cuervo, 2002). The importance of CG became even more prominent after the many scandals that swept the world starting from the financial crisis in July 1997 (Johnson et al., 2000, Ho and Wong, 2001; Abdullah and Page, 2009) – for example the Enron case in 2002 – and ending with the international financial crisis that affected the world late 2008.

There is no universally accepted, well-established definition of CG. Professional bodies such as ASB and The Chartered Institute of Internal Auditors stick to a concise and succinct definition of CG. For example, the latest version of The UK Code on CG [37] (2010) holds to the classic definition primarily introduced by The Cadbury Report in 1992, which states that "corporate governance is the system by which companies are directed and controlled" (FRC, 2010, p. 1). Similarly, the Chartered Institute of Internal Auditors prefers this definition as well. Clarke (2007) views this definition as the most direct and useful one regarding

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[37]The dominant UK regulatory framework for CG is the UK Code on CG hereafter, "The Code".

corporate governance. However, Sternberg (1998) states that this definition will be applicable also to company law or organised psychological manipulation.

The OECD (2004) provides a wider description of CG. It posits that "corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders" (OECD, 2004, p. 11). Notably, this definition takes into account stakeholder groups other than shareholders. Additionally, it emphasises the corporate governance role in setting, monitoring and achieving the firms' objectives (Mallin, 2006).

On an academic level, scholars have also introduced various definitions of CG. Typically, different academic perspectives (finance versus accounting) provide different CG definitions. Finance literature argues that "corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment" (Shleifer and Vishny, 1997, p. 737). From an accounting perspective, most literature views CG as a group of control mechanisms designed to monitor managerial decisions in an effort to mitigate agency problems, and therefore ensure efficient decision-making and maximise the value of the firm (Cuervo, 2002; Weir et al., 2002; Andres et al., 2005; Larcker et al., 2007; and Donnelly and Mulcahy, 2008). Brown et al. establish that "corporate governance is to do with corporations and it is also to do with determining the activities in which they are properly engaged" (2011, p. 98). Bhasin and Shaikh define CG as "a set of relationships between a corporation's management, its board, its shareholders, and other stakeholders. It also provides a principled process and structure through which the objectives of the corporations, the means of attaining the objectives, and systems of monitoring performance are set" (2013, p. 80). Such definitions are too broad in scope and emphasise the objectives of CG and its corporate impact on firm value in its broad sense. Another definition clarifies the main players in the CG system. Abdullah and Page argue

"corporate governance deals with the rights and responsibilities of a company's board of directors, its shareholders and various stakeholders" (2009, p. 3).

While the definitions above acknowledge a broad CG concept, the following are narrower in scope. Sternberg (1998) defines CG as "ways of ensuring that corporate actions, assets and agents are directed at achieving the corporate objectives established by the corporation's shareholders. The later definition limits the scope of CG to current shareholder's interests ignoring the accountability of the management towards other stakeholders. Keasey et al. (2005) view CG as a group of mechanisms that improve the firm's performance efficiency whilst controlling management's behaviour. In their survey of the most important definitions of CG to the institutional shareholders, Solomon and Solomon (2005) find that the shareholder-oriented definitions are ranked first. This is not surprising since each group of shareholders normally tends to prefer the definition that best serves its needs and interests.

In conclusion, although CG definitions seem to be diverse, such definitions share a common view on CG as a way of mitigating agency problems and restoring market credibility, whereas Keasey et al.'s (2005) definition adds another angle for CG, which is to improve the firm's performance.

The afore-mentioned classification of CG with regards to finance and accounting perspectives is consistent with that of Rahman (2006), who states that CG literature has two strands: the first regards CG as guiding and improving management's performance and the other sees it as a mechanism for fulfilling an investor-protection function.

In line with its accounting basis, the current study is confined to the accounting definitions of CG. Owing to the diversity of CG definitions, the current study adopts the academic definition used heavily in the accounting context. Hereafter, CG is composed of a group of interrelated and complementary controls or mechanisms, which work to mitigate agency

problem and its associated costs such as information asymmetry and adverse selection, while promoting the efficiency of the firm's performance.

Arguably, good governance improves relationships among the primary corporate participants, as long as it holds management accountable to the board and the board accountable to shareholders. Particularly, the market reaction to management forecasts depends on board and audit committee efficiency (Karamanou and Vafeas, 2005). In sum, "good corporate governance should contribute to better company performance by helping a board discharge its duties in the best interests of shareholders; if it is ignored, the consequence may well be vulnerability or poor performance" (FRC, 2008, p. 1). By contrast, poor governance is likely to result in value losses and significant externalities (Ezzamel and Watson, 1997).

Eventually, more attention has been placed on corporate governance's contribution to a comprehensive disclosure (Ernstberger and Grüning, 2010). At the academic research level, Bujaki and McConomy (2002) argue that the 1992 UK Cadbury Committee report on the Financial Aspects of Corporate Governance was the primary motive for the emerging body of research in the CG area – specifically, the implementation of certain CG mechanisms in relation to financial reporting quality, disclosure transparency, and the extent of disclosure (O'Sullivan et al., 2008). Willekens et al. (2005) also point to the increased attention given to CG mechanisms in general. In addition, accounting scandals have put discussions on reforms to the current financial reporting model at the top of the political agenda (O'Sullivan and Diacon, 1999; and Willekens et al., 2005).

Moving from The Code (2008)'s definition of CG as a system for controlling and directing the company or as a group of mechanisms helps mitigate the agency problem. CG can be classified as internal and external mechanisms, both of which collaborate to strengthen the

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governance of the firm (Cremers and Nair, 2005). Internal CG mechanisms are those related to the internal activities of the firm (Curevo, 2002) or those processes that are within the firm's control (Brown et al., 2011). Internal mechanisms therefore include the board, ownership structure, and the audit. External governance mechanisms are those external to the firm (Curevo, 2002) or beyond its control (Brown et al., 2011), such as external auditor mechanisms.

Surveying the related literature on the association between DQ and CG unveils four main CG mechanisms. These four mechanisms are sub-divided into 14 CG mechanisms. Appendix 6 displays examples of prior studies, which test the relationship between some CG mechanisms and different proxies for DQ. Notably, up to the researcher's knowledge, no prior study investigates the relationship between a measure of DQ and CG. Appendix 6 includes a table that provides a comprehensive summary on each study. Column 1 lists the authors' names and year of publication. Column 2 shows the sample size and the analysis period. Column 3 documents the empirical settings, including both developing and developed countries. Column 4 lists the disclosure type. Column 5 presents the proxy of disclosure used in each of the studies as the dependent variable. Column 6 lists CG mechanisms used in each study. Column 7 presents the methodology employed by each study in investigating the relationship between DQ and CG. Column 8 documents the results of each study. The last column, (9) highlights the limitations of each study. The most apparent limitation is the measure used for disclosure, i.e. proxies for disclosure quality and not a direct measure of DQ. Another limitation is the use of limited mechanisms of CG in each study.

Appendix 6 is used in developing an illustrative Figure 5.1 and Table 5.1. Moving from Appendix 6, which gives an overall view of the relevant literature, Figure 5.1 is developed. This figure is derived from column 6 of the appendix 6. This column lists the different CG mechanisms tested in the literature. Additionally, using the definitions for internal and external CG mechanisms discussed previously (see Curevo, 2002; Cremers and Nair, 2005; and Brown et al., 2011), these mechanisms are subdivided into internal and external components. In summary, Figure 5.1 delineates the various CG mechanisms tested in the literature. This figure represents the framework of CG that will be tested in the current underlying study. It consists of three internal CG mechanisms, namely the board, ownership structure, and audit committee. The client's auditor represents the external corporate governance mechanism. The first internal mechanism (the board) is sub-divided into board independence, board size, leadership structure, board meeting frequency, remuneration committee independence, and remuneration committee size. The second internal mechanism is ownership structure, which is sub-divided into managerial ownership, and ownership concentration. The third internal governance mechanism is the audit committee, which is sub-divided into audit committee independence, audit committee size, the presence of a financial expertise in the audit committee, and audit committee meeting frequency.

Table 5.1 is also derived from Appendix 6. The table is designed mainly to show the mixed results of the association between disclosure quality and corporate governance. Column 1 lists corporate governance mechanisms (column 6 of Appendix 6). CG mechanisms are presented in the same order of Figure 5.1 which is the order followed in the coming section when developing research hypotheses. Columns 2 to 28 list the authors' names and publication year (column 1 of Appendix 6).

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Generally, the literature is mixed with regard to the association between most of the CG mechanisms and disclosure quality. Notably, although the most widely tested CG in the literature is board size, however, there is no agreement about the relationship between board size and disclosure quality. Moving along the row of "board size"; the first study (i.e. Ho and Wong, 2001) does not find a significant association between disclosure and board independence. The third study (i.e. Anderson et al., 2004) documents a positive association between disclosure and board independence. The sixth study (i.e. Karamanou and Vafeas, 2005) however, finds a negative association between DQ and board independence. Therefore, looking at the row correspondent to a specific governance variable shows to what extent the literature has reached to a conclusion about the relationship between this variable and disclosure.

Figure 5.1: CG Mechanisms

	Internal CG Mechanisms		**External CG Mechanisms**

The Board

Ownership Structure

Audit Committee

External Auditor Attributes

Managerial ownership

Shareholding Concentration

Independence	Size	Leadership Structure	Meeting Frequency	Compensation Committee Independence	Compensation Committee Size

Independence	Size	Financial Expertise	Meeting Frequency

Independence	Size

Table 5.1: Relevant Studies on the Relationship between Disclosure and CG Mechanisms

	Ho & Wong (2001)	Eng & Mak (2003)	Anderson et al. (2004)	Evans (2004)	Willekens et al. (2005)	Karamanou & Vafeas (2005)	Lakhal (2005)	Mangena & Pike (2005)	Frankel et al. (2006)	Brammer & Pavelin (2006)	Cheng & Courtenay (2006)	Gietzmann (2006)	Celik et al. (2006)	Abraham & Cox (2007)	Aljifri & Hussainey (2007)	Boesso & Kumar (2007)	Cerbioni & Parbonetti (2007)	Lim et al. (2007)	Kelton & Yang (2008)	O'Sullivan et al. (2008)	Donnelly & Mulcahy (2008)	Laksmana (2008)	Li et al. (2008)	Beak et al. (2009)	Fleo et al. (2009)	Cheung et al. (2010)	Jiang et al. (2010)	Mendes-Da-Silva, and Onusic (2014)
Board Independence	?	?	+	?	+	-	?	?	-	-	+			+		?	+	+	+	?	+	+	+	+	+	?		+
Board Size			?	?	?	?	?				?						-				+	+						+
Lack of Separation in Leadership Structure	?			?			-				?						-			?	-		?		-			
Board Meeting Frequency			+			?																+						
Compensation Committee Independence																					+	+						
Compensation Committee Size																						+						
Institutional Ownership						+						+								?				+		-		
Managerial Ownership		-		?	-														?	?			?		-			?
Ownership Concentration		-								?			+							?			-			-		
Audit Committee Independence			+	?		?															+				?			
Audit Committee Size			-			-		?													+			+	+			
Financial Expertise						+		+										+										
Audit Committee Meeting Frequency			+			?													+		+			+	?			
Threat to auditor independence																					+							
Auditor Firm Size					+										?						+			?				

Table is Table constructed by author using relevant literature. (+) Denotes a significant positive relationship, (-) Denotes a significant negative relationship, (?) Denotes an insignificant relationship.

Notably, the extant literature links CG mechanisms with various proxies for disclosure quality, not a direct measure of disclosure quality (see Figure 3.1 for details of these proxies). In addition, due to the problem of mixed results and the fact that with few exceptions, prior studies do not justify their findings, results are not comparable. In other words, the literature does not answer the question of why results are mixed, and researchers cannot draw conclusions around most of the CG mechanisms. It would be more useful to use an example in trying to answer such a question. Board independence is a good example, as it is the most widely examined corporate governance mechanism in the literature. In this vein, it is expected that board independence will bear the most suitable evidence.

One explanation for the inconclusive results is that different CG systems have different implications. For example, in their meta-analysis study, García-Meca and Sánchez-Ballesta (2010) suggest that the direction of the relationship between board independence and disclosure depends on the CG system prevailing in the country. The study concludes that in capitalist Anglo-Saxon (e.g. UK, Kenya, New Zealand, and the US) and Asian countries (e.g. Hong Kong and Malaysia), disclosure is not affected by board independence.

At the other end, in Communitarian countries (e.g. Germany, France, and Sweden) the relationship is positive.[38] Oddly, the study does not suggest reasons for this conclusion. Importantly, even in the Anglo-Saxon countries empirical evidence is inconclusive. For example, Anderson et al. (2004), Laksamana (2008), Li et al. (2008), Donnelly and Mulcahy (2008), Fleo et al. (2009) and Hussainey and Al-Najjar (2011) report a positive relationship between board independence and disclosure. Conversely, Barako et al. (2006) find a negative relationship. Frankel et al. (2006), Lakhal (2005) and Mangena and Pike (2005) argue that

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[38]The term "Communitarian" refers to those countries with a business system which emphasises government role in social and economic affairs. These countries consider the linkage between banking and industry (Miller et al. 2005). For more information about different CG systems see Choi et al. (1996) and Miller et al. (2005).

board independence does not affect disclosure levels. Further, even on the UK context results are mixed. While Li et al. (2008) and Hussainey and Al-Najjar (2011) report a positive association, Mangena and Pike (2005) and Brammer and Pavelin (2006) show a non-significant association. Accordingly, mixed results cannot be attributed to different governance systems. A second explanation for the inconclusive results is that the country's regulatory environment influences the effectiveness of CG mechanisms ((Ernstberger and Grüning, 2013).

Consequently, drawing on the above-stated reasons, developing the underlying study's hypotheses will be generated from the relevant theory and not from prior studies' findings. Agency theory offers a fertile framework for addressing the association between disclosure quality and corporate governance. Notably, it is the most dominant theory in the governance literature (Carcello et al., 2006), and in particular, is heavily used in explaining motivations for disclosure (Lang and Lundholm, 1993). Agency theory models the relationship between the principal (and agent). The nature of agency relationship is defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling, 1976, p. 308). In this essence, shareholders are the 'principals' who delegate the running of the firm to managers 'agents'. Such separation between ownership and control causes an agency problem. The first theoretical framework for agency theory was introduced by Jensen and Meckling (1976). They establish that managers have advantages over shareholders by virtue of having access to information not available to other users. This situation creates an information asymmetry problem. Additionally, according to the agency theory, there is potential for a conflict of interests between managers and shareholders. Generally, managers are perceived to have a tendency to maximise their own benefits. On the other hand, the celebrated goal is presumed to be maximising shareholders'

wealth (Loderer et al., 2010). These divergent targets are called the "adverse selection" problem (Bharath et al., 2009).

It is worth bringing into discussion here that results usually vary among studies based on the different empirical settings. Since countries differ with regard to the governance system prevailing in the country, the agency relationship differs accordingly. The OECD clarifies this notion. OECD (1990, Summary, para. 2) contends that:

"One of the most striking difference between countries' corporate governance systems is the difference in the ownership and control of firms that exist across countries. Systems of corporate governance can be distinguished according to the degree of ownership and control and the identity of controlling shareholders. While some systems are characterised by wide dispersed ownership (outsider systems), others tend to be characterised by concentrated ownership or control (insider systems). In outsider systems of CG (notably the US and UK), the basic conflict of interest is between strong managers and widely-dispersed weak shareholders in insider systems (notably Germany and Japan. On the other hand, the basic conflict is between controlling shareholders (block holders) and weak minority shareholders.

Since the underlying study is UK-based, more emphasis is given for understanding the outsider systems. The OECD recognises that outsider systems, such as the UK, "tends to foster a more open and equitable distribution of information and place stronger emphasis on the protection of shareholders' rights and, in particular, those of minority interests" (OECD, 1990, para. 47). This highlights the importance of motivating companies to disclosure information of high quality.

The preceding discussion frames the nature of the agency problem; nonetheless, identifying the potential consequences of this problem is important for determining possible mitigation approaches. Indeed, agency problems have several implications. Firstly, information asymmetry may result in distorting investor trust, since investors are unable to evaluate the decision-making process, and thereby may have several suspicions regarding management performance; consequently, the cost of raising capital will increase (Healy and Palepu, 2001). A second cost associated with information asymmetry is the risk premium claimed by investors (Graham et al., 2005).

Reducing agency problem results in fruitful outcomes to shareholders, firms and the financial market. First, it increases returns to shareholders via reducing transaction and agency costs (Hooper et al., 2009); additionally, it restores market confidence and results in more equity financing (La Porta et al., 1997); it also contributes to the success of financial markets (Beak et al., 2004). Lastly, reducing agency problem leads to a decrease in information asymmetry between owners and managers and hence promotes firm value (Gompers et al., 2003), this is tested in chapter Eight.

Theoretically, there are several ways to eliminate agency problem, essentially through aligning the interests of shareholders and managers. These include compensations and debt contracts; yet, the ability to enforce optimal contracts is questionable (Healy and Palepu, 2001). Additionally, it is extremely difficult to write contracts to cover all eventualities (Abdullah and Page, 2009). Moreover, these contracts are deemed costly to shareholders (Solomon and Solomon, 2005), including, as argued by Abdullah and Page (2009), timing cost, cost of negotiation and enforcement of these contracts. Therefore, alternative approaches have been evolved to address agency problem. The most common ones are disclosing more information than required (e.g. Bartov and Bodnar, 1996; Jones, 2007) and CG (Healy and

Palepu, 2001). Both approaches attempt to eliminate information asymmetry problem. Therefore, this chapter discusses these two approaches.

To sum up, hypotheses will be developed mainly from agency theory. Agency theory dominates Anglo-American corporate governance debates. Most significantly, agency theory is the principle underlying corporate governance in the UK, as highlighted by Johnston: "since the 1980s, and justified by reference to agency theory, the wider corporate governance environment has increasingly pressurised management to prioritise shareholder interests" (2006, p. 823).

Beside the relevant theory, the current study focuses on CG regulations prevailing in the UK. This decision is derived from the fact that, as justified in chapter Two, the sample consists of UK listed firms. Given the objective of the current study – examining the extent to which CG mechanisms promote the quality of disclosure practices – it becomes necessary to define CG mechanisms based on a UK corporate governance regulation, namely; the UK Code on Corporate Governance "The Code".

The first version of The Code was published in 1992 by the Cadbury Committee and was known at that time as the Cadbury Report. Since this date, The Code has been reviewed periodically and modified as necessary based on the feedback gained from firms operating in the market, for example the review of 2005 (FRC, 2005), or in response to public demand such as the review of 2010 (FRC, 2010) caused by either changing market conditions or developments in the accounting and auditing professions. In fact, reviews have taken place in 1998, 2003, 2005, 2007, and 2010.

At this point of the discussion, it is important to decide which version of The Code will be the basis for defining corporate governance remuneration. Importantly, this study will consider all modifications to The Code until the review of 2007, which became effective from 29 June 2008. Therefore, the basis here will be The Code as it stood in 2008. Obviously, the latest revision of The Code cannot be considered in this study since it only became effective on 29 June 2010 (FRC, 2010), and it will take at least a year before it is possible to examine the impact of the modified code.

5.2.1 Board Literature

A board of directors is delegated from shareholders to perform four primary functions. The first is to monitor management behaviour, whilst the second is strategic decision-making and policy support (Abdullah and Page, 2009) or, more specifically, approving business decisions and strategies, disposal of assets, and investments (Tirole, 2006). The third is a governance role, namely managing the assets on the shareholders' behalf and being accountable for their stewardship (Ezzamel and Watson, 1997). The fourth role is the maintenance of firm reputation (legitimacy role) (Filatochev et al., 2007).

It is well acknowledged that the board have a significant role in determining disclosure (Michelon and Parbonetti, 2006). Indeed, the board[39] is an effective controlling mechanism that maximises shareholders' wealth and mitigates agency problems (Donnelly and Mulcahy, 2008), and as such is expected to contribute toward high-quality disclosure. McKinsey and

[39]Two types of board structure exist, namely the one-tier (unitary) board and the two-tier board. The first type is where one board manages and oversees the firm's performance; this type is criticised in the sense that it performs incompatible corporate functions (Spisto, 2005). However, this limitation is debatable as the presence of independent directors may help to reconcile the conflicting roles. This type of board is widely adopted in many European countries; examples include the UK and Ireland. A two-tier board is one where the supervisory board is distinct from the management board (Kong and Tang, 2008). Germany, Finland, and Denmark adopt the two-tier board structure (Jungmann, 2006). Worldwide corporate governance guidelines focus on the single-tier board system, since it is the most common board system in the majority of westernised economies (Yeh et al, 2009). Such CG guidelines do not provide specific recommendations for two-tier boards. Keeping silent about the applicability of the corporate governance principles on countries that apply such principles allows the conclusion that CG principles apply to different types of boards. Empirically, some evidence exists from countries allowing the two types of boards as to the lack of difference between the board type in relation to firm performance (see, for example, Benedicteand Ronald, 2010).

Company's global investor opinion survey (2002) reports that institutional investors perceive that the most important mechanism of CG are effective boards of directors, disclosure, strong rights and equal treatment of shareholders. This may justify the intensive examination of board mechanisms in the literature and their relationship with DQ. Furthermore, Michelon and Parbonetti (2006) claim that board may has an effect on the process of stakeholders' engagement in general, and on the choice of disclosure policy in particular.

The Blue Ribbon Committee (1999) argues that a key element of board supervision is working with management to achieve corporate legal and ethical compliance. Such supervision includes ensuring the use of quality accounting policies, internal controls, and independent as well as objective external auditors. This supervision is expected to deter fraud, anticipate financial risks, and promote accurate, high-quality and timely disclosure of financial and other material information. This, in turn, should benefit the board, the public markets, and the shareholders.

In the CG literature, there is no full agreement among researchers on what constitutes board mechanisms. Some researchers identify a vague concept of board mechanisms, for example Hoitash et al. (2009), who test board strength, whilst other studies identify a more detailed list of board mechanisms (e.g. Barako et al., 2006; O'Sullivan et al., 2008; and Laksamana, 2008). Ahmed et al. (2006) use board independence (board composition)[40] and board size as the only determinants of CG and board mechanisms in particular. Ahmed et al. (2006) believe that those two mechanisms have a vital influence on the overall CG structure. Willekens et al. (2005) state that board effectiveness is influenced by its size and its independence.

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[40] These two terms are used interchangeably in the literature.

In short, the first internal CG mechanism is the board. It is assumed that the board plays an important role in managing the financial reporting process and hence is likely to affect disclosure in one way or another. The board is regarded as the most pivotal internal CG mechanism, which controls the management and eliminates managerial fraud (Iqbal et al., 2011). An overview of the literature suggests that the board as a CG mechanism has six aspects. These include; board independence, board size, lack of separation in leadership structure, frequency of board meetings, and finally the size and independence of the remuneration committee. The current study uses agency theory to formulate the hypothesised association between these governance mechanisms and DQ. In the absence of sufficient arguments by agency theory to support the association between governance mechanisms and DQ, other theoretical frameworks are used. The study also uses CG code to support the research hypotheses. The rest of this section discusses these mechanisms in detail.

Board Independence

The first CG mechanism to be extensively examined in the literature is board independence; in other words, to what extent the board is composed of independent directors. It is believed that the more independent the board is, the fewer agency problems there are (Fama and Jensen, 1983). Drawing on agency theory, firms should attempt to reduce information asymmetry and promote investor confidence by having a higher proportion of independent directors on the board. The underlying logic suggests that the independent directors work for the shareholders and thus are motivated to improve the overall quality of the financial reporting process (Jiang et al., 2010) – in particular, disclosure quality – and consequently reduce agency costs (Beekes et al., 2004). Prior studies examining this mechanism advocate this argument (García-Meca and Sánchez-Ballesta, 2010).

Another view advocating the importance of independent directors claims that non-independent directors have an advantage over other shareholders (Jiang et al., 2010). That is to say, such directors will not be interested in DQ since they already have access to the information they need. Additionally, agency theory claims that managers will withhold information for their own benefit either to cover a negative performance or to take advantage of a positive performance, and therefore the need arises for independent directors to control management behaviour.

This argument is reinforced by The Code, which states: "The board should include a balance of executive and non-executive directors (and in particular independent non-executive directors) such that no individual or small group of individuals can dominate the board's decision taking" (FRC, 2008, p. 7).

At this point of discussion, it is useful to clearly define the concept of "independent director". Anderson et al. (2004) provide a detailed definition of "independence", defining independent directors as those who have no relation of any kind with the firm other than their appointment as a director. More specifically, they are not current or former employees, not related to managers, and their firms do not do business with the firm on whose board they sit. On the other hand, affiliated or "gray" directors are those who have a business relationship with the firm or who were previously employed by the firm (Raghunandan et al., 2001). According to this definition, non-executive directors could be "gray" directors as long as they are not defined as independent in the firm's annual reports. Nevertheless, some studies regard non-executive directors as independent, where in fact they might be affiliated directors (e.g. Barako et al., 2006).

This observation is considered by The Code as follows: "the board should identify in the annual report each non-executive director it considers to be independent" (FRC, 2008, p. 7). The Code goes a step further and requires that at least half of the board, excluding the chairman, be independent directors. Such board structure is believed to represent an optimal outcome given costs and benefits associated with different types of directors (i.e. executive, non-executive and non-executive independent directors) (McKnight and Weir, 2009).

Since The Code does not recognise all non-executives as independent, studies using the proportion of non-executives to measure board independence are misleading. Indeed, one of the possibilities on which prior studies have reported mixed results in relation to board independence is the use of different measures for "independence", such as non-executive and non-executive independent directors (García-Meca and Sánchez-Ballesta, 2010). Consequently, the current study's definition of "independence" is restricted to those directors clearly defined as independent in the firm's annual reports.[41]

Based on the above discussion, the first hypothesis is formulated as follows:

H1: There is a positive association between board independence and disclosure quality.

Board Size

The second common board mechanism is board size. Two theoretical views exist regarding the relationship between board size and its supervisory role in terms of management practices,

and accordingly its influence on disclosing information. From an agency perspective, larger boards have a greater knowledge base to fulfil their advisory role, thereby allowing for better workload distribution and committee assignments (Ahmed et al., 2006; and Laksamana,

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[41] In the annual report, three types of directors are highlighted: executive directors, non-executive directors (gray directors), and non-executive independent directors. The current study considers only non-executive independent directors in calculating board independence.

2008). Large boards are less likely to be dominated by management (Hussainey and Wang, 2011). The second view stems from the organisational behaviour research. This view maintains that smaller boards facilitate more frequent and intense information sharing and processing than larger boards (Lipton and Lorsch, 1992; Jensen, 1993; and Karamanou and Vafeas, 2005). Additionally, large boards might destroy corporate value (Cerbioni and Parbonetti, 2007).

The Code maintains that the board's size should be reasonable – not too large or too small. "The board should not be so large as to be unwieldy. The board should be of sufficient size that the balance of skills and experience is appropriate for the requirements of the business and that changes to the board's composition can be managed without undue disruption" (FRC, 2008, p. 7).

Accordingly, having two ambivalent contradictory viewpoints, in addition to the absence of a suggestion for suitable board size by The Code, leads the current study to predict the second hypothesis (with no specific direction) as follows:

H2: There is an association between board size and disclosure quality.

Leadership Structure

The third board-related CG mechanism is leadership structure, which refers to the existence of a dominant authority within the board. Dominant authority means a duality in the leadership, where the chairman also holds the position of Chief Executive Officer (CEO)[42] (Ho and Wong, 2001; Anderson et al., 2004; and Chahine and Tohmé, 2009).

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[42] One may argue that there might be dominant personality acting on the board even if there is a separation between the CEO and the chairman. However, such an argument will not hold in face of the fact that a high independence rate on the board would mitigate such a dominant personality, if one existed.

According to agency theory, such combined functions can significantly impair boards' pivotal monitoring and controlling functions (Cerbioni and Parbonetti, 2007; and Donnelly and Mulcahy, 2008). Leadership duality enables the CEO to engage in opportunistic behaviour, because of his/her dominance over the board (Barako et al., 2006). Consequently, the presence of a dominant personality within the ranks of executive management is thought to hinder effective CG (Lakhal, 2005; and O'Sullivan et al., 2008).

On the regulatory level, one of The Code's (2008) main principles is concerned with the leadership structure of the board. It states: "there should be a clear division of responsibilities at the head of the company between the running of the board and the executive responsibility for the running of the company's business. No one individual should have unfettered powers of decision" (FRC, 2008, p. 6). Leadership structure is measured through the variable "Lack of separation in leadership structure.

Consistent with the theory and The Code principle, the third hypothesis is formulated as follows:

H3: There is a negative association between the lack of separation in leadership structure and disclosure quality.

Board Meeting Frequency

While the literature has mostly focused on board size and independence as measures for board oversight, the intensity of board monitoring activities such as, meetings frequency and board sub-committees are of equal importance (Brick and Chidambaran, 2010). The number of meetings is usually used as a proxy for board diligence[43] (e.g. Carcello et al., 2006). According to agency theory; any mechanism that helps to improve management's

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[43] Diligence refers to the quality of directors' supervisory process (Brenner and Schwalbach, 2009).

performance toward shareholders' interest mitigates agency conflict. Frequent board meetings arguably facilitate greater information sharing among directors (Laksamana, 2008). Generally, after crises, boards meet more frequently and this improves the firm's performance (Vafeas, 1999). Laksamana (2008) claims that for effective disclosure decisions, boards need to devote a significant amount of time and resources. Laksamana's study posits that the time and resource commitments of directors are positively associated with the extent of compensation practice disclosure as a type of disclosure, whereas the presence of overcommitted directors reduces the oversight of the management practices. This is consistent with The Code's provision. It argues: "the board should meet sufficiently regularly to discharge its duties effectively" (FRC, 2008, p. 6). The Code specifies the board's duties as follows:

"The board's role is to provide entrepreneurial leadership of the company within a framework of prudent and effective controls which enables risk to be assessed and managed. The board should set the company's strategic aims, ensure that the necessary financial and human resources are in place for the company to meet its objectives and review management performance. The board should set the company's values and standards and ensure that its obligations to its shareholders and others are understood and met" (FRC, 2008, p. 10).

In sum, one of the board duties is to oversee management practices, and one of those practices is best practice disclosure. Therefore, the more frequently meetings are held, the more effective the board will be or, more specifically, the more time will be expected to be allocated for overseeing disclosure, and thus promoting disclosure quality.

Accordingly, with the consensus about the positive influence of board meeting frequency, the fourth hypothesis is developed as:

H4: There is a positive relationship between board meeting frequency and disclosure quality.

Independence and Size of the Remuneration Committee

Board sub-committees (i.e. remuneration and audit committees) are meant to offer more scope for independent directors to discuss financial disclosures (Ezzamel and Watson, 1997).

Historically, the relationship between the existence, as well as the independence, of the remuneration committee and disclosure quality has not been empirically tested. Remuneration committees are supposed to advice on directors' emoluments and service contracts (Ezzamel and Watson, 1997). The Code's principle holds that "the board should establish a remuneration committee of at least three, or in the case of smaller companies[44] two, independent non-executive directors" (FRC, 2008, p. 15). Nonetheless, agency theory deals with the overall board independence and not the independence of its sub-committees such as the remuneration or nomination committees. Since The Code (2008) values the independence of the remuneration committee, the current study posits the following hypotheses based on The Code's provision:

H5: There is a positive association between the independence of the remuneration committee and disclosure quality.

Remuneration committee size has not been sufficiently examined in the literature; however the debate could be very similar to that arising around board size, as discussed earlier. Unlike the absence of a theoretical consensus on remuneration committee size, The Code (2008) requires a minimum size of three independent directors. However, no preference is given for a large/small size. Consequently, the following additional hypothesis is predicted (with no specific direction as such):

H6: There is a relationship between the size of the remuneration committee and disclosure quality.

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[44] A smaller company is one that is below the FTSE 350 throughout the year immediately prior to the reporting year (FRC, 2008, footnote no. 2).

5.2.2 Ownership Literature

Many studies suggest that the structure of ownership should have an impact as a CG mechanism on disclosure (García-Meca and Sánchez-Ballesta, 2010). Two main ownership mechanisms are being tested in the literature: the type of ownership and the shareholding concentration.

Type of Ownership

The type of ownership structure provides explanations for many governance issues, namely managerial power, shareholders' monitoring role, financing and investment decisions and disclosure policies (Jiang et al., 2010). Moreover, as claimed by Eng and Mak (2003, p. 326), "the structure of ownership determines the level of monitoring and thereby, the level of disclosure". It is assumed that certain types of owners have the knowledge and motivation to reduce management concealment of information, whereas others may be motivated to hide information.

Managerial Ownership

According to Jensen and Meckling's (1976) convergence of interest hypothesis,[45] managers are assumed to have less incentive to maximise job performance when they are not shareholders. Indeed, a lower level of managerial ownership is associated with increased agency problems (Eng and Mak, 2003). Thus, when agency problems decrease, managers will not instigate high-quality disclosure since they are not motivated to mitigate agency problem. In contrast, another view holds that up to a certain level, management and shareholders' interests are aligned (Stulz, 1988; and Donnelly and Mulcahy, 2008) and that managerial

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[45]This hypothesis maintains that directors manage the money of shareholders and not their own. Accordingly, it is expected that managers will not work with the same level of efficiency with which the shareholders will work for their own (Jensen and Meckling's, 1976).

ownership will promote best practice disclosure. Nevertheless, based on Fama and Jensen's (1983) view, managers' and shareholders' interests are aligned only at a low level of ownership. Stated differently, after a certain level, increased managerial ownership results in low-quality disclosure (Luo et al., 2006; and Kelton and Yang, 2008). Overall, it is recognised that managers' and shareholders' interests are less aligned when there is a greater separation between ownership and control (Lafond and Roychowdhury, 2008). Additionally, prior literature provides support for Jensen and Meckling's proposition (Beak et al., 2009). Consequently, based on agency theory, the following hypothesis is developed:

H7: There is a negative relationship between managerial ownership and disclosure quality.

Ownership Concentration[46]

The theoretical literature on CG provides conflicting views as to whether concentration of shareholdings improves managers' activities (Konijn et al., 2011). In this context, one view maintains that "holders of small proportions of shares have little prospect of changing company policies and consequently are unlikely to incur the costs of monitoring management" (Abdullah and Page, 2009, p. 24). This is particularly true for firms, which are characterised by a greater concentration of ownership and have substantial shareholders with increased power due to the size of their shareholdings. Thus, it is easier for fewer substantial shareholders to voice an opinion to which management will be forced to listen (O'Sullivan et al., 2008).

The other view is backed by agency theory, which asserts that the potential for conflict would be greater in firms where shares are widely held, than when they are in the hands of a few (Fama and Jensen, 1983). Nonetheless, the degree of information asymmetry between the firm and its shareholders increases when ownership is widely dispersed (García-Meca, and

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[46] This is referred to as "block holdings" in some studies (e.g. Abdullah and Page, 2009).

Sánchez-Ballesta, 2010). Consequently, based on agency theory, agency costs increase in case of ownership dispersion and thus firms would attempt to provide high-quality disclosure to avoid unfavourable investor reactions. Managers may therefore voluntarily disclose information to reduce agency conflicts with the owners (Ho and Wong, 2001; and Barako et al., 2006). Because agency theory is the main platform for developing hypotheses, the following hypothesis is derived:

H8: There is a negative relationship between ownership concentration and disclosure quality.

5.2.3 Audit Committee Literature

The role of the audit committee as a CG mechanism is apparent (Barua et al., 2010) and has captured researchers' interests in the past in the wake of high-profile accounting scandals (Krishnan and Visvanathan, 2008). Based on agency theory, the audit committee acts as an important CG mechanism, that mitigates the information asymmetry problem, improves investors' confidence in the financial reporting system, and consequently reduces agency costs. An audit committee acts as a controlling mechanism for the financial reporting process, external auditing function, and internal control effectiveness (Sharma et al., 2009). Being an effective monitoring device, the audit committee contributes towards a higher disclosure quality (Forker, 1992), and more value-relevant information disclosure (Samy, 2009; and Li et al., 2008).

Corporate failures have led to increased attention being paid to audit committee regulations. For example, in the UK, the Smith Report (2003) recommends that audit committees review the significant financial reporting issues and judgments made in connection with the preparation of the company's financial statements, interim reports, preliminary announcements and related formal statements.

Audit committee mechanisms have been extensively tested in the literature, either separately or in connection with other corporate governance mechanisms. Audit committee mechanism is sub-divided into: independence, size, financial expertise, and meeting frequency.

Audit Committee Independence

In line with agency theory, and similar to the discussed debate regarding board and remuneration committee independence, it is presumed that independent audit committee members are more objective and less likely to overlook possible deficiencies in financial reporting. Further, the importance of audit committee independence has been reemphasised after the many recent accounting scandals (Bronson et al., 2009), where external users such as investors value the independence of audit committees. Indeed, this works towards restoring investor confidence. In addition, disclosure quality may suffer if the audit committee members fail to question management adequately (Felo et al., 2009; and Samy, 2011).

The Code (2008) recognises the importance of the independent audit committee and posits that "the board should establish an audit committee of at least three or in the case of smaller companies two, independent non-executive directors" (FRC, 2008, p. 17). In summary, based on agency theory, the following hypothesis is developed:

H9: There is a positive relationship between audit committee independence and disclosure quality.

Audit Committee Size

There is no optimal size for the audit committee. The Code (2008) requires that the audit committee be composed of at least three members, yet it is silent as to the preferable size. Therefore, as discussed in relation to board size earlier, two views are addressed in this regard. The first relates to the notion that having more members will lead to more effective

monitoring (Mangena and Pike, 2005), through having a wider expertise and strength (Be´dard et al., 2004), and meeting more frequently (Li et al., 2008). Moreover, small committees may constrain the resources available to the audit committee and adversely affect the quality of its oversight (Fleo et al., 2009). At the other side, the organisational behaviour research maintains that large committees are less productive (Jensen, 1993; and Karamanou and Vafeas, 2005).

Given the two contrasting views in predicting the association between audit committee size and disclosure quality, and with the absence of regulatory guidance in this sense, the following hypothesis is formulated:

H10: There is an association between audit committee size and disclosure quality.

Accounting Expertise

Literature studies the association between the presence of the audit committee's financial expertise and disclosure practices. Empirically, unlike other CG mechanisms, there is an agreed consensus as to its effect on disclosure. However, one debatable issue in the extant literature is whether audit committee members should posses accounting expertise, or whether it is enough to have only financial expertise.

Financial expertise refers to "financial experts with more general experience in analyzing financial statements or as CEOs" (Krishnan and Lee, 2009, p. 242). At the other end, The Securities and Exchange Commission's (SEC) initial proposal defines a person with accounting expertise as a public accountant, auditor, principal or chief financial officer, controller, or principal or chief accounting officer (2002). Any other financial expertise is regarded as financial non-accounting expertise and not as accounting expertise under this specific definition.

Regulatory statements such as the Smith Guidance (FRC, 2005) in the UK or Sarbanes-Oxley Act (SOX) in the US call only for financial expertise. The SEC's (2002) initial proposal advocates accounting expertise, presuming that it improves the monitoring process. Yet, opponents of this approach claim that small firms will fail to attract members with accounting expertise. Moreover, they believe that the monitoring role is simply achieved by financial expertise and that accounting expertise is not necessary (Krishnan and Lee, 2009). Because of this feedback, the SEC (2002) asks only for the presence of financial expertise in the audit committee.

Empirical results find that it is the accounting expertise and not the financial expertise of the audit committee that enhances financial reporting quality (Krishnan and Visvanathan, 2008). In addition, external auditors value accounting expertise of the audit committee members over financial expertise (Krishnan and Visvanathan, 2009). The market reacts positively to the appointment of directors with accounting expertise to the audit committee, but no reaction to appointments of those with financial expertise has been observed (Defond et al., 2005). Additionally, an audit committee with accounting expertise is less likely to have internal control weaknesses (Zhang et al., 2007).

This implies that by having such mechanisms, the audit committee is more effective and reduces the internal control risk. Be´dard et al. (2004) and Dhaliwal et al. (2011) find a positive association between accounting expertise, and less earnings management and better internal control.

To conclude, the theoretical proposition of the initial SEC (2002) proposal is sound enough to be defended. However, there is no prior study examining the impact of this proposition on disclosure quality. Therefore, based on this conclusion and the fact that all audit committees nowadays have at least one financial expert, it is more worthy to test the association between

audit committees having at least one member with accounting expertise as defined by the SEC (2002), and disclosure quality. This produces the following hypothesis:

H11: There is a positive association between the presence of an accounting expert in the audit committee and disclosure quality.

Audit Committee Meeting Frequency

The governance role of the audit committee is very apparent, as emphasised earlier. To act as an effective CG mechanism, the audit committee should maintain diligence (Barua et al., 2010). Since it is difficult to observe diligence, studies use the number of committee meetings to proxy for audit committee diligence (Sharma et al., 2009). The number of meetings is regarded as the only quantitative measure of diligence (Raghunandan and Rama, 2007). It is believed that audit committees which meet more frequently play a more effective supervisory role than audit committees that meet less frequently (Felo et al., 2009). Audit committees that meet more frequently are more likely to discuss the remediation of material weaknesses in the internal control system (Goh, 2009).

Similar to the foundations discussed in relation to board meeting frequency, this mechanism is enhanced by agency theory. Regulatory bodies in general are silent as to the sound number of meetings (see, for example, SOX in the US and Smith Guidance in the UK). Although the Smith Guidance requires at least three meetings, it encourages more. However, it leaves the decision of how often the committee should meet to the committee's chairman. "It is for the audit committee chairman, in consultation with the company secretary, to decide the frequency and timing of its meetings. There should be as many meetings as the audit committee's role and responsibilities require" (FRC, 2005, p. 6).

Thus, it is believed that more meetings will promote more effective audit committee performance – including high-quality disclosure – as a corporate governance mechanism. Accordingly, the following hypothesis is derived:

H12: There is a positive relationship between audit committee meeting frequency and disclosure quality.

Previous sub-sections discussed the three internal corporate governance mechanisms. The remainder of this section explores the external corporate governance mechanism: the firm's auditor.

5.2.4 External Auditor Literature

The process of auditing financial statements is considered to be an external mechanism for CG (Mangena and Pike, 2005). External auditors may act as an independent third party that helps resolve agency conflict between managers and stakeholders. This assumption is backed by agency theory. External auditors assure stakeholders of the credibility of accounting information and hence mitigate agency problems (Cohen et al., 2002; and Fan and Wong, 2005). The role of the external auditor is pivotal in the sense that its attributes are of interest to CG structure (Cadbury Report, 1992). External auditors are the keystone of CG as they serve as gatekeepers by watching over managerial behaviour for the shareholders (O'Sullivan et al., 2008). External audits of a high quality may positively influence corporate reporting in general and the extent of disclosure of financial and non-financial performance measures in particular (Willekens et al., 2005; Cohen et al., 2007; and Samy, 2011).

There are two mechanisms, namely threat to auditor independence and audit firm size, which affect the quality of the external auditor and its role in CG, and in turn affect the overall

disclosure quality. These mechanisms and their relationship with disclosure quality are discussed in detail in the following sub-sections.

Threat to Auditor Independence

Threat to auditor independence as a concept could be misinterpreted, and mistakenly or fraudulently misused. There is no precise definition of threat to auditor independence (Antle, 1984). It is an elusive and controversial concept in the accounting profession (Swanger and Chewning, 2001). Mayhew and Pike (2004) question the relationship between investors' auditor selection and threat to auditor independence. Arguably, "merely being the auditor of a public company provides an interest of the audit partner in the client firm" (Kinney, 1999, p. 73). Kinney (1999) argues that the auditor will always be interested in the success of the client's firm. He justifies his argument in many ways. Firstly, financially successful firms lead to growth in audit and non-audit fees. Secondly, those firms will have fewer litigation risks. Thirdly, loss of big clients will affect the audit partner's career.

In the auditing literature, auditors should have independence in appearance and independence in fact[47] when providing auditing services for the client. This is to ensure that the audit report is fairly stated and provides an accurate opinion about the fair presentation of the financial statements, and accordingly be perceived as one of the CG controlling mechanisms.

Independence in fact refers to the auditor's unbiased mental behaviour, whereas independence in appearance is the perception by a reasonable observer that the auditor has no relationship with an audit client that might impose a conflict of interest (AICPA, 1994). It is widely accepted that independence in fact is hardly observed. Meanwhile, "research has focused upon identifying the factors which potentially influence independence, and assessing their impact

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[47] For a detailed discussion, see Sutton (1997).

upon *perceived* independence since independence in fact is unobservable" (Beattie et al., 1999, p. 68).

Investors will doubt the reliability of financial statements if the auditor's perceived independence is doubted (Hodge, 2003). Moreover, auditor independence is vital to the integrity of the financial statements (Kanangaretnam et al., 2010; and Samy, 2011). Firms with more independent auditors are more likely to report internal control weaknesses (Zhang et al., 2007). Similarly, auditor independence is an important CG mechanism affecting disclosure quality (O'Sullivan et al., 2008).

Surprisingly, the influence of auditor independence on disclosure quality has not been heavily tested. Only one study investigates the association between threat to auditor independence and disclosure quality, as shown in Table 5.1.

Agency theory is a solid foundation for explaining the importance of the auditor's independence. This is to say that one vital procedure to restore investors' confidence is to have an independent auditor reporting on the faithful representation of the financial statements.

To sum up, measuring threat to auditor independence can be viewed as a problematic issue in the literature. The proportion of fees paid for Non-Audit Services (NAS) is the most common measure to proxy for threat to auditor independence. Furthermore, The Code (2008) also refers to auditor independence using NAS. Prior literature uses the percentage of non-audit fees to total fees paid to the auditor (e.g. Ghosh et al., 2009) or the percentage of non-audit fees to audit fees (e.g. Abbott et al., 2003) to measure threat to auditor independence.

Regulatory guidelines such as SOX and The Code (2008) believe that non-audit services harm auditor independence. This is evident in The Code's provision that asks the board to explain to shareholders how the auditor's objectivity and independence is safeguarded when the auditor provides non-audit services (The Code, 2008). Indeed, high non-audit fees are negatively related to independence (Gul et al., 2007). Moreover, "the rise in non-audit services provides incentives that might jeopardize independence and audit quality" (Lee et al., 2010, p. 7). Meanwhile, "professional investor participants rated perceived auditor independence at around 50% less when the external auditor provided non-audit services either through their local office or an associated entity than when the same services were provided by a firm unrelated to the external auditor" (Mauldin, 2003, p. 167).

Although it is evident from the above discussion that the professional bodies view the provision of non-audit services as impairing auditor independence, which is also empirically supported by many studies, another viewpoint exists. Some scholars argue that while investors may perceive the provision of NAS as threatening auditor independence, it might not actually affect the client-auditor relationship. For example, Deberg et al. (1991) find that there is no association between the decision to change the auditor and the level of non-audit services provided. Meanwhile, Lai and Krishnan (2009) document a positive association between firm value and the provision of non-audit services by the auditor. In closing, this viewpoint suggests that the provision of NAS in fact does not affect the auditor-client relationship in terms of the quality of the audit, and might have a positive impact on other aspects of the firm such as the market value. Nonetheless, this argument is not widely examined, and neither is it largely supported by prior studies (Lai and Krishnan, 2009).

In conclusion, as long as corporate governance primarily serves the investors' interests, who in this context – as the literature posits – perceive the provision of non-audit services negatively, and with the limited evidence on the positive impact of providing extensive non-audit services by the auditor, the current study follows the first argument and presumes a negative association between the percentage of non-audit services and threat to auditor independence.

Based on the above-discussed views on the importance of auditor independence as a corporate governance mechanism which works to improve disclosure quality, the following hypothesis is developed:

H13: There is a positive association between threat of auditor independence and disclosure quality.

Audit Firm Size

Indeed, "the auditing literature generally concludes that the audit quality of Big 4 auditors is superior to that of non-Big 4 auditors" (Lawrence et al., 2011, p. 260). Investors consider big audit firms as providing ultimate auditing quality, and their role of safeguarding investors' rights of having fairly-stated financial statements is much more trusted than that of smaller audit firms (Hussainey, 2009). In this vein, big audit firms have more resources than smaller firms; these resources enable them to allocate many more resources to the training and development of the auditors, which in turn promotes the auditors' quality (Nekhili et al., 2010). Firms audited by larger audit firms provide higher-quality financial statements (Becker et al., 1998; and Tendeloo and Vanstraelen, 2008). Arguably, financial statements audited by big audit firms help investors to better anticipate future earnings (Lee et al., 2007).

Moreover, investors perceive financial reporting information as being of higher quality when firms are audited by big audit firms (Hussainey 2009; Boone et al., 2010). This assumption is justified by a number of reasons. First, big audit firms are more likely to invest more to maintain their reputation as providers of quality audits, compared to smaller audit firms. In the case of reputation damage, big firms stand to lose more than small firms (Tendeloo and Vanstraelen, 2008; Lai, 2009). Second, large audit firms have many clients and are therefore likely to be less dependent on individual clients; thus, this may improve the quality of their work to a greater degree than the small audit firms (Barako et al., 2006). Third, big audit firms are more likely to constrain opportunistic accounting practices for fear of litigation (Piot and Ganin 2007).

Although this is the common view held in the literature about the relationship between audit firm size and audit quality, Lawrence et al. (2011) presents another view. They claim that, since the Big 4 and non-Big 4 are subject to the same regulations, a reasonable level of quality by both Big 4 and non-Big 4 firms is expected (Lawrence et al., 2011). Recently, Lawrence et al. (2011) investigate whether the superior quality of the Big 4 stems from the client characteristics rather than the audit firm. They use three proxies for audit quality; discretionary accruals, ex-ante cost of equity capital and analyst forecast accuracy. Results suggest that there are insignificant differences regarding the three proxies between the Big 4 and non-Big 4. They consider the difference in the three proxies with regards to client size, however, they concluded that their study does not resolve the question as to whether Big 4 and non-Big 4 firms provide different levels of audit quality.

In summary, the view commonly held in the literature is that audit firm size reflects audit quality. Audit firm size affects both mandatory disclosure (e.g. Abdelsalam and Weetman, 2007) and disclosure (e.g. Archambault and Archambault, 2003). Big audit firms might influence firms to provide more information to increase the perceived audit quality of the

annual reports as a whole (Archambault and Archambault, 2003). Firms that hire big audit firms are normally big firms because they have enough resources to hire big-audit firms. Accordingly, based on the institutional theory, the following hypothesis is formulated:

H14: There is a positive relationship between audit firm size and disclosure quality.

5.3 Summary and Conclusions

This chapter provided an in-depth review of prior literature on the association between different proxies for DQ and CG mechanisms, which are extensively examined in accounting literature. The chapter proceeded to develop the current study's hypotheses on the association between disclosure quality and 14 corporate governance mechanisms derived from surveying the extant governance accounting literature. The CG mechanisms are divided into internal and external mechanisms.

Notably, in general, CG mechanisms exhibit inconclusive results in the empirical literature as to its association with disclosure. One exception of these CG mechanisms is the presence of financial expertise in the audit committee, for which the extant literature reports a positive association with disclosure quality. Prior studies, with few exceptions, do not justify their findings or solve the mixed results phenomenon. Importantly, in developing the hypotheses, the current study provides the link between various CG mechanisms and agency theory or the theoretical conception supporting each CG mechanism. Moreover, the study employs and reinforces the theoretical assumptions made by The Code's (2008) principles in predicting the study's hypotheses, whenever applicable.

Chapter Six : Examining the Association between Disclosure Quality and Corporate Governance Mechanisms: A Cross Sectional Study

6.1 Overview

Chapter Five reviewed relevant literature and developed research hypotheses for the expected associations between disclosure quality and various CG mechanisms. Chapter Five aimed to empirically test the previously developed hypotheses for these associations. Chapter Six therefore highlights the study design and discusses the results and findings of the study. The chapter starts by discussing the study design. Afterwards, in section 6.2, the definitions of the variables used in this study are then explained. In section 6.3, the descriptive analysis is discussed, the correlation analysis between the dependent variable (DQ) and independent variables (CG and control variables) is discussed in section 6.3. In addition, regression analysis and relevant interpretation of results are explained. Finally, in section 6.4, robustness tests are conducted. The chapter concludes in section 6.5.

6.2   Study Design

This study uses the Ordinary Least Squares (OLS) regression model to examine the association between DQ and internal and external mechanisms of CG. This is in line with the majority[48] of studies examining the association between DQ and CG mechanisms. OLS is considered optimal in examining such associations because firstly, disclosure quality is not considered as endogenous variable in similar studies (e.g. Ho and Wong, 2001; Eng and Mak, 2003; Celik et al., 2006; Beak et al., 2009; and Jiang et al., 2010).

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[48] Refer to Appendix 6, only one study (i.e. Hussainey and Al-Najjar, 2011) uses fixed effect model to examine the association between DQ and CG mechanisms. However, conducting Haussman test suggests that fixed effect model does not offer the best estimates since Chi square is very small and insignificant. Some other studies use two-stage least squares (2SLS). However, such instrumental variables (IV) method is fraught with some limitations as explained in chapter Two .

To check whether there are omitted variables in the model, the Ramsey test is used. This is a test for the omitted variables in the model (Goldstein, 1992). Makhija and Patton (2004) also utilise the Ramsey test to check the omitted variables in their study where they investigate the association between ownership structure and disclosure. Conducting The Ramsey RESET test using powers of the fitted values of quality score shows a significant F value of 1.27 with a probability of 0.284. Accordingly, it could be argued that the threat of omitted variables in the model is minimised.

Consequently, the threat of endogeneity is minimised.[49] Secondly, OLS model requirements (linearity assumptions) and, more interestingly, normality, are perfectly met in the present study (see Appendix 7). Thirdly, OLS permits investigation into the cross sectional effect of the variables of interest. Given these reasons, there is no valid justification to favour other models over OLS.

6.2.1 Definitions of Variables

The following paragraphs define how the dependent and independent variables will be measured.

Disclosure Quality

Chapter Four introduced a new measure for DQ, based on OFR guidance on the information quality dimensions. Accordingly, each firm in the sample is assigned a quality score. In analysing the association between CG mechanisms and DQ, this study utilises the same scores obtained in chapter Four.

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[49] The endogeneity problem is discussed in details in chapter Two.

Corporate Governance Mechanisms

The preceding chapter develops 14 research hypotheses representing various corporate governance mechanisms to be tested. Table 6.1 delineates each CG mechanism and identifies the relevant data source.

Column 1 lists the 14 CG mechanisms with the abbreviation written in *italics*. Column 2 displays the expected direction of the association between DQ and each of the CG mechanisms based on the discussion in the previous chapter.[50] Notably, in relation to board size, remuneration committee size, and audit committee size, the current study does not expect a particular association direction, as discussed in chapter Five. Column 3 defines measures used to reflect each of the CG mechanisms. Column 4 presents the data source used to collect the CG variables. Data for some of these mechanisms is manually extracted from either the annual reports, or from the Boardex database, which is a CG database. The third data group is from the Datastream database.

Control Variables

In an attempt to provide accurate and generalisable results, efforts have been exerted to control for a wide range of firm characteristics. Surveying the literature shows that there are eight control variables dominating studies investigating the relationship between CG mechanisms and disclosure. These variables are: firm size *(SIZE)*, profitability *(PROF)*, liquidity *(LIQ)*, leverage *(LEV)*, investment growth *(INVEST)*, risk *(RISK)*, analyst following *(ANALYST)*, dividend policy *(DIV)*, and industry type *(INDUST)*. To the best of the researcher's knowledge, no prior study controls for this comprehensive set of variables. With the exception of dividend policy and industry type, section 4.3.1 discusses the theoretical

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[50]Auditor independence is expected to have a positive association with voluntary disclosure quality. However, following the literature, the study measures independence using the percentage of non-audit fees to total fees; therefore, this measure is inversely related to auditor independence.

underbidding of these variables, measures used to test the control variable and the data source of each variable.

In relation to dividend policy, Hussainey and Al-Najjar (2011) examine the association between dividend policy and the extent of forward-looking information as a proxy for information asymmetry and find a positive relationship. Easterbrook (1984) argues that the dividend could serve to alleviate agency conflicts between management and shareholders. In doing so, dividend payout reduces available free cash flow and therefore, managers are forced to finance their projects through the financial markets (Sharma, 2011). Based on this proposition, if dividend is used to mitigate agency conflicts, firms that pay dividend may not heavily depend upon disclosure (Archambult and Archambult, 2003). However, Archambult and Archambult (2003) do not find an evidence to support their proposition and maintain that such proposition might be valid only for less developed capital markets. Similarly, Naser et al. (2006) conclude that dividend is not a determinant of social disclosure.

In addition to the arguments regarding the association between dividend and disclosure, there are some arguments around the relationship between dividend and CG. The corporate finance literature offers two opposing hypotheses in explaining the linkage between CG and dividend policy (Adjaoud and Ben-Amar, 2010). The outcome model of dividend stipulates that the better governed firms are associated with dividend payouts because those firms offer stronger protection rights to shareholders (La Porta et al., 2000). Whereas, the substitution hypothesis maintains that better governed firms have lower agency costs and therefore are less likely to use dividend to mitigate agency costs (Adjaoud and Ben-Amar, 2010).

Importantly, UK studies support the substitution hypothesis. Dhanani (2005) offers evidence that UK managers do not use dividend policy to manage principal–agency conflicts. More

recently, Al-Najjar and Hussainey (2009) confirms the same conclusion and find that independent directors as a CG mechanism substitute dividends in mitigating agency conflicts.

Based on prior discussion that in the UK, dividend is not used to mitigate agency conflict, following prior literature (e.g. Price et al., 2011), dividend policy is not considered among the control variables in the main analysis. Another reason for excluding dividend payout policy from the main analysis is that, dividend is usually associated with firm size and profitability (Hassan et al., 2009; and Price et al. 2011). Larger firms and profitable firms tend to pay more dividends. Moreover, Inchausti (1997, p. 57) maintains that " if it were considered that a low dividend payout ratio has been caused by the low profitability of the firm, two hypotheses, payout and profitability, would stand in contradiction to each other". Accordingly, dividends payout and profitability should not be included in the same regression model. Therefore, Inchausti (1997), Hassan et al. (2009) and Price et al. (2011) exclude dividend from their study. Therefore, dividend payout policy is excluded from the main analysis in the current study but rather included in one of the sensitivity tests. Dividend payout ratio *(DIV)* is Datastream item no. WC09504 defined as: dividend per share-last 12 months /earnings per share- last 12 months * 100.

As to industry Classification, usually, it is expected that industry characteristics will impose a differentiating behavior on the financial reporting of disclosure. For example, operations of financial institutions are significantly different from those of manufacturing and commercial companies. Accordingly, disclosure by financial institutions may differ from disclosure by non-financial companies (Willekens et al. 2005).

Thus, the current study also controls for industry sectors using Datastream level 2 industry classifications, where a dummy variable is assigned for each sector. The industry sectors are: basic materials *(BMAT),* health care *(HEALTH),* industrials *(INDUST),* technology *(TECH),*

telecommunications *(TELE),* oil and gas (*OIL*), customer services (*CSER*), utilities *(UTIL),* and customer goods *(CGOODS).*

6.3 Empirical Analysis

The association between corporate governance mechanisms and disclosure quality is examined in two ways. First, a univariate analysis is undertaken where the correlation coefficients between different corporate governance mechanisms and disclosure quality are estimated and matched with the expected direction predicted through hypotheses. Second, a multivariate analysis is performed and disclosure quality is regressed on a comprehensive set of corporate governance mechanisms and control variables.

Table 6.1: Definition of Variables, and Data Sources

Corporate Governance Mechanisms	Expected Sign	Measure	Source
Board Independence (*BIND*)	+	% of independent directors excluding the chairman.	Annual reports
Board Size (*BSIZE*)	?	Number of board members.	Boardex
Lack of Separation in Leadership Structure (*LEAD*)	-	Dummy variable 1 for the presence of a board member holding both the Chairman and CEO roles and 0 otherwise.	Boardex
Board Meeting Frequency (*BMF*)	+	Number of board meetings.	Annual reports
Remuneration Committee Independence (*REMIND*)	+	% of independent directors.	Annual reports
Remuneration Committee Size (*REMSIZE*)	?	Number of committee members.	Board
Managerial Ownership (*MOWNER*)	-	% of total shares in issue held by employees, or by those with a substantial position in a company that provides significant voting power at an annual general meeting.	Datastream (code: NOSHEM)
Ownership Concentration (*CONCEN*)	-	Following Li et al. (2008), % of shares held by those owning a 3% or more stake in the firm's after excluding significant directors' shareholdings. The threshold of 3% is chosen as this is the level which triggers disclosure in accordance with disclosure and transparency rules of the UK Listing Authority.	Annual reports
Audit Committee Independence (*ACIND*)	+	% of independent members.	Annual reports
Audit Committee Size (*ACSIZE*)	?	Number of committee members.	Boardex
Accounting Expertise (*ACCEXP*)	+	Dummy variable 1 for the presence of accounting expertise in the committee and 0 otherwise. The study employs the SEC definition of accounting expertise, as follows: all directors with experience as a public accountant, auditor, principle or chief financial officer, controller, or principle or chief accounting officer.	Annual reports
Audit Committee Meeting Frequency (*ACMF*)	+	Number of meetings.	Annual reports
Threat to auditor independence (*AIND*)	+	% of non-audit fees to total auditor's fees.	Annual reports
Audit Firm Size (*ASIZE*)	+	Dummy variable 1 if the auditor is one of the Big 4 auditing firms and 0 otherwise.	Annual reports

Table constructed by author. The above table sets out the definitions of the main independent variables, where column 1 lists the 14 CG mechanisms, and the abbreviations of the independent variables that will be used hereafter in *italics*. Column 2 displays the expected direction of the association between each CG mechanisms and disclosure quality based on the discussion in the previous section; "+" represents a positive association, "-" refers to a negative association and "?" denotes an undefined association type. Column 3 defines measures used to reflect CG mechanisms. Column 4 presents the data source used to collect each variable.

Based on the previous discussion regarding hypotheses development, the current study predicts the following model:

$$DIS_t = a + \beta_1 BIND + \beta_2 SIZE + \beta_3 LEAD + \beta_4 BMF + \beta_5 REMIND + \beta_6 REMSIZE +$$
$$\beta_7 MOWNER + \beta_8 CONCEN + \beta_9 ACIND + \beta_{10} ACSIZE + \beta_{11} ACCEXP + \beta_{12} ACMF +$$
$$\beta_{13} AIND + \beta_{14} ASIZE + \sum_{j=1}^{n} \beta_{16} \left(Controls_{jit} \right) + \varepsilon$$

Where:

DIS= disclosure quality (quantity). Disclosure quality is measured through the aggregation of seven qualitative information attributes.

BIND= percentage of independent directors, excluding the chairman, on the board.

BSIZE= number of board members.

LEAD= dummy variable 1 for the presence of a board member holding both the Chairman and CEO roles and 0 otherwise.

BMF= number of board meetings.

REMIND= percentage of independent directors.

REMSIZE= number of committee members.

MOWNER = percentage of total shares in issue held by employees, or by those with a substantial position in a company that provides significant voting power at an annual general meeting.

CONCEN= percentage of shares held by those owning 3% or more of a firm's stake after excluding significant directors' shareholdings.

ACIND= percentage of independent members.

ACSIZE = number of committee members.

ACCEXP= dummy variable 1 for the presence of accounting expertise in the committee and 0 otherwise.
ACMF= number of meetings.

AIND= percentage of non-audit fees to total auditor's fees.

ASIZE= dummy variable 1 if the auditor is one of the Big 4 firms and 0 otherwise.

Controls= the control variables: j for firm i, in year t, where j = 1 to n.

6.3.1 Descriptive Statistics

Table 6.2 provides the descriptive statistics for the dependent and independent variables. Due to the nature of the independent variables examined in the current study, descriptive statistics are elaborated in two panels. Panel A presents the statistics for continuous variables, whilst Panel B displays the descriptive statistics for categorical variables.

(*Quality)* is the quality score as calculated and developed. The mean and median of DQ scores are 3.139 and 3.149 respectively. The maximum quality score is 3.988, while the minimum is 2.006. This implies a wide variation in disclosure quality among firms, where some firms provide the market with high-quality disclosures and others opt to disclose at low quality.

Board independence *(BIND)* reports a mean of 54% and a median of 55.6%. Generally, sample firms have on average 54% of their board seats filled by independent directors. These percentages show that the average independence percentage in boards is slightly above 50%. Referring back to The Code principle discussed in chapter Five, section 5.2.1 which requires that at least 50% of the board be composed of independent directors - section A.3.2. in 2003, 2006, and 2008's versions of the Code- it is clear that on average, firms tend to just fulfil the minimum requirement to show their adherence to The Code. Firms seem to exert few efforts to voluntarily improve the board independence image. Board minimum and maximum figures are 11% and 89% respectively. With a minimum of 11%, it is obvious that some firms still fall below the required independence percentage.

Table 6.2: Descriptive Statistics (DQ, CG and Control Variables)

Panel A Continuous Variables

Variable	Mean	Std. Dev.	Minimum	25%	Median	75%	Maximum
QUALITY	3.139	0.395	2.006	2.895	3.149	3.420	3.988
BIND	0.538	0.120	0.111	0.455	0.556	0.625	0.889
BSIZE	8.885	2.213	5	7	9	10	20
BMF	8.867	2.529	3	7	9	10	22
REMIND	0.934	0.178	0	1	1	1	1
REMSIZE	3.805	0.989	2	3	4	4	8
MOWNER	4.107	10.721	0	0	0	0	65
CONCEN	34.327	17.555	0	22.53	33.7	45.85	92.40
ACIND	0.962	0.141	0	1	1	1	1
ACSIZE	3.550	0.893	2	3	3	4	8
ACMF	4.056	1.398	1	3	4	5	23
AIND	0.406	0.223	0	0.242	0.386	0.571	0.978
SIZE	3840	6840	337	509	1552	3705	61245
PROF	26.146	61.995	-161.55	10.383	18.04	28.568	780.39
LIQ	1.509	1.077	0	0.94	1.285	1.69	8.65
LEV	0.745	7.281	0	0.093	0.230	0.351	137.787
INVEST	0.041	0.298	-0.185	0.001	0.003	0.013	4.268
RISK	0.315	0.137	0.127	0.230	0.282	0.356	1.071
ANALYST	11.893	5.849	1	7	11	16	33
DIV	38.646	21.699	0	27.13	39.5	50.23	99.29

Panel B Categorical Variables

Variable	Number	Percentage
LEAD	26	4.89
ACCEXP	343	64.47
ASIZE	529	99.44
BM	40	7.52
HC	24	4.51
INDUST	184	34.59
TEC	36	6.77
TELE	4	0.75
OIL	12	2.26
CSER	136	25.56
UTIL	24	4.51
CGOODS	72	13.53

Table constructed by author using data as outlined in Table 6.1, column No. 4. Table 6.2 provides descriptive statistics for the dependent and independent variables. Panel A shows descriptions for continuous variables. The first column lists the dependent variable; the quality score *(QUALITY)*. The first column also lists 14 CG independent variables as follows: board independence *(BIND)*, board size *(BSIZE),* board meeting frequency *(BMF),* compensation committee independence *(REMIND),* compensation committee size *(REMSIZE),* managerial ownership *(MOWNER)*, ownership concentration *(CONCEN),* audit committee independence *(ACIND)*, audit committee size *(ACSIZE)*, audit committee meeting frequency *(ACMF)*, and threat to auditor independence *(AIND)*. The table also shows 7 control variables: firm size *(SIZE)*, profitability *(PROF)*, liquidity *(LIQ)*, leverage *(LEV)*, investment growth *(INVEST)*, risk *(RISK)*, and the number of analyst following *(ANALYST)*. The second column shows the mean. The third column elaborates the standard deviation *(Std. Dev.)*, while the fourth column lists the minimum. The fifth column shows the bottom quartile *(25%)*. The sixth column shows the median. The seventh column lists the top quartile. Lastly, the eighth column elaborates the maximum. Panel B lists categorical variables. Lack of separation in leadership structure *(LEAD)* represents the duality of the chairman position; *(ACCEXP)* refers to the presence of accounting expertise in the audit committee and *(ASIZE)* is the size of the external auditor where it is given the value 1 if the auditor is one of the Big 4 auditing firms and 0 otherwise. Industries are controlled for using dummy variables. The industries are: basic material *(BM)*, health care *(HC)*, industrial *(INDUST)*, technology *(TEC)*, telecommunications *(TELE)*, oil and gas *(OIL)*, consumer services *(CSER)*, utilities *(UTIL)*, and consumer goods *(CGOODS)*. The number of observations *(n=532)*.

The in-depth analysis of the sample shows that around 28.5% of firms have an independence percentage of less than 50%, which is the minimum required by The Code (2008). Firms that just maintain a 50% independence level account for 16%, and the rest of the sample represents firms with an independence percentage of over 50%. As indicated by the maximum percentage, the highest independence level is 89%. Nonetheless, it is worth noting that the involvement of independent directors on UK boards has increased over time, from only 3.8% in 2004 to 54% in 2009 (Abdullah and Page, 2009).

Board size *(BSIZE)* has a mean of 8.885 and a median of nine members. Accordingly, on average, the sample firms' boards consist of nine members. This fact is consistent with Abdullah and Page's (2009) findings that the board size of FTSE 350 firms has decreased over time from over 10 members to nine members on average. Abdullah and Page's (2009) study was conducted over the period from 1999 to 2004, yet boards seems to have held the same trend until 2009. The smallest board is composed of five and the biggest contains 20 members. This implies a good variety of board sizes in the sample.

Board meeting frequency *(BMF)* shows a mean of 8.867 and a median of nine times. Notably, there is a wide variation of meeting frequencies in the sample. The maximum number of board meetings is 22 times whereas, surprisingly, some firms hold only three meetings yearly. It would be interesting to know the percentage of firms with low meeting frequency. Only three observations (0.6% of the sample) held three meetings annually; however, this remains an odd situation given that these are considered large firms on average.

In relation to remuneration committee independence *(REMIND)*, the level exhibited by firms in the sample is generally high. The mean is 93% and the median is 100%. The independence of the remuneration committee has shown an upward trend in independence over time, with

FTSE 350 firms having on average 82.1% independent directors in 2004 (Abdullah and Page, 2009).

Despite such improvements in remuneration committee independence, it has not yet reached the optimum level. The Code (2008) requires a 100% independent remuneration committee, yet some firms still hold remuneration committees composed entirely from non-independent directors, which is evident from the minimum zero percentage seen in several cases (1.9% of the sample is composed of non-independent directors).

The mean size of the remuneration committee *(REMSIZE)* is 3.805 and the median is four members. The remuneration committees vary in size, ranging from two to four members. The Code (2008) calls for a minimum of three members; therefore, a minimum of two members in the remuneration committee is not expected. In fact, 5.6% of the sample fails to adhere to the minimum size requirements. The trend of remuneration committee size has not dramatically changed since 2004, where the average size was 3.6 members (Abdullah and Page, 2009).

The mean and the median of managerial ownership *(MOWNER)* over the sample period are 4.11% and zero% respectively. Based on Abdullah and Page's (2009) study, the magnitude of managerial ownership in FTSE 350 firms has taken a descending trend since 2001. The current study further reinforces these observations when comparing the average of 4.05% to 5.7% as reported by Abdullah and Page (2009) in 2004. Managerial ownership significantly varies in the sample with a maximum of 65% and a minimum of zero%. Notably, 78% of the firms have zero managerial ownership. This implies an increased agency problem and that management should strive to mitigate such problems and provide higher-quality disclosure (Eng and Mak, 2003).

The mean of ownership concentration *(CONCEN)* is 34.33% while the median is 33.7%. Generally, the percentage of shares held by those owning a 3% or higher stake in the firm

after excluding significant directors' shareholdings is around 33%. This percentage has increased compared to the reported percentage (27%) in 2004 (Abdullah and Page, 2009). Similar to managerial ownership, these figures suggest that there is a wide variation of ownership concentration in the sample where some firms lack concentration (4.3% of the sample) and others have a high degree of ownership concentration (92%).

Similar to the improvement in independence level noted for the remuneration committee, audit committee independence *(ACIND)* level has increased from an average of 81.4% in 2004 (Abdullah and Page, 2009) to 96.2%. The median is 100%, reflecting a high degree of code compliance, though some firms still do not have a fully independent audit committee as required. The minimum is Zero%, showing that some audit committees are fully composed of non-independent directors.

Comparing audit committee size *(ACSIZE)* with that of the remuneration committee, it is notable that the first is relatively small. The mean and median are 3.55 and three members respectively. However, the size widely differs across firms with a minimum of two and a maximum of eight members. Comparing the current study statistics with a similar one conducted in 2009 (i.e. Abdullah and Page) shows the steady size of the audit committee since 2004, where the authors report a mean of 3.5 members for UK FTSE 350 firms.

Similar to the remuneration committee, some firms still do not conform to The Code's requirement of a minimum of three members (6.6% of the sample). Once again, the non-compliance ratio is higher than that of the remuneration committee (6.6% versus 6%).

With respect to the frequency of audit committee meetings *(ACMF)*, the mean is 4.05 times and the median is 4 times. Indeed, FTSE 350 non-financial firms held four audit committee meetings on average per year. The range greatly varies with a maximum of 23 meetings and a minimum of only one meeting.

Concerning threat to auditor independence *(AIND)*, it is worthy clarifying that the study measures independence, as mentioned earlier, using the percentage of non-audit fees to total fees paid to the auditor. This measure is negatively related to threat to auditor independence. The higher the ratio, the less independent the auditor is. Nevertheless, threat to auditor independence is expected to have a positive relationship with disclosure quality. The mean of threat to auditor independence is 40.6% and the median is 38.6%. This is a relatively high ratio. On average, 40% of auditors' remuneration comes from non-audit services (NAS). Since some firms hire another auditing firm to provide NAS, the minimum is zero%. Meanwhile, other firms extensively pay for NAS with the maximum being 97.8%. Generally, these statistics are consistent with the rapidly increasing trend of NAS provided to the client firm. Zhang et al. (2007) report a mean of 22% for the percentage of non-audit fees to total fees, whilst Gosh et al. (2009) report a mean of 35.3% and median of 32.6%.

With respect to the control variables, descriptive statistics show that firm size *(SIZE)* – measured by the natural logarithm of total assets – has a mean of 3840 million and a median of 1552 million. Although the sample is mainly composed of FTSE 350 firms, which are therefore relatively large, firm size varies widely across the sample. The minimum is 337 million and the maximum is 61254 million.

Profitability *(PROF)* has a mean of 26.146% and a median of 18.04%. This implies that, on average, firms in the sample enjoy a 26% profitability level. The sample's profitability significantly varies with a minimum of -161.16%, indicating loss-making firms, and a maximum of 780.39%. Therefore, the sample reflects a good combination of highly profitable firms and also some loss-making firms.

Liquidity ratio *(LIQ)* has a mean of 1.509% and a median of 1.28% respectively, reflecting a satisfactory liquidity level in general. The sample has some healthy firms and others with a critical liquidity problem. The maximum and minimum are 8.65% and 0% respectively.

Leverage ratio *(LEV)* has a mean of 0.745% and a median of 0.23%, with a minimum of 0% and a maximum of 137.787%. Investment growth *(INVEST)* shows a mean of 0.041 and a median of 0.003. It ranges from -0.185 to 4.268. The mean of risk *(RISK)* is 0.315 and the median is 0.282, and it ranges from 0.127 to 1.071, indicating the variety of risk-seeking and risk-averse firms.

In general, the number of analysts following a firm *(ANALYST)* is 12 on average (the mean is 11.83 and the median is 11). The least attractive firm (0.9% of the sample) has only one analyst following it whilst the most attractive firm has 33 analysts following it. This shows that firms in the sample have different attractiveness degrees to analysts.

Lastly, dividend payout *(DIV)* shows a mean and median of 38.646% with a minimum of zero% and a maximum of 99.29 %. This indicates a variety in dividend policy applied in the sample.

Panel B of Table 6.2 presents the statistics for categorical variables -The numbers reported are for firm years-, namely lack of separation in leadership structure *(LEAD)*, the presence of accounting expertise in the audit committee *(ACCEXP)* and the audit firm size *(ASIZE)*. Additionally, the panel presents the industry sector dummies. The lack of separation in leadership structure description shows that 95.11% of firms exhibit the "0" dummy variable. This means that the majority of firms in the sample comply with The Code's (2008) requirements relating to the separation of roles of the chairman and the CEO.

Notably, results of the association between the existence of a board member holding both the Chairman and CEO roles and disclosure quality should be interpreted with caution since there are few observations exhibiting duality in the Chairman and CEO roles.

In comparing this percentage with that of Abdullah and Page's (2009) on the FTSE 350 sample, it appears that more firms are complying with these requirements (95.11% in 2010 versus 92.7% in 2004). At the other extreme, 4.89% of firms suffer from a leadership duality problem. Although the duality of CEO role is not widely observable, it is worth saying that it is unexpected to have some firms in the FTSE 350 who are not adhering to such a clear principle of The Code, which calls for separation between the chairman and CEO positions.

The second binary corporate governance variable is the presence of accounting expertise in the audit committee *(ACCEXP)*. Descriptive statistics suggest that 64.47% of firms have an accounting expert on their audit committees, although this is not a requirement by The Code (2008). This implies that many firms are confident about the benefits of having such expertise and thus are voluntarily applying this as a corporate governance mechanism.

The third variable is the external auditor's size *(ASIZE)*. Clearly, most of the firms in the sample are hiring one of the Big 4 firms. Therefore, results related to audit firm size should be interpreted with caution because there are few observations with small audit firms. Consequently, the association between small audit firms and disclosure quality is not clear.

Finally, panel B details the different industry sectors in the sample. The industrial *(INDUST)* sector constitutes the biggest industry sector in the sample (34.59%), while the telecommunications *(TELE)* sector is the smallest (0.75%).

6.3.2 Univariate Analysis (Correlation Matrix)

Table 6.3 reports the Pearson correlation between all variables. Interestingly, all correlations between the dependent variable (disclosure quality) and various corporate governance mechanisms are consistent with agency theory – coefficients are in line with the expected signs – except for managerial ownership *(MOWNER),* and ownership concentration *(CONCEN).*

Table 6.3: Pearson Correlation Matrix (DQ, CG and Control Variables)

	QUALITY	BIND	BSIZE	LEAD	BMF	REMIND	REMPSIZE	MOWNER	CONCEN	ACIND	ACSIZE	ACCEXP	ACMF	AIND	ASIZE	SIZE	PROF	LIQ	LEV	INVEST	RISK	Analyst
BIND	0.086**																					
	0.048																					
BSIZE	0.118***	0.028																				
	0.007	0.520																				
LEAD	-0.140***	-0.062	-0.028																			
	0.001	0.156	0.524																			
BMF	0.049	0.064	-0.061	-0.016																		
	0.257	0.139	0.134	0.719																		
REMIND	0.001	0.326***	-0.056	0.015	0.042																	
	0.977	0.000	0.200	0.738	0.330																	
REMSIZE	0.030	0.253***	0.358***	-0.043	0.101**	0.004																
	0.495	0.000	0.000	0.318	0.020	0.925																
MOWNER	0.044	-0.195***	-0.022	0.022	-0.123***	-0.064	-0.123***															
	0.317	0.000	0.611	0.610	0.005	0.138	0.005															
CONCEN	0.031	-0.045	-0.181***	0.087**	-0.119***	-0.104**	-0.112**	0.059														
	0.475	0.296	0.000	0.045	0.006	0.016	0.010	0.171														
ACIND	0.087**	0.292***	0.024	0.002	0.105**	0.550***	0.004	-0.031	-0.105**													
	0.043	0.000	0.589	0.970	0.016	0.000	0.919	0.483	0.015													
ACSIZE	0.090**	0.265***	0.514***	-0.013	0.066	0.007	0.681***	-0.110**	-0.118***	-0.031												
	0.038	0.000	0.000	0.767	0.123	0.871	0.000	0.011	0.007	0.482												
ACCEXP	0.023	0.028	0.066	0.114***	-0.014	-0.014	0.024	0.010	0.105**	0.020	0.066											
	0.601	0.520	0.127	0.009	0.741	0.740	0.580	0.827	0.015	0.645	0.126											
ACMF	0.125***	0.176***	0.246***	0.010	0.196***	-0.002	0.173***	-0.088**	-0.032	0.041	0.221***	0.027										
	0.004	0.000	0.000	0.826	0.000	0.968	0.000	0.042	0.464	0.349	0.000	0.532										
AIND	-0.006	-0.062	-0.017	-0.030	-0.012	-0.023	-0.027	-0.002	0.026	-0.030	-0.020	0.003	0.012									
	0.898	0.150	0.690	0.489	0.778	0.605	0.539	0.969	0.558	0.490	0.651	0.953	0.777									
ASIZE	0.096**	0.159***	0.064	0.017	-0.093**	-0.023	0.138***	-0.015	0.044	-0.020	0.131***	0.101	0.021	-0.047								
	0.026	0.000	0.139	0.695	0.031	0.605	0.002	0.733	0.311	0.644	0.003	0.019	0.629	0.283								
SIZE	0.237***	0.319***	0.554***	-0.111**	0.056	-0.028	0.270***	-0.127***	-0.143***	0.094**	.0421***	0.080*	0.285***	0.035	0.137***							
	0.000	0.000	0.000	0.010	0.196	0.522	0.000	0.003	0.001	0.030	0.000	0.066	0.000	0.418	0.002							
PROF	-0.001	0.050	-0.012	-0.016	0.015	-0.032	0.086*	0.015	-0.081*	0.032	0.016	-0.049	-0.002	-0.049	0.007	-0.054						
	0.972	0.245	0.786	0.720	0.727	0.460	0.047	0.735	0.062	0.459	0.710	0.262	0.960	0.258	0.867	0.218						
LIQ	0.006	-0.046	-0.207***	0.038	-0.140***	-0.056	-0.133***	0.094**	0.141***	0.047	-0.095***	-0.113***	-0.078	0.145***	-0.054	-0.198***	-0.072					
	0.887	0.295	0.000	0.384	0.001	0..196	0.002	0.031	0.001	0.280	0.030	0.009	0.710	0.001	0.218	0.000	0.109					
LEV	0.075*	0.023	0.075**	-0.017	0.005	-0.008	0.182***	0.080*	-0.064**	0.012	0.113***	-0.090**	0.047	-0.001	0.008	-0.127***	0.011	-0.036				
	0.087	0.592	0.085	0.703	0.917	0.858	0.000	0.064	0.142	0.777	0.009	0.040	0.275	0.997	0.860	0.003	0.805	0.405				
INVEST	-0.103**	-0.097**	-0.174***	-0.021	0.039	0.021	-0.164***	-0.030	0.125***	0.028	-0.162***	-0.121***	-0.059	-0.010	-0.006	-0.257***	-0.031	0.136***	-0.013			
	0.017	0.025	0.000	0.637	0.370	0.632	0.000	0.490	0.004	0.527	0.000	0.005	0.174	0.826	0.900	0.000	0.475	0.002	0.770			
RISK	0.024	-0.015	-0.185***	-0.020	0.033	0.014	-0.227***	0.062	0.240***	-0.024	-0.180***	-0.030	0.015	0.056	0.091**	-0.148***	-0.120***	0.129***	-0.071	0.205***		
	0.586	0.726	0.000	0.651	0.452	0.755	0.000	0.155	0.000	0.579	0.000	0.495	0.725	0.195	0.036	0.001	0.006	0.003	0.103	0.000		
ANALYST	0.118***	0.166***	0.329***	-0.100**	0.054	-0.081*	0.145***	-0.056	-0.224***	-0.024	0.253***	0.072*	0.173***	-0.045	0.072**	0.489***	0.137***	-0.137***	0.026	-0.131**	-0.144***	
	0.006	0.000	0.000	0.021	0.218	0.061	0.001	0.194	0.000	0.578	0.000	0.098	0.000	0.210	0.099	0.000	0.002	0.002	0.554	0.003	0.001	
DIV	-0.032	0.074*	-0.011	0.025	-0.021	0.094**	0.116***	-0.047	-0.124***	0.063**	0.038*	0.023	-0.040	-0.031	-0.033	-0.038	0.088**	-0.161***	0.089**	-0.137***	-0.471***	-0.038
	0.469	0.087	0.805	0.568	0.627	0.030	0.008	0.277	0.004	0.146	0.383	0.600	0.361	0.474	0.454	0.387	0.044	0.002	0.039	0.002	0.000	0.378

Table constructed by author using data extracted from the IBM SPSS analysis. Table 6.3 displays the correlation analysis. *(QUALITY)* quality score, *(BIND)* board independence, *(BSIZE)* board size, *(LEAD)* lack of separation in leadership structure, *(BMF)* board meeting frequency,*(COMIND)* remuneration committee independence, *(REMSIZE)* remuneration committee size, *(MOWNER)* managerial ownership, *(CONCEN)* ownership concentration, *(ACIND)* audit committee independence, *(ACSIZE)* audit committee size, *(ACCEXP)* the presence of accounting expertise in the audit committee, *(ACMF)* audit committee meeting frequency, *(AIND)* threat to auditor independence, *(ASIZE)* the size of the external auditor, *(SIZE)* the firm size, *(PROF)* profitability, *(LIQ)* liquidity, *(LEV)* leverage, *(INVEST)* investment growth, *(RISK)* risk, and *(ANALYST)* the number of analyst following, *(DIV)* dividend payout,. Number of observations *(n=532)*, ***, **, * Significant at 1%; 5% and 10% respectively

Clearly, board independence *(BIND)*, audit committee independence *(ACIND)*, threat to auditor independence *(AIND)*, and auditor size *(ASIZE)* are significantly positively correlated with disclosure quality. On the other hand, lack of separation in leadership structure *(LEAD))* are significantly negatively correlated with disclosure quality.

With respect to the board, remuneration committee and audit committee sizes, as discussed earlier in the hypotheses development section, no specific theory posits the influence of size on the effectiveness of the board committees; instead, two contradictory views exist. The correlation matrix, however, shows a significant positive association between board and affiliated committees' size and disclosure quality. This supports the view proposing that larger boards or committees normally have a greater knowledge base to fulfil their advisory role and are less likely to be dominated by management.

The first control variable is firm size *(SIZE)*, which is measured by the natural logarithm of total assets. Overall, the results show that firm size is positively associated with disclosure quality with a coefficient of 0.237 at the 1% significance level. This suggests that large firms disclose information at a high standard level of quality. Firms are more likely to follow a sound disclosure practice and conform to institutional expectations by adopting institutional norms (Merkl-Davies and Brennan, 2007). By adopting the recommendation of OFR best practice, firms will send a message of trustworthiness to the financial market. Accordingly, large firms in the market would conform to OFR best practice to maintain market confidence, and to raise capital.

Analyst following *(ANALYST)* is positively associated with disclosure quality, with a coefficient of 0.118 at the 1% significance level. This suggests that the higher the quality of information disclosed, the more analysts follow the firm. This is consistent with Yu (2010)

findings that firms disclosing more information enjoys better information environment through attracting more analysts. Thus, firms release information at the highest level of quality to attract financial institutions and financial analysts' attention (Holland, 1998) and to attract more financial analysts (Lang and Lundholm, 1993; Healy et al., 1999; and Yu, 2008).

Leverage *(LEV)* is positively correlated with disclosure quality. The correlation is 0.074 at the 10% significance level. This suggests that firms that disclose at higher quality are more likely to raise fund through debt financing.

On the other hand, investment growth *(INVEST)* shows a negative association with disclosure quality. The coefficient is 0.103 at the 5% significance level. The negative association between INVEST and disclosure quality is consistent with Core's (2001) suggestion that although high-growth firms provide more disclosure, they still have greater information asymmetry than low-growth firms. The interpretation of this result is that firms concentrate on disclosure quantity rather than disclosure quality. This explains the high level of information asymmetry.

Additionally, correlation analysis shows that profitability, liquidity, risk, and dividends payout ratios do not affect a firm's decision to voluntarily disclose information at a high quality level. Finally, the correlation analysis Table 6.4 suggests that industry type is not always a determinant for quality of disclosure.

Table 6.4: Pearson Correlation Matrix (DQ and Industry Sectors)

Industry Sector	Quality
BM	0.207*** 0.000
OIL	0.032 0.464
HC	-0.118*** 0.006
INDUST	0.031 0.476
TEL	-0.013 0.774
UTIL	0.014 0.752
TECH	-0.049 0.264
CSER	-0.109** 0.012
CGOODS	0.025 0.571

Table constructed by author using data extracted from the IBM SPSS analysis **(BM)** Basic material, **(OIL)** oil and gas, **(INDUST)** Industrial, **(TEL)** telecommunications, **(UTIL)** utilities, **(TECH)** technology, **(CGOODS)** consumer goods, **(HC)** health care, **(BM)** basic material, **(CSER)**, consumer services, Number of observations **(n=532)**, ***, **, * Significant at 1%; 5% and 10% respectively

Oil and gas *(OIL)* Industrial *(INDUST)*, telecommunications *(TEL),* utilities *(UTIL),* technology *(TECH),* and consumer goods *(CGOODS)* are not associated with disclosure quality. Other industry sectors, however, are correlated with disclosure quality. Particularly, two industry sectors are characterised by low disclosure quality, namely: health care *(HC)* with a coefficient of 0.118 at the 1% significance level, and consumer services *(CSER)* with a coefficient of 0.109 at the 5% significance level. Whereas, basic materials *(BM) is* characterised by high disclosure with a coefficient of 0.207 at the 1% significance level.

In relation to the positive association between basic materials *(BM),* it is presumed that this industry generally requires great capital expenditures. As such, correlation analysis suggests that firms belonging to such industry sector need to raise capital, and hence firms try to promote their credibility by providing disclosure quality.

The Pearson correlation matrix (Table 6.3) also gives an overview about the correlations among independent variables. The Pearson correlation does not show unexpected

associations. The largest correlation (0.680) is between audit committee size and remuneration committee size. Such correlation is normal because, on average, the number of audit committee members is close to the number of remuneration committee members. This is due to the Code provisions with regard to the size of both committees. In relation to the remuneration committee, the Code (2008) establishes that "The board should establish a remuneration committee of at least three, or in the case of smaller companies two, independent non-executive directors" (FRC, 2008; para. B.2.1). Similarly, with regard to the audit committee, The Code (2008) holds that "The board should establish an audit committee of at least three, or in the case of smaller companies two, independent non-executive directors". (FRC, 2008; para. C.3.1).

The second largest correlation for the independent variables is 0.554 between board size and firm size. It is fairly reasonable that the bigger the firm, the greater number of director sat on the board because big firms need more monitoring than small ones. Therefore, there is no multi-collinearity problem present in the current analysis. This is further reinforced by conducting variance inflation factor (VIF) for the independent variables.

There are multiple ways to test for multi-collinearity, yet the most widely used methods include checking the Pearson correlations among the regressors, and assessing the variance inflation factor (VIF).

Empirical literature usually depends on the first (correlation analysis) method and seldom uses VIF. However, VIF has a more specific rule in judging multi-collinearity, in contrast to correlation matrix which entails a high degree of subjectivity. Accordingly, the extent to which multi-collinearity presents a problem in the estimation of the association between corporate governance mechanisms and disclosure quality is further examined through VIF. This is especially important when considering such a wide range of variables.

It is argued that "VIF provides a reasonable and intuitive indication of the effects of multi-collinearity on the variance of the ith regression coefficient" (O'Brien, 2007, p. 674). Particularly, VIF "shows directly how much the standard error of the estimation is inflated by the multi-collinearity" (Lüchters and Chakrabarty, 2006, p. 1).

In the statistical literature, arguments vary as to what VIF level denotes a sever multi-collinearity problem. Two rules of thumb exist. One rule considers a value of 4 as a multi-collinearity, while the other defends a value of 10 (O'Brien, 2007). In the relevant literature, the commonly used cut-off is 10 (Brown and Caylor, 2006). Looking at Table 6.5, it is evident that all VIF values are below the lowest cut-off (i.e. 4). Interestingly, corporate governance mechanisms in general have low VIF values, with the largest being 2.39 for audit committee size. Meanwhile, the control variables have low VIF values, with firm size having the largest value of 2.35 VIF, then, suggests that multi-collinearity is not likely to be a major factor driving the study's results.

In short, when the correlation matrix (Table 6.3) and VIF (Table 6.5) are used to check multi-collinearity, it is clear that both methods suggest that all independent variable are free from the multi-collinearity problem.

Table 6.5: Collinearity Statistics

Variable	VIF
BIND	1.54
BSIZE	1.98
LEAD	1.07
BMF	1.16
REMIND	1.60
REMSIZE	2.06
MOWNER	1.10
CONCEN	1.22
ACIND	1.56
ACSIZE	2.39
ACCEXP	1.10
ACMF	1.19
AIND	1.05
ASIZE	1.11
SIZE	2.35
PROF	1.09
LIQ	1.14
LEV	1.21
INVEST	1.160
RISK	1.51
ANALYST	1.49
DIV	1.39

Table constructed by author using data extracted from the IBM SPSS analysis See Table 6.1 for definitions of variables

Additionally, the researcher conducts the Durbin-Watson test. The Durbin-Watson test "tests the null hypothesis that the residuals from an ordinary least-squares regression are not auto correlated". The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation (Field, 2005). The reported Durbin-Watson value is 1.24. This suggests that there is no serial correlation in the residuals.

6.3.3 Multivariate Analysis (Regression Results)

As to fulfil the current study's objective, a multiple regression analysis (OLS) is used to test the hypotheses and determine what specific CG mechanisms help to improve DQ. The dependent variable is the DQ scores calculated in chapter Three and the independent variables are the 14 CG mechanisms summarised in Table 6.1, plus the control variables. Table 6.6 delineates the regression results.

When interpreting Table 6.6, it is worth noting that empirically – to the researcher's knowledge – no prior study has examined this comprehensive set of CG mechanisms and control variables. Therefore, the current study's analysis provides deep insights as to those CG mechanisms that are really associated with disclosure quality. The R-squared and adjusted R-squared values are 11.8% and 8.2% respectively. The model is significant with an F-value of 3.250 at the 1% significance level, which implies a good overall model fit.

In general, three hypotheses regarding the association between CG mechanisms and DQ are accepted, whereas the remaining 11 hypotheses are rejected. Interestingly, the accepted hypotheses (i.e. lack of separation in structure, audit committee meeting frequency, and the audit firm size) are consistent with agency theory. This section discusses results of the regression analysis, and whether each hypothesis is accepted or rejected in the same order of the hypotheses development section 5.2 of chapter Five. In doing so, the section relates the accepted hypotheses with agency theory. In addition, the section discusses the rejected hypotheses and analyses the potential reasons behind such rejection.

Table 6.6: Regressions Results **of CG mechanisms on DQ**

	QUALITY	Sig.
Intercept	1.707***	0.000
BIND	-0.032	0.850
BSIZE	-0.005	0.630
LEAD	**-0.202****	**0.019**
BMF	0.011	0.119
REMIND	-0.011	0.921
REMSIZE	-0.030	0.197
MOWNER	0.002	0.175
\\	0.001	0.243
ACIND	0.213	0.139
ACSIZE	0.000	0.986
ACCEXP	0.024	0.493
ACMF	**0.021***	**0.098**
AIND	-0.022	0.767
ASIZE	**0.426***	**0.064**
SIZE	**0.131****	**0.002**
PROF	0.000	0.454
LIQ	0.003	0.860
LEV	**0.006****	**0.018**
INVEST	**-0.130****	**0.029**
RISK	0.092	0.498
ANALYST	0.002	0.610
	1.553	0.611
Industry-Controlled	YES	
	16.2%	
Adjusted R-Square	11.3%	
F-Value	3.34 ***	0.000

Table constructed by author using data extracted from the IBM SPSS analysis. *(QUALITY)*quality score, *(BIND)* board independence, *(BSIZE)* board size, *(LEAD)* lack of separation in leadership structure, *(BMF)* board meeting frequency,*(REMIND)* remuneration committee independence, *(REMSIZE)* remuneration committee independence, *(MOWNER)* managerial ownership, *(CONCEN)* ownership concentration,*(ACIND)* audit committee independence, *(ACSIZE)* audit committee size, *(ACCEXP)*, the presence of accounting expertise in the audit committee *(ACMF)* audit committee meeting frequency, *(AIND)* threat to auditor independence, *(ASIZE)* the size of the external auditor, *(SIZE)* the firm size, *(PROF)* profitability, *(LIQ)* liquidity, *(LEV)* leverage, *(INVEST)* investment growth, *(RISK)* risk, and *(ANALYST)* the number of analyst following. Number of observations *(n=532)*, ***, **, * Significant at 1%; 5% and 10% respectively.

The Board Hypotheses

Agency theory regards a board of directors as one of the vital CG mechanisms, which mitigates agency problems through providing high-quality disclosure. However, results of the association between different board mechanisms and DQ show that only one board mechanism (lack of separation in leadership structure) is effective in improving disclosure quality in the UK.

This conclusion lends itself to the possible justification that the current board characteristics of FTSE 350 firms are not strong enough to promote DQ as is hoped by agency theory.

Arguably, one of two possibilities could back the weak monitoring role of the board. The first possibility is that firms do not conform to the principles and provisions provided by The Code (2008). Stated differently, The Code provides sufficient guidance that should stimulate the board as an effective CG mechanism, yet in practice, firms do not follow The Code's principles. The second possibility of the insignificant association between the afore-mentioned board mechanisms and DQ quality is that the current Code's principles are not strong enough to improve DQ. The descriptive analysis Table 6.2 provides a good basis for further in-depth evaluation of these two possibilities.

Board Independence (BIND)

Although agency theory argues that board independence *(BIND)* should have a positive influence on the firm's DQ, regression results show an insignificant association between board independence and DQ. Therefore, hypothesis number one is rejected. This result is usual in the UK context. Long et al. (2005) establish that independent directors in the UK are not closely related to firm supervision and rather pursue a very general role. Similarly, Ezzamel and Watson (1997, p. 62) recognise that "despite the presence of non-executives, it is widely recognised that the boards of directors in UK companies are generally dominated by executives".

In explaining the regression results as to board independence *(BIND)*, the descriptive statistics show that, on average, board independence *(BIND)* accounts for 54%. The Code (2008) calls for a balance of independent and non-independent directors (the minimum is expected to be at least at 50% independence). However, the current independence average of 54% suggest that firms do not exert much effort with regards to having a more independent board than required by The Code (2008) though, on average, they achieve the minimum independence rate required. However, the minimum independence rate among the sample firms is 11%, which

reveals that some of the large FTSE 350 firms do not even comply with The Code's minimum independence requirement.

Based on this observation, the insignificance of the *(BIND)* results is a two-way function; namely, limitations in The Code's principle and improper compliance by firms. Firstly, The Code's (2008) current principle as to board independence is not solid enough since it just calls for a balance between independent and non-independent directors. Therefore, calling for a higher independence rate than 50% is hoped to increase board independence rate and consequently promote boards' effectiveness, particularly in relation to disclosure quality. Secondly, some firms do not even adhere to this principle. In short, the insignificance of the results could be jointly justified by these two arguments. Bebchuk and Weisbach (2010, p. 944) states that:

"If directors only have access to publicly available information, it is hard to imagine that they will be able to evaluate management better than an outside shareholder. In addition, the mere fact that directors do not have superior information would in itself likely be the consequence of a strained relationship with management, since presumably no information of value would have been transmitted during board meetings. The informational advantage of directors over outsiders thus presumably provides a measure of the potential for these directors to add value".

Board Size (BSIZE)

As to board size *(BSIZE)*, as discussed earlier, there is no agreed-upon theoretical viewpoint on its relationship with DQ. The underlying empirical evidence shows that there is no association between the number of board members and DQ. Therefore, hypothesis number two is rejected.

Looking at The Code (2008), it is obvious that it does not specify an optimal board size that influences the board's effective role (for instance, promoting disclosure practices). Consequently, the first justification of the insignificant association between board size and

disclosure quality is backed by the absence of a specific requirement with regards to board size.

 Arguably, the current average board size of nine members does not suit the large FTSE 350 firms' nature. Larger boards are expected to positively influence disclosure quality, as evidenced by the correlation matrix in Table 6.3.

Lack of Separation in Leadership Structure (LEAD)

The first accepted hypothesis is hypothesis number three. It is concerned with the expected negative relationship between lack of separation in leadership structure – the presence of a board member holding both the Chairman and the CEO roles– and DQ. Regression results show that lack of separation in leadership structure *(LEAD)* has a negative association with DQ. This is apparent with a coefficient of 0.205 at the 1% significance level. Accordingly, the presence of a dominant member who acts as both chairman and CEO is negatively associated with DQ. Consequently, results support the acceptance of hypothesis number three.

This result is consistent with the agency theory assumption that combining the two positions of chairman and CEO distorts the monitoring role of the chairman and allows the CEO to engage in opportunistic behaviour, which in turn is associated with disclosure quality. In the UK, lack of separation in leadership structure – which stipulates the separate function of chairman and CEO – results in fewer agency costs (Brown et al., 2011).

Board Meeting Frequency (BMF)

With regards to board meeting frequency *(BMF)*, it is argued that boards that meet more frequently are more effective. However, regression results do not support this argument where

the analysis reports a positive relationship yet insignificant correlation between board meeting frequency and DQ. Accordingly, hypothesis number four is rejected.

This might be backed with one of two possibilities. Firstly, the efficiency of board meetings needs to be improved and directed toward monitoring best practice disclosure practices. Stated differently, it is not about how long the board meets, but more importantly, how much time is devoted to oversee and promote disclosure practices of the management. Thus, although the number of board meetings has a positive relationship, such association is not significant enough to enhance DQ. Secondly, the frequency of meetings is not sufficient enough to allow effective supervisory role over management disclosure practices.

The Code (2008) is vague in this context, calling for "sufficiently regular" meetings, with no mention of the minimum number of meetings necessary to maintain satisfactory board performance. Currently, firms held an average of nine board meetings yearly, with some firms having a low meeting frequency of three times. The insignificance of the association suggests that there is a room for more effective board monitoring role through more frequent meetings. Therefore, the results suggest that The Code needs to revise this principle, and calls for more frequent board meetings to improve the board's overall functioning process.

Remuneration Committee Independence (REMIND)

Regarding remuneration committee independence *(REMIND)*, despite the fact that agency theory posits a positive relationship with DQ, the results show an insignificant association. Therefore, hypothesis number five is rejected.

Regarding the independence of the remuneration committee *(REMIND)*, firms in general have a 93% independence rate. Obviously, this rate is lower than The Code's (2008) requirement of a fully independent remuneration committee. In this vein, The Code (2008) is clear and the

problem lies with firms' application of this requirement. In short, the results hold that a fully independent remuneration committee is more likely to influence DQ positively.

Remuneration Committee Size (REMSIZE)

The last CG board mechanism is remuneration committee size (*REMSIZE*). Similar to board size, there is no theory, nor a well-acknowledged argument, on the association between the number of remuneration committee members and DQ. Results here show no association between remuneration committee size and DQ; therefore hypothesis number six is rejected.

In explaining the insignificant relationship between remuneration committee size (*REMSIZE*) and DQ, it is notable that 5.6% of the sample falls below The Code's (2008) required size of three members. The current insignificance association between remuneration committee size and DQ might suggests that, probably, a larger committee size would positively promote DQ.

In conclusion, there is no strong evidence on the association between remuneration committee and DQ. UK studies have repeatedly indicated little evidence on the effectiveness of

remuneration committees in general (Ezzamel and Watson, 1997).

Ownership Structure Hypotheses

The second CG mechanism is the ownership structure. Based on the regression results, the two hypotheses falling under this mechanism are rejected. In interpreting these results, the current study analyses the possibility that The Code's (2008) principles in relation to ownership are vague, and consequently that firms do not apply these principles, which in turn weaken the effectiveness of ownership as a CG mechanism. The other side of the coin would be that firms do not adhere to The Code's (2008) principles, although such principles are clearly stated.

Managerial Ownership (MOWNER)

So as to managerial ownership *(MOWNER)*, agency theory posits a negative association between the percentage of managerial ownership and DQ. However, results show an insignificant association. Therefore, hypothesis number seven is rejected.

Ownership Concentration (CONCEN)

Agency theory points out that the lower the ownership concentration is, the higher the quality of disclosure. This notion stems from the belief that "block holders can perform coalitions at relatively low cost to influence company behaviour by exercising the power of their combined holdings" (Abdullah and Page, 2009, p. 46). Regression analysis, however, documents an insignificant relationship between ownership concentration *(CONCEN)* and DQ. This leads to the rejection of hypothesis number eight.

Audit Committee Hypotheses

According to agency theory, the audit committee is one of the mechanisms that mitigate agency problems through promoting DQ. Regression results show that none of the three audit committee mechanisms are associated with disclosure quality. Consequently, the related hypotheses are rejected.

Audit Committee Independence (ACIND)

Regression results show that the independence of the audit committee members *(ACIND)* is not significantly associated with DQ. Accordingly, hypothesis number nine is rejected. Similar to the approach adopted in interpreting results of both the board and ownership mechanisms, the following paragraphs analyse the possible reasons for the insignificant results of the three rejected audit committee hypotheses.

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In-depth analysis of audit committee independence reveals that, on average, firms' audit committee are made up of 40% independent directors, although The Code (2008) requires fully independent audit committees. Such incompliance with the CG guidance proposed by The Code (2008) is argued to be a possible reason for the small magnitude of the coefficient reported in the regression analysis. This justification is in line with the findings of existing literature that the audit committee serves as an effective CG mechanism only if it is fully independent. For instance, Anderson et al. (2004) find that a fully independent audit committee is associated with reduced cost of capital. Additionally, Be´dard et al. (2004) provide evidence that an audit committee reduces earnings management only when all members are independent. Bronson et al. (2009) find that the benefits of audit committees are limited unless the committee comprises independent directors only.

Audit Committee Size (ACSIZE)

Similar to the board and remuneration committee sizes, there is no widely accepted argument on whether the size of the audit committee is associated with DQ. Empirically, results do not provide evidence on this association. Accordingly, hypothesis number ten is rejected.

The Presence of Accounting Expertise in the Audit Committee (ACCEXP)

Hypothesis number 11 deals with the proposition that the presence of accounting expertise in the audit committee enhances DQ. Results do not support this hypothesis as regression analysis shows positive but, insignificant association between the presence of accounting expertise in the audit committee and DQ. The hypothesis is therefore rejected. Notably, there is no extensive literature examining the association between this variable and DQ. Although results do not suggest an association between the presence of accounting expertise in the audit

committee and DQ however, the presence of accounting expertise in the audit committee could be related to other variables such as firm value (see chapter Eight).

Audit Committee Meeting Frequency (ACMF)

Hypothesis number 12 assumes a positive relationship between the number of audit committee meetings and DQ. The hypothesis contends that the more frequently the audit committee meets, the more likely it is to exercise its role effectively as a CG mechanism designed to mitigate agency problems. More specifically, this allows the committee to regularly review and appraise management's performance, which in sum reinforces the committee's overall monitoring and controlling role. Particularly, as mentioned in chapter Five, section 5.2.3, one of the audit committee's roles is to promote overall transparency and improve DQ.

Empirical analysis provides evidence that reinforces this hypothesis, with a coefficient of 0.021 at the 10% significance level. Therefore, hypothesis number 12 is accepted.

The Code (2008) is vague in this context, calling for "sufficiently regular" meetings, with no mention of the minimum number of meetings necessary to maintain satisfactory audit committee performance. Currently, firms held an average of four board meetings yearly, with some firms having a low meeting frequency of once a year. The relatively small coefficient suggests that there is a room for more effective monitoring role.

The External Auditor

The external CG mechanism usually investigated in the literature is mainly the external auditor. While empirical investigation reveals a significant association between audit firm size

and DQ, no evidence is found as to the association between the threat to auditor independence and DQ.

Threat to Auditor Independence (AIND)

Hypothesis number 13 claims a positive association between the degree of threat to auditor independence and DQ. Theoretically, auditor independence *(AIND)* is a vital CG mechanism which promotes DQ, yet it has not been extensively tested so far in the literature.

However, regression analysis documents an insignificant association between threat to auditor independence and DQ. Consequently, hypothesis number 13 is rejected. Notably, threat to auditor independence is measured through the percentage of non-audit service (NAS) provided. Given such measure of threat to auditor independence, Results show that the provision of non-audit services does not impair the auditor's independence. Such result is similar to that of Deberg et al. (1991). They find that there is no association between the decision to change the auditor and the level of non-audit services provided.

Audit Firm Size (ASIZE)

Hypothesis number 14 presumes that there is a positive relationship between audit firm size *(ASIZE)* and DQ. Regression results enforce the theoretical assumption and report a positive association. Accordingly, hypothesis 14 is accepted. The coefficient is 0.426 at the 10% significance level.

It is commonly held in the literature that, audit firm size reflects audit quality. Audit firm size affects both mandatory disclosure (e.g. Abdelsalam and Weetman, 2007) and disclosure (e.g. Archambault and Archambault, 2003), hence, big audit firms could influence firms to provide more disclosure to increase the perceived audit quality of the annual reports as a whole

(Archambault and Archambault, 2003). Notably, this association should be interpreted with caution as most of the sample contains firms with big audit firms. Meanwhile, the researcher repeated the analysis after omitting the audit firm size and results remain consistent to such deletion.

In conclusion, there are three CG mechanisms significantly associated with DQ in the UK, namely; lack of separation in leadership structure, audit committee meeting frequency, and auditor size. Overall, one can argue that the board, audit committee, and the external auditor are more effective in the UK than the ownership structure. This is apparent from having the three CG mechanisms proved to be effective in improving DQ belongs to the board, audit committee, and the external auditor. On the other hand, none of the ownership structure was found to be associated with DQ. Relatively, external auditor is the most effective, then, the audit committee, and lastly, the board of directors.

Interestingly, the arguments derived from the above discussion are supported by the latest review of The Code in 2010. This review was conducted as a response to the financial crisis, which came to a head in 2008-2009 and which triggered widespread reappraisal, locally and internationally. There are two main conclusions based on the review, which, interestingly, are in line with the current study's findings. The recommendations of the review are as follows:

> *"First, that much more attention needed to be paid to following the spirit of The Code as well as its letter. Secondly, that the impact of shareholders in monitoring The Code could and should be enhanced by better interaction between the boards of listed companies and their shareholders. To this end, the FRC has assumed responsibility for a stewardship code that will provide guidance on good practice for investors" (FRC, The Code, 2010, p. 2).*

The first recommendation of the code is consistent with the underlying study's finding that many firms are merely trying to comply with the letter of The Code, with no observable actions to contribute to a coherent CG structure. This argument goes in line with that put forth by Bebchuk and Weisbach (2010). A very clear example is that the average percentage of

board independence is 54%, as discussed previously. Notably, proposing reforms to strengthen the role of boards is a common policy response after observing a governance crisis (Bebchuk and Weisbach, 2010). The second recommendation, which is in line with the current study's findings, pertains to the weak role of ownership structure as a corporate governance mechanism.

Up until this point of the analysis, it will be interesting to present the detailed modifications of The Code (2008) which are consistent with the current study's findings. Firstly, The Code (2010) calls for external evaluation of board effectiveness every three years. This particularly supports the argument concluded from rejecting most of the board mechanisms related hypotheses – except lack of separation in leadership structure – that the board currently does not function as an effective CG mechanism as it should be; therefore, The Code (2010) proposes external independent evaluation. This is relevant to the independence of board and related committees, such as the remuneration and audit committees, and might be relevant as well to adequate board size based on the complexity and the size of the firm's operations.

Secondly, the new code added additional responsibility for the chairman in terms of leading of the board while ensuring its effectiveness, achieving the requisite culture of constructive challenge by non-executives to the executive and finally, training, evaluation, and board composition. Other modifications include more gender diversity, annual re-election of directors, and enhancing risk committees' formations.

Control Variables

With respect to the control variables, Regression analysis shows that two firm characteristics are associated with DQ. The first is firm size *(SIZE),* which is positively associated with DQ with a coefficient of 0.131 at the 1% significance level. This indicates that larger firms tend to

provide high-quality information regardless of their liquidity, leverage and risk position. Abdullah and Page (2009) justify this positive association in FTSE 350 firms, maintaining that larger firms are exposed to higher levels of media enquiry than smaller firms when they fail to comply with regulatory requirements. Based on the institutional theory, large firms are more likely to provide high-quality disclosure. The theory holds that firms will be keen to conform to institutional expectations by adopting institutional norms (Merkl-Davies and Brennan, 2007). Thus, by adopting regulatory guidance, firms will send a message of trustworthiness to the stock market. Accordingly, regression results suggest that large firms conform to the OFR best practice guide, and provide high-quality disclosure, to maintain market confidence and to raise capital.

The second firm characteristic, which is correlated with DQ is leverage ratio. The coefficient is 0.006 at the 5% significance level. This is in line with the argument that firms with high leverage are more likely to disclose more information to minimise litigation risk (Watts and Zimmerman, 1990).

The third firm characteristic that is associated with DQ is investment growth *(INVEST)*. Regression analysis reports a negative relationship with a coefficient of -0.130 at the 5% significance level. This finding is in line with the theoretical arguments by Core (2001), who suggest that high-growth firms still suffer from information asymmetry even when increasing the quantity of disclosure. Therefore, regression analysis suggests that high-growth firms are not keen to focus on the quality of disclosure.

In short, Firms that disclose information of high quality are characterised by large size, high leverage ratio, and low investment growth opportunities.

6.3.4 Robustness Tests (Sensitivity Analysis)

This section presents several sensitivity tests to assess the robustness of the results. The first is testing the sensitivity of results to the year of the analysis. This is done in two ways. The first way is to include a dummy variable for each of the four years. The second way involves including a dummy variable for the global financial crisis. The second robustness test involves testing the sensitivity of results to the inclusion of dividend payout policy while excluding profitability. The third sensitivity test is using the quantity of information as the dependent variable instead of the quality of information disclosed. Finally, the fourth sensitivity analysis is concerned with including a dummy variable to account for the mandatory nature of the Business Review. The new Business Review requirements are only effective for year-ends beginning on or after 1 October 2007 (ABS, 2009, para. 2.1). Stated differently, the Companies Act (2006) became completed in its final draft and effective on or after October 2007. Accordingly, the researcher assigns a dummy variable 1 for the financial years 2008 and 2009 and zero for the financial years 2006 and 2007 to consider the overlap between the mandatory Business Review and the best practice OFR.

As a first robustness test, this study assesses the sensitivity of results to the year of the analysis. The study proceeds to run the regression including dummy variables for the years 2006, 2007, 2008, and 2009.

Table 6.7: Sensitivity Tests for the association between DQ and CG Mechanisms

Panel A: Dummy Years   Panel B: Crisis Dummy   Panel C: Controlled for Dividend   Panel D: Quantity Analysis   Panel E : Mandatory Quantity

	Quality Controlled for Years	Sig.	Quality Controlled for Crisis	Sig.	Quality controlled for dividend	Sig.	Quantity Controlled for Years	Sig.	Mandatory Dummy	Sig.
Intercept	1.803***	0.000	1.769***	0.000	1.841***	0.000	0.134***	0.000	1.764***	0.000
BIND	-0.047	0.783	-0.044	0.796	-0.048	0.776	0.007	0.863	-0.047	0.783
BSIZE	-0.004	0.701	-0.004	0.668	-0.004	0.713	-0.001	0.603	-0.004	0.701
LEAD	-0.214**	0.013	-0.213**	0.013	-0.216**	0.012	0.033*	0.094	-0.214**	0.013
BMF	0.011	0.131	0.010	0.134	0.011	0.128	0.000	0.829	0.011	0.131
REMIND	0.004	0.975	-0.001	0.995	0.004	0.970	-0.019	0.485	0.004	0.975
REMPSIZ	-0.035	0.142	-0.034	0.154	-0.034	0.156	0.005	0.406	-0.035	0.142
MOWNE	0.002	0.166	0.002	0.172	0.002	0.155	0.000	0.445	0.002	0.166
CONCEN	0.001	0.412	0.001	0.388	0.001	0.427	0.000	0.159	0.001	0.412
ACIND	0.191	0.189	0.198	0.170	0.192	0.188	0.002	0.953	0.191	0.189
ACSIZE	0.005	0.849	0.005	0.867	0.005	0.864	-0.005	0.475	0.005	0.849
ACCEXP	0.018	0.618	0.021	0.566	0.016	0.664	0.012	0.153	0.018	0.618
ACMF	0.023*	0.076	0.023*	0.076	0.023*	0.075	0.001	0.656	0.023*	0.076
AIND	-0.007	0.927	-0.010	0.895	-0.008	0.916	0.017	0.327	-0.007	0.927
ASIZE	0.437*	0.057	0.435*	0.058	0.439*	0.057	-0.039	0.459	0.437*	0.057
SIZE	0.123***	0.005	0.122**	0.005	0.120***	0.006	0.023**	0.024	0.123***	0.005
PROF	0.0002	0.463	0.000	0.470			0.0001	0.216	-0.0001	0.463
LIQ	0.003	0.856	0.003	0.857	0.004	0.837	-0.006	0.156	0.003	0.856
LEV	0.005**	0.023	0.005**	0.023	0.005**	0.027	0.001	0.265	0.005**	0.023
INVEST	-0.127**	0.032	-0.129**	0.031	-0.127**	0.033	-0.033**	0.017	-0.127**	0.032
RISK	0.064	0.656	0.092	0.499	0.086	0.582	0.079**	0.018	0.064	0.656
ANALYST	0.001	0.758	0.002	0.633	0.002	0.664	0.0003	0.967	0.001	0.758
CRISIS			0.047	0.165						
DIV					0.0004	0.631				
Mandator									0.039	0.442
Industry-controlled	YES		YES		YES		YES		YES	
Time-controlled	YES		YES		YES		YES		YES	
R-Square	16.6%		16.5%		16.6%		15.1%		16.6%	
Adjusted R-Square	11.3%		11.5%		11.2%		9.7%		11.3%	
F-Value	3.110***	0.000	3.30***	0.000	3.100***	0.000	2.780***	0.000	3.110***	0.000

Table constructed by author using data extracted from the IBM SPSS analysis. *(QUALITY)* quality score, *(BIND)* board independence, *(BSIZE)* board size, *(LEAD)* Lack of separation in leadership structure, *(BMF)* board meeting frequency,*(REMIND)* remuneration committee independence, *(REMSIZE)* remuneration committee independence, *(MOWNER)* managerial ownership, *(CONCEN)* ownership concentration,*(ACIND)* audit committee independence, *(ACSIZE)* audit committee size, *(ACCEXP)*, the presence of accounting expertise in the audit committee, *(ACMF)* audit committee meeting frequency, *(AIND)* threat to auditor independence, *(ASIZE)* the size of the external audit firm, *(SIZE)* firm size, *(PROF)* profitability, *(LIQ)* liquidity, *(LEV)* leverage, *(INVEST)* investment growth, *(RISK)* risk, and *(ANALYST)* the number of analyst following. *(CRISIS)*, dummy variable of one zero for the before crisis period (i.e. 2006 and 2007) and one for the crisis period (2008 and 2009). Number of observations *(n=532)*, ***, **, * Significant at 1%; 5% and 10% respectively.

In the main analysis, i.e. Table 6.6, there was no control for years. In the sensitivity test, Table 6.7, the time factor is considered in three ways as discussed above. Comparing results of Table 6.6 (not controlled for years) with Panels A and B of Table 6.7 (years controlled) provides evidence on year's effect.

Results are robust to the dummy years. Stated differently, Results are consistent over different years. Panel A of Table 6.7 reports the results of this sensitivity test. Variables that significantly influence DQ in the main test (Table 6.6) are persistent after controlling for years. Interestingly, even the significance level of these variables is consistent with that reported in the main test. The values of the R-square and adjusted R-square are 16.6% and 11.3% respectively.

In an additional test for considering the year effect, a dummy variable is introduced to proxy for the global financial crisis. Similar to Panel A, Panel B of Table 6.7 shows that results are robust. Panel B shows that when introducing the crisis dummy, the findings are quite similar to those reported in the main analysis (Table 6.6). The crisis dummy is insignificant. The values of the R-square and adjusted R-square are 16.5% and 11.5% respectively.

The second sensitivity test is focused on including dividends. This is meant to control for the probability that firms utilise dividends to mitigate agency conflicts. In doing so, profitability is excluded as prior studies (e.g. Inchausti, 1997; Hassan et al., 2009; and Price et al., 2011) claim that dividends and profitability are usually associated and represent contradicting hypotheses and, accordingly, should not be included in the same regression analysis.

Panel C shows that variables, which significantly influence DQ in the main test (Table 6.6) and after controlling for years dummies (Panel A and B) are persistent after adding dividend and excluding profitability. Therefore, results are robust to the inclusion of dividend. The values of the R-square and adjusted R-square are 17% and 11.7% respectively whereas, F-value is 3.201. The coefficient of dividends is insignificant, and thus is not associated with DQ. This result confirms previous findings by Dhanani (2005) and Al-Najjar and Hussainey (2009) that UK managers do not use dividend to manage principal–agency conflicts.

With respect to the third sensitivity test, regression analysis is performed using the quantity of disclosure[51] *(QUANTITY)* as the dependent variable, instead of disclosure quality (*QUALITY*). The underlying logic behind this robustness test presumes that since disclosure quantity is not correlated with DQ, as evidenced in chapter Four, section 4.3 one should logically expect that the determinants of both differ. Bamber and McMeeking (2010) argue that determinants of DQ and quantity are different, and therefore, it is expected to have different implications. Thus, as a third robustness check, this study investigates whether the CG mechanisms associated with DQ will differ if the quantity of information disclosed is used as the dependent variable instead of the quality.

This sensitivity test is also a further important validation of the developed DQ measure. That is, if CG mechanisms are the same over the two different measures, it follows that one will be indifferent using either quantity-based measures or disclosure quality measures. Panel D of Table 6.7 presents the results of this test.

Obviously, CG mechanisms associated with the quantity of disclosure differ from CG mechanisms associated with disclosure quality. While lack of separation in leadership structure, audit committee meeting frequency, and audit firm size are associated with DQ, only one CG mechanism appeared to be associated with disclosure quantity, namely; lack of separation in leadership structure *(LEAD).* lack of separation in Leadership structure is negatively associated with disclosure quantity with a coefficient of 0.041 at the 5% significance level.

Looking at the control variables, apparently, they differ from those control variables associated with DQ. Regression results provide evidence that firm size, investment growth, and risk are associated with the quantity of information disclosed. The coefficient of firm size

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[51] See the definition of disclosure quantity in chapter Three, section (3.3.4).

is 0.023 at the 5% significance level indicating a positive relationship between firm and quantity of information disclosed. This finding confirms most of other studies 'findings that firm size is associated with disclosure quantity.

Refereeing to Table 6.6, firm size is a common variable associated with both disclosure quantity and DQ. However, the relationship is stronger for DQ with a coefficient of 0.131 at the 1% significance level. Quality and quantity disclosure analysis suggests that large firms provides more disclosure -this is typically expected as the firm's business is more diversified and thus calls for more information released- at a high quality disclosure (refer to section 4.3 for more explanation).

Regression results suggest that investment growth is negatively associated with the quantity of information disclosed. The coefficient is 0.033 at the 5% significance level. Finally, the risk is positively associated with disclosure quantity with a coefficient of 0.079 at the 5% significance level. This suggests that, firms with high risk provides more information. This is justified in two ways. The first is to maintain shareholders informed about the risks the firm is encountering and what strategies the firm is applying to overcome those risks. Second, to rest the shareholders assured that the company is not affected by the surrounding risks in order not to lose any current and potential shareholders. The quantity regression by itself would not help with an in-depth analysis unless combined with the DQ results. Refereeing to Table 6.6, results show that risk is not associated with DQ. In other words, UK firms with higher risk, tends to mitigate such risks through providing more information rather than more informative/high quality information.

Clearly, with such different results between using disclosure quality/quantity, it is empirically evident that using quantity as a proxy for quality is not such a proper measure and causes misleading results. In closing, from comparing the quality and quantity regressions it is

evident that determinants of DQ differ from those of disclosure quantity. Accordingly, two conclusions are reached here; the first presumes that it could be argued confidently that the DQ measure developed previously (chapter Four, section 4.3) is a valid quality measurement. Secondly, the current study's results as to the relation between CG mechanisms and disclosure are robust.

Regression results are consistent with those of prior studies. However, as a robustness test, the interpretation of results (as discussed above) is focused on the extent to which CG and control variables are similar/different regarding quality and quantity of information disclosed. Comparing the quantity results reported in this test with those of previous studies is beyond the scope of the current study. The decision not to compare regression results for quantity is justified in number of ways. Firstly, in relation to disclosure quantity in general, from surveying the related literature it is clear that none of the CG mechanisms, nor the control variables, gained a consensus as to their association with disclosure quantity. Even where the majority of studies suggest a specific association of a certain variable, the significance level markedly differs (Ahmed and Courtis, 1999).

Secondly, results vary according to the disclosure score used. This is true even with the specific definition of the quantity employed here (the proportion of forward-looking information) because the definition of "forward-looking" differs across studies.[52] For example, Hussainey et al. (2003) and Schleicher et al.'s (2007) forward-looking disclosure scores reflect only 55% of the actual forward-looking disclosure released in the investigated statements. Bozzolan et al. (2009) do not check the reliability of their coding scheme. In addition, some studies using the proportion of forward-looking information as a measure for disclosure quantity have methodological limitations restricting the comparability of results.

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[52] This is evident through having different forward-looking keywords lists in the literature, in addition to the subjectivity imbedded in the manual content analysis.

Consequently, these studies cannot be regarded as good benchmarks for comparison. Thirdly, the different combinations of CG mechanisms and control variables used in each study are expected to yield different results. Fourthly, the sample characteristics (size and time period of analysis) can also affect the reported findings.

Panel E reports results of the fourth sensitivity test, which accounts for the mandatory nature of the Business Review. Results show that the mandatory nature of the Business Review is insignificant. Accordingly, it could be argued that the overlap between the Business Review and the OFR does not affect the results. This is apparent from Panel E, where CG mechanisms that are associated with DQ are consistent after considering the mandatory nature of The Business Review. This is consistent with Abed et al. (2012) who investigate the effect of the changing nature of the OFR from a mandatory to a best practice statement. Similar to the current study's findings, Abed et al. (2012)'s did not find any change in the results caused by the regulations.

6.4   Summary and Conclusions

The current chapter examined the relationship between DQ and CG mechanisms. In doing so, this chapter attempted to overcome prior literature limitations. Therefore, the current study advances the literature and used an innovative DQ measure – developed in chapter Three – to test disclosure quality instead of using the disclosure level as a proxy for quality. Additionally, the current study tested a comprehensive CG structure by incorporating 14 CG mechanisms as well as controlling for a wide range of variables.

The findings show that there are primarily three corporate governance mechanisms, which are associated with the quality of disclosure statements of UK FTSE 350 non-financial firms.

These are lack of separation in leadership structure *(LEAD)*, audit committee meeting frequency *(BMF)*, and audit firm size *(ASIZE)*.

The first CG mechanism improving DQ is the leadership structure *(LEAD)*, where the separation between the chairman and CEO positions and responsibilities improve the quality of the OFR disclosure. Secondly, the results posit a positive association between audit committee meeting frequency *(ACMF)* –which is a proxy for diligence, as discussed in chapter Four – and the audit firm size *(ASIZE)* and disclosure quality.

The following Table 6.8 links chapter Five and Six, by listing the 14 hypotheses developed in chapter Five along with the results of the analysis conducted in the current chapter (Six). Columns 1 and 2 are extracted from chapter Four whereas; columns 4 and 5 are concluded from chapter Five. Column 1 reflects the hypothesis number. Column 2 lists the governance variables. Column 3 shows the expected association as highlighted in each hypothesis (chapter Four). Column 4 lists the actual direction of the relationship found between each of the CG variables and DQ. Column 5 shows the result of the analysis (rejecting/accepting the hypothesis).

Table 6.8: Summary of Results

Hypothesis number	Corporate Governance Mechanisms	Expected Association	Reported Association	Results of the Analysis (Rejecting / Accepting the hypothesis)
1	Board Independence	+	Insignificant	Reject
2	Board Size	?	Insignificant	Reject
3	Lack of Separation in Leadership Structure	-	-	**Accept**
4	Board Meeting Frequency	+	Insignificant	Reject
5	Remuneration Committee Independence	+	Insignificant	Reject
6	Remuneration Committee Size	?	Insignificant	Reject
7	Managerial Ownership	-	Insignificant	Reject
8	Ownership Concentration	-	Insignificant	Reject
9	Audit Committee Independence	+	Insignificant	Reject
10	Audit Committee Size	?	Insignificant	Reject
11	Accounting Expertise	+	Insignificant	Reject
12	Audit Committee Meeting Frequency	+	+	**Accept**
13	Threat to auditor independence	+	Insignificant	Reject
14	Audit Firm Size	+	+	**Accept**

To sum up, the current study presents a novel contribution to both CG and disclosure literature, being timely and relevant in light of the recent worldwide appraisals of CG structure (i.e. The Code, 2010) and disclosure regulations (the latest Management Commentary published by the IASB). More specifically, this study also contributes to the two research streams (i.e. DQ and CG) by explaining and justifying the mixed results as to the association between CG and DQ. Lastly, the study introduces an empirical evidence of what CG mechanisms in the UK influence DQ.

Chapter Seven : Examining the Joint Effect of DQ and CG mechanisms on FV: Review and Hypotheses Development

7.1 Overview

Chapter Four highlighted the prominence of having a sound measure for DQ, whilst chapter Six showed that certain CG mechanisms improve the quality of disclosed information in the OFR in the UK narratives. In this vein, it is reasonable to examine the economic benefits of both DQ and CG mechanisms for firms. This area of research should provide policy-maker a part of a cost-benefit analysis by exploring the benefits for firms having higher DQ and higher quality of CG. The researcher expects that higher DQ and governance quality should lead to desirable consequences. Firm value (FV) -measured by Tobin's Q- is used to examine the economic consequences of the quality of disclosure and CG. Little research has considered the impact of both variables on FV in general and in the UK context in particular.

Accordingly, this chapter addresses the question of whether the observed FV reflects the quality of disclosure and CG structure. The second question, given that FV reflects CG structure, is what the CG mechanisms significantly affecting firm value are. The third question addressed in this chapter is whether DQ and CG have a substitution or a complementary relationship.

There has been some interest in investigating the effect of disclosure and some CG mechanisms on FV.[53] This strand of research has received widespread attention invoked by its importance. Generally, it is argued that "the importance of this topic is obvious from the

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[53]In early work of governance, few studies used firm performance and FV interchangeably (e.g. Mehran, 1995; Short and Keasey, 1997; Eisenberg et al., 1998; Klein, 1998; Bhagat and Black, 2002; Kiel et al., 2003). However, the literature eventually made a clear distinction between both (e.g. Bebchuk and Weisbach, 2010). Researchers normally use historical accounting measures such as ROA and ROE (Loderer et al., 2010) in examining the effect of CG on firm performance. Examples of these studies include Chen et al., 2005; Cremers and Nair, 2005; and Larcker et al., 2007; Lafuente et al. 2009; Elsayed; 2010; and Ramdani and Witteloostuijn, 2010). On the other hand, researchers measure the effect of CG on FV using Tobin's Q (e.g. Larcker et al. 2005; Sheu et al., 2010; and Braga-Alves and Shastri, 2011). The difference between ROA, ROE and Tobin's Q is that ROA and ROE have backward-looking perspective whereas Tobin's Q has forward-looking perspective (Demsetz and Villalonga, 2001).

considerable growth in the empirical literature on CG across accounting, economics, finance, management, and corporate strategy literatures" (Larcker et al., 2007, p. 964).

However, the existing literature has some voids in investigating these two research avenues. On one side, in testing the link between DQ and FV, prior research use two proxies for DQ. The first proxy involves scoring quality based on the "occurrence" dimension[54] using a checklist of items (e.g. Hassan et al., 2009). The second proxy entails a kind of subjective scoring such as analyst ratings (e.g. Healy et al., 1999; Jiao, 2010), given the limitations of these two proxies (see chapter Two, section 2.4), drawing a persuasive conclusion on the association between DQ and CG is difficult. The second gap results from investigating the link between disclosure and FV only while ignoring CG, or investigating the association between DQ and FV while considering only limited governance mechanisms.

This study contributes to the extant literature along two dimensions. Firstly, it examines the joint effect of both CG mechanisms and DQ on FV. Furthermore, in doing so, it overcomes the limitations of different proxies for DQ currently used in the literature by using an innovative DQ measure. Secondly, it adds to the knowledge through testing an extensive set of CG mechanisms in an effort to mitigate the omitted-variables bias seen in prior studies. Such contributions have several policy implications for the interested regulatory bodies of CG and DQ, particularly in the UK.

7.2   Literature Review

It is widely acknowledged that agency theory explains information asymmetry and adverse selection problems. As discussed in Chapter Three, information asymmetry means managers have informational advantages over the market participants. The separation between

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[54] Hassan et al. (2009) refer to this approach as the disclosure level.

ownership and management creates an adverse selection problem where market participants believe that managers tend to behave to their own benefit. Accordingly, any mechanism intended to narrow the information asymmetry gap is profound to the success of the financial market (Ronen and Yaari, 2002). Two main mitigation mechanisms have been evolved to overcome agency problems (information asymmetry and adverse selection), namely high-quality disclosure and effective CG.

7.2.1 Disclosure Quality and Firm Value

High quality disclosure represents a profound mitigation mechanism with regards to agency problems (Lang and Lundholm, 1993). In a broad context, accounting information plays a vital role in capital markets. Barth et al. (2001, p. 79) posit that "accounting information is defined as value relevant if it has a predicted association with equity market values". There are two main roles through which accounting information may serve market participants: the valuation role and the stewardship role. Beyer et al. (2010) argue that the valuation role of accounting information permits capital providers to evaluate the return potential of a certain investment opportunity. They add that the stewardship role allows capital providers to manage and utilise their invested capital in a certain firm. Bearing in mind that agency theory results in information asymmetry problems, the accounting information role in the market becomes even more obvious.

It is noteworthy to unveil the specific role of disclosure as an example of accounting information. In this sense, disclosure provides several benefits; as contended by Healy et al. (1999, p. 488), "first, [it] can help correct any firm mis-valuation, and second; [it] can increase institutional interest and liquidity for a firm's stock". High-quality disclosure helps to reduce information asymmetry among the market participants, as well as between managers

and investors (Dhaliwal et al., 2011). It is widely held that "disclosure strategies then provide a potentially important means for corporate managers to impart their knowledge to outside investors, even if capital markets are efficient" (Healy and Palepu, 1993, p. 1). Generally, better information environments are associated with higher market valuation (Lang et al., 2004). Accordingly, high-quality disclosure adds more credibility to the financial reports and enhances investors' perceptions of firms; in turn, such perceptions are reflected in FV (Healy et al., 1999).

Importantly, this assumption relies heavily on the quality of information disclosed to the market. Investors value disclosure if it is of high quality rather than being meaningless talk from management.

Investors can evaluate the quality of DQ directly or indirectly. With the computerisation of the current proposed disclosure measure, investors can use the software to calculate the quality score for a specific company. Additionally, an investor will need to evaluate the 5 information items related to KPIs; this should only take a few minutes. Investors can indirectly evaluate the disclosure quality via the financial analysts. Indirectly, investors can judge on the quality of disclosures through the financial analysts. Financial analysts can easily use the proposed DQ measure to evaluate firms on behalf of their investors. Another indirect evaluation method is through the public rating companies. Public rating companies can score all listed firms (e.g. FTSE 350) and provide this service to the investors.

Another avenue through which disclosure heightens FV is the minimisation of uncertainties regarding the firm's future performance, which would result in reducing the cost of increasing the shareholders' cash flow (Hassan et al., 2009). Beak et al. (2004) find that during the 1997 Korean financial crisis, firms that had higher DQ experienced smaller reductions in their value.

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In conclusion, high-quality disclosure is regarded as one of the most influential CG mechanisms (Black et al., 2006; Cheung et al., 2010; and Sheu et al. 2010). Overall, disclosure is presumed to contain value-relevant information (Al-Najjar et al., 2011) and consequently affects FV (Haggard et al., 2008).

In spite of the afore-mentioned arguments on the influence of DQ on FV, the empirical evidence is still inclusive. Some studies maintain that voluntarily disclosing information adds to firm value (e.g. Healy and Palepu, 1993; Beak et al., 2004; Cheung et al., 2010; and Jiao, 2010) while others (e.g. Hassan et al., 2009) do not find evidence to support this assumption. In general, there is little evidence on this research stream to deduct a cohesive conclusion (Hassan et al., 2009).

Importantly, the link between DQ and FV has not been tested in the extant literature, yet, the extent literature generally uses either the level of disclosure provided (i.e. Hassan et al., 2009; and Cheung et al. 2010) or the analyst ratings (Healy et al., 1999) to proxy for DQ. Obviously, results of studies that use proxies for DQ are only valid to the extent that such proxies are sound (Hassan et al., 2009). Bearing in mind the empirical evidence derived in chapter Six, section 6.3 that disclosure quantity alone is not a proper proxy for DQ; potential concerns around the validity of prior research's findings are raised.

According to the above discussion and based on the agency theory, the following research hypothesis on the link between DQ and FV is developed:

H1: Firms disclosing high-quality information exhibit better FV.

7.2.2 Corporate Governance and Firm Value

A strong CG structure is another effective mechanism to capture market participants' trust in the reported financial reports presented by management and mitigate agency problems. Indeed, "governance describes the institutional arrangements that regulates financial markets" (Hooper et al., 2009, p. 93). In this regard, improving CG restores market confidence and results in more equity financing (La Porta et al., 1997). CG increases firm's cash flow, which ultimately is reflected into higher FV (Bozec et al., 2010). In addition, CG increases returns to shareholders via reducing transaction and agency costs (Hooper et al., 2009). Therefore, FV is a pivotal factor in the success of the financial markets (Beak et al., 2004), as better governed firms have higher FV (Gompers et al., 2003; and Sami et al., 2011). La Porta et al. (2002) manifest that in countries where laws are in favour of investor protection, investors are willing to pay more for a firm's equity. Therefore, investors recognise that with better legal protection, the problem of conflicting investor-management interests will be minimised. This argument presents CG as a kind of investor protection mechanism, which mitigates agency problems and therefore enhances FV. Consequently, predicting a positive association between CG and FV is very common in the relevant literature.

Despite the vast body of literature examining the influence of individual CG mechanisms on FV (Beak et al., 2004), the international evidence on this regard comes to no definitive conclusions with regards to what the important CG mechanisms affecting FV are (Black et al., 2006; Henry, 2008; and Bebchuk and Weisbach, 2010). Generally, Bozec et al. (2010, p. 685) maintain that, "overall, prior studies fail to find convincing evidence that CG affects firm performance or value". Accordingly, investigating which CG mechanisms have an effect on FV in the UK is an interesting research question, and is addressed by the current study.

In analysing the association between CG mechanisms and FV, two main research approaches are notable in the literature. The first approach utilises a composite (index-based) measure of CG. This measure could be either a self-constructed index or a ready-made index. Examples of literature following the second approach include research by Black (2001), who employs a ready-made CG index to examine the association between CG and firm value in Russia, and documents a positive relationship. Klapper and Love (2004) undertake a cross-country study for emerging markets using a composite measure, and conclude a positive relationship in general between CG and firm value. Black et al. (2006) demonstrate that CG structure is a causal factor in explaining the market value of Korean firms using a constructed index-based measure. Brown and Caylor (2006) develop a summary of CG measures and find a positive effect of CG on FV in the US. Similarly, Braga-Alves and Shastri (2011) report a positive relationship between a composite governance index (NM6) and FV in Brazil. Ammann et al. (2011) and Sami et al. (2011) also document a strong and positive relationship between CG and FV.

In contrast, Klein et al. (2005) employ an aggregated CG index developed by the Global and Mail Canadian newspaper published in its business report (McFarland, 2002). They conclude that using the aggregated CG index does not seem to have an effect on FV. In conclusion, the results are still inclusive, as is apparent from the foregoing literature review.

Although these measures usually include numerous CG mechanisms, composite measures – either self-constructed or ready-made indices – are prone to numerous limitations. Firstly, the literature points out that, indices incorporating few CG mechanisms are more effective than those capturing a vast number of CG mechanisms (Brown et al., 2011). Secondly, if the individual CG mechanisms are weighted, the threat of arbitrary assignments of weights appears (Klein et al., 2005). Thirdly, when a set of indicators are naively summed up to form

some type of governance index, this results in an inconsistent regression coefficient and the ability of ready-made indices to statistically reflect managerial behaviours, making organisational performance questionable (Larcker et al., 2007). Fourthly, composite measures have virtually no predictive power, and the results have difficulty in interpreting conflicting results (Dey, 2008; and Daines et al., 2010). Fifthly, the validity of such proxies is doubtful (Aguilera and Desender, forthcoming).

The second approach is to examine the effect of CG on FV using a few CG mechanisms in isolation. Clearly, this approach leads to missing variable bias (Beiner et al., 2006). Particularly, literature has been focused on board and ownership mechanisms, with limited investigations of audit committee and auditor mechanisms (exceptions include Brown and Caylor, 2006). Another caveat is the use of different measures for individual CG mechanisms, which makes it difficult to obtain a conclusive result. For example, the use of the percentage of non-executive directors versus the percentage of independent directors as a measure for board independence[55] yields incomparable conclusions.

In comparing the two previously discussed approaches in examining the effect of CG on FV, one may conclude that, the first approach – naively summing up CG mechanisms using one variable, either via ready-made or self-constructed indices – entails a great deal of subjectivity. Additionally, it involves selectiveness bias, and therefore, is likely to be greatly contested, especially with its low predictive power (Dey, 2008). Arguably, these statistical limitations cannot be mitigated, and thus, using this approach, the results will not be of strong predictive power (Larcker et al., 2007). Whereas, research gaps in the second approach could be overcame. The first gap – the examination in prior studies of only a few governance mechanisms– is mitigated through examining an extensive set of 14 individual CG

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[55] Refer to chapter Five, Board Independence sub-section for the distinction between the two measures.

mechanisms to avoid the measurement error imbedded in examining only a few governance mechanisms. The second gap – the use of different measures for CG mechanisms– is mitigated by selecting valid and reliable measures of CG. For instance, directors' independence is measured using only the non-executive independent directors' percentage and excluding gray directors.[56]

Based on the above comparison, with the ability to mitigate gaps in the second approach and the inability to mitigate the limitations of the first, the second research approach is preferable. Moreover, identifying the most important CG mechanisms affecting firm value – using the second approach – would be more interesting to this research vein and more worthwhile for policy-makers and regulators.

Importantly, one of the difficulties in this research stream is that "there is not well-developed theory about the complex, multi-dimensional nature of CG or a conceptual basis for selecting the relevant governance mechanisms to include in an empirical study" (Larcker et al., 2007, p. 965). Additionally, after the latest financial crisis, it is evident that what constitutes good CG is still not understood, nor practiced (Bliss, 2011).

This could be one of the reasons for the ambiguity of empirical results on the relationship between CG and FV. Interestingly, the current study would mitigate this problem through using the UK governance code – The Code (2008) – as the basis for identifying CG mechanisms to be included in this study's framework.[57] Accordingly, the current study uses the same 14 CG mechanisms previously identified in chapter Four.

Chapter Six shows that not all the 14 CG mechanisms are associated with DQ. However, these mechanisms will be investigated in the third empirical study (chapter Eight). Stated

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[56] Table 6.1 defines each measure of CG mechanisms.
[57] This approach was applied in chapter Six as well. See Figure 6.1 for details of these governance mechanisms.

differently, both the accepted and the rejected hypotheses investigated in the second empirical study (chapter Six) will be tested in the third empirical study. Since the scope and objective of the second empirical study differs from that of the third, it is more prudent to include the 14 CG mechanisms in investigating the joint effect between CG mechanisms and DQ on FV. The following figure 7.1 highlights the interrelationships between the three empirical studies.

Figure 7.1: The Interrelationships among the Three Empirical Studies
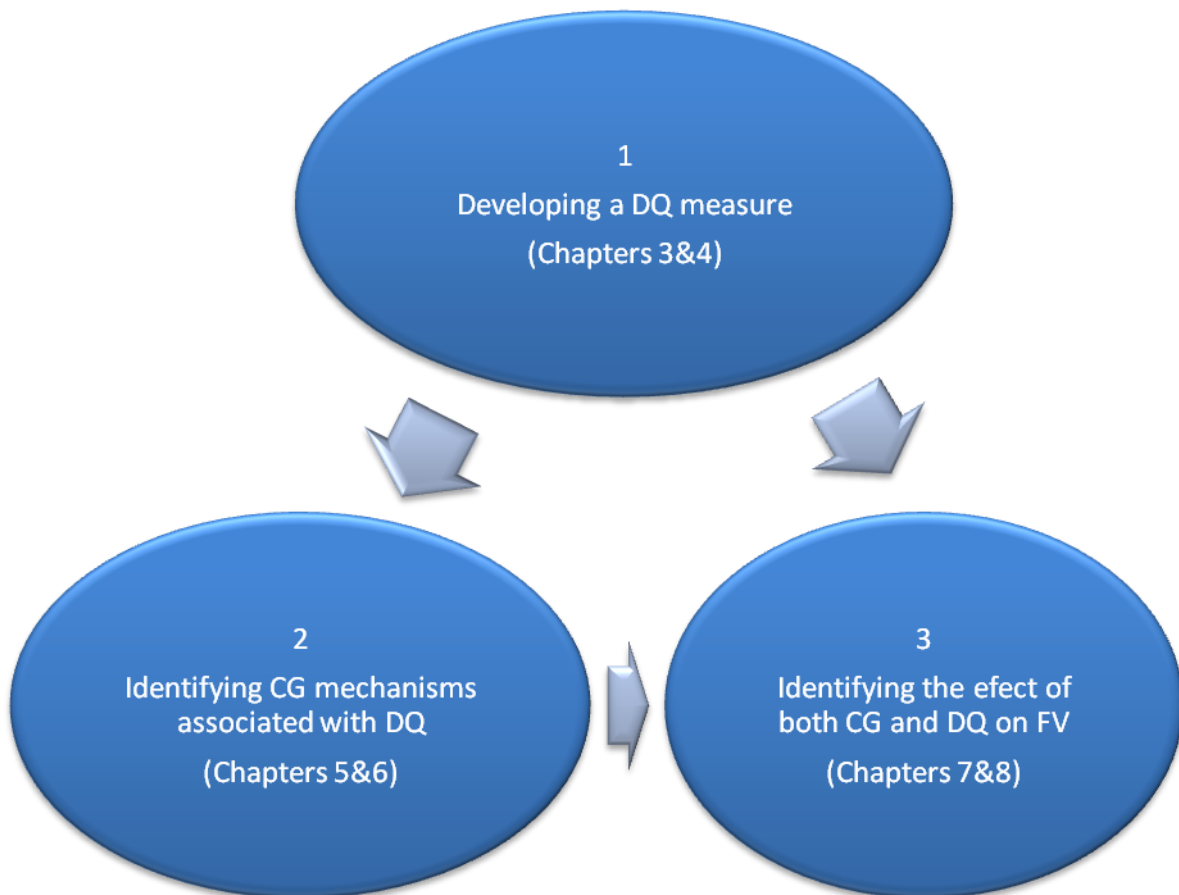
As shown in the figure above, the DQ measure developed in the first empirical study (circle no. 1) is included in the second empirical study (circle no. 2) as the dependent variable. In the second empirical study, the researcher investigates the determinants of DQ where 14 CG mechanisms are investigated. In the third empirical study, the DQ measure is included as one of the independent variables in investigating the determinants of the FV, along with the 14 CG mechanisms. Figure 7.2 is a more simplified version of Figure 7.1 where the first circle shows that CG mechanisms are used as the independent variable to DQ. The arrows show that circles 2 (CG) and 3 (DQ) are used as independent variables to the firm value (circle 3).

Figure 7.2:   A simplified Figure of the Interrelationships among the Three Empirical Studies
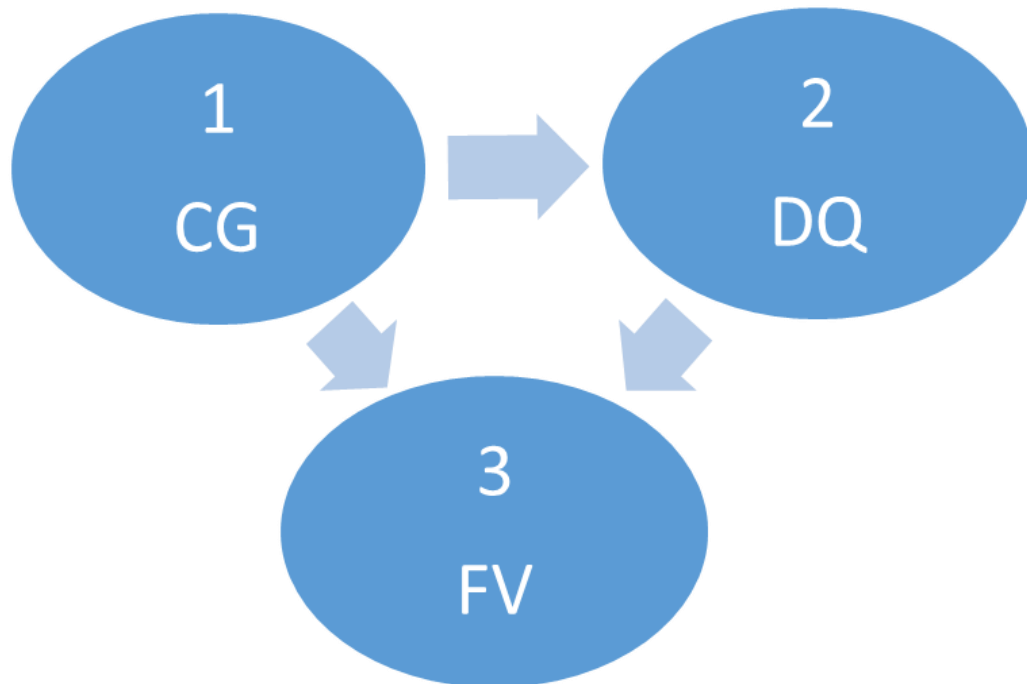
The remainder of this section presents the theoretical background underlying the relationship between each of these 14 corporate governance mechanisms and firm value.

7.2.2.1 Board and Sub-Committees Independence

Overall board independence and the independence of the sub-committees' directors (Setia-Atmaja, 2009) is a vital determinant for overall board monitoring role (Brick and Chidambaran, 2010), particularly, by controlling executive directors and pursuing them to act for shareholders' interests rather than assuming self- interest (Ramdani and Witteloostuijn,

2010). Independence is then viewed as an important governance mechanism that promotes firm value (Black and Kim, 2011).

However, empirical evidence is mixed in this regard. Yermack (1996) reports a negative association between board independence and FV, while others do not find any significant association (e.g. Brown and Caylor, 2006; Dahya et al., 2008; and Bebchuk and Weisbach, 2010). Black and Kim (2011) find a positive relationship between board and audit committee independence and FV. Similarly, Chan and Li (2008) find a positive relationship between audit committee independence and FV.

Accordingly, it is difficult to predict the direction of the association between board independence, board independence; remuneration committee independence, audit committee independence, and FV and the following hypotheses are developed:

H2: There is a relationship between board independence and FV.

H3: There is a relationship between remuneration committee independence and FV.

H4: There is a relationship between audit committee independence and FV.

7.2.2.2 Board and Sub-Committees Size

The relationship between board size and FV is ambiguous in the existing literature, with two competing theoretical views existing in this regard. From an agency perspective, larger boards mean more people reviewing management performance (Kiel and Nicholson, 2003). The other view is prevailing in the organisational behaviour research, highlighting that productivity losses could arise when working groups grow larger (e.g. Jensen, 1993; Karamanou and Vafeas, 2005). Moreover, large boards can destroy corporate value (Cerbioni and Parbonetti, 2007).

Empirically, there is no conclusive evidence on the association between board and sub-committee size and FV. Yermack (1996) examines the effect of board size as a proxy for CG on firm value, and reports a negative relationship. Similarly, Chan and Li (2008) find a negative relationship between audit committee size and FV. On the other hand, Beiner et al. (2006) report a positive association between board size and FV. Therefore, it is difficult to predict the direction of the expected association between board size and FV, and the following hypotheses are derived:

H5: There is an association between board size and firm value.

H6: There is an association between remuneration committee size and firm value.

H7: There is an association between audit committee size and firm value.

7.2.2.3 Lack of Separation in Leadership Structure

According to agency theory, the combined functions of the chairman and the Chief Executive Officer (CEO) can significantly impair boards' pivotal monitoring and controlling functions (Cerbioni and Parbonetti, 2007; and Donnelly and Mulcahy, 2008). Therefore, such duality is likely to hinder effective CG (Lakhal, 2005; O'Sullivan et al., 2008). This in turn can negatively affect FV. The research on the effect of lack of separation in leadership structure on FV is scares. Cheung et al. (2010) do not find evidence on the effect of the lack of separation in leadership structure on FV. Accordingly, it is difficult to predict the direction of the association between lack of separation in leadership structure and FV. Accordingly, the following hypothesis is derived:

H8: There is a relationship between lack of separation in leadership structure and FV.

7.2.2.4 Number of Board and other Sub-Committees Meeting Frequency

The number of board meetings is usually used as a metric for board activity (Brick and Chidambaran, 2010). Vafeas (1999) argues that board meeting frequency is an essential governance mechanism that can influence FV. Accordingly, a positive relationship is expected between number of board meeting frequency and FV.

H9: There is a positive relationship between number of board meetings and firm value.

H10: There is a positive relationship between number of audit committee meetings and firm value.

7.2.2.5 Managerial Ownership

The convergence of interest hypothesis presumes that managers are assumed to have less incentive to maximise job performance when they are not shareholders (Jensen and Meckling, 1976). A lower level of managerial ownership is associated with increased agency problems (Eng and Mak, 2003). Thus, the greater the managerial ownership is, the greater the FV firm value due to convergence of interest (Ryu and Yoo, 2011).

In contrast, the entrenchment hypothesis (Fama and Jensen, 1983) holds that managers' and shareholders' interests are aligned up to a certain level, after which, increased managerial ownership results in corporate assets becomes less valuable as managers can entrench themselves from maximizing FV (Chen and Steiner, 2000; Ryu and Yoo, 2011).

Although there is substantial literature examining the association between managerial ownership and FV; however, the results are contradictory and the conclusion unclear (Brown et al., 2011).

Having such opposing hypotheses make is difficult to predict the direction of the relationship between managerial ownership and FV. Therefore, the following hypothesis is predicted:

H11: There is a relationship between managerial ownership and FV.

7.2.2.6 Ownership Concentration

The theoretical literature provides conflicting views as to whether ownership concentration improves management activities. While the incentive-alignment hypothesis maintains that block holders have more incentives to maximize firm value, at the other end, it is presumed that block holders may utilise their power for self-treatment at the expense of other stakeholders and thereby, reduce firm value (Konijn et al., 2011).

Additionally, the empirical evidence on the effect of ownership concentration on FV is limited and is mixed (Konijn et al., 2011). While Desetz and Villalonga (2001), Beiner et al. (2006) and Thomsen et al. (2006) find no significant relationship between ownership concentration and FV, Konijn et al. (2011) document a negative association. Therefore, it is difficult to predict the direction of the expected association between ownership concentration and FV.

H12: There is a relationship between ownership concentration and firm value.

7.2.2.7 Audit Committee Accounting Expertise

Chan and Li (2008) conjecture that if expert independent expertise have majority in the board they can improve FV. However, they use the financial expertise and not the accounting expertise on the board to investigate such proposition. Given the preference of accounting expertise over financial expertise as discussed previously in chapter Four, the same proposition applies for the existence of an accounting expertise in the audit committee. Accordingly, it is expected that the presence of an accounting expertise in the audit committee to have a positive impact on FV.

H13: There is a positive association between the presence of an accounting expertise in the audit committee and firm value.

7.2.2.8 Threat to Auditor Independence

With many recent study considering auditor independence as one of governance mechanisms, and knowing that governance mechanisms could impose an influence on FV, the current study tests whether threat to auditor independence affect FV. Lai and Krishnan (2009) articulate that if investors perceive the provision of non-audit services as impairing auditor independence, this would necessarily have a negative effect on FV. Unfortunately, the literature is very scarce in this research filed to allow for conclusive evidence. Therefore, a positive relationship is expected between threat to auditor independence and FV.

H14: There is a positive association between threat to auditor independence and firm value.

7.2.2.9 Audit Firm Size

The linkage between audit firm size and firm value has never been tested in the extant literature before. However, there is a literature on the effect of audit firm size on stock market in general. For example, Hussainey (2009) investigates investors' ability to predict firm's future earning changes and find that investor's ability is greater for firms audit by big audit firms. He concludes that inventors perceive firms audit by big-audit firms as providing higher quality information than firms audited by non-big firms. Wang et al. (2008) maintains that, according to the agency theory, big audit firms have stronger incentives for independence and to influence stringent and extensive disclosure standards since they have more to lose from damage of their reputations and that this influence firm value. Clatworthy et al. (2010) find that in UK, investors perceive big 4-audit firms are associated with more value relevant information.

In the current study, audit firm size is included as one of the external governance mechanisms. The study tests whether audit firm size plays a role in improving FV. The proposition is that, if investors perceive big audit firms as providing high quality audit,[58] it is likely that firm value could be positively affected. Therefore, the following hypothesis is predicted:

H15: There is a relationship between audit firm size and FV.

Not all governance mechanisms necessarily affect FV (Brown and Caylor, 2006). There is a pervasive consensus that CG structure differs across countries with different regulatory and institutional arrangements (Brown et al., 2011). In this sense, some mechanisms might be significantly more influential than others in different countries. Additionally, there is a

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[58]Refer to Section 5.2.4 for discussion on this hot debating issue.

consensus on the difficulty to predict which CG mechanisms influence better outcomes. For example, Larcker et al. (2007) raise this fact when investigating the impact of CG mechanisms on managerial behaviour and firm performance.

does not reveal the circumstances in which CG mechanisms are substitutes, and when they complement each other (Abdulla and Page, 2009). Moreover, there is very limited research (e.g. Mouselli and Hussainey, 2011; and Al-Najjar et al., 2011) conducted in the UK context on which governance mechanisms affect FV. Therefore, there is no reason to expect specific governance mechanisms to affect FV in the UK.

7.3 The Joint Effect of DQ and CG on FV

The previous sections manifest the link between DQ and FV on one side and the association between CG structure and FV on the other. This section discusses the joint effect of both DQ and CG on FV. To put it differently, how could disclosure quality and CG structure intersect?

Although many researchers examine the association between CG and FV, few studies examine the link between DQ, CG and FV. To the best of the researcher's knowledge, this study is the first study to investigate the joint effect of DQ and CG on FV. The trend of examining the joint effect of two variables on a third one is new in the accounting literature (e.g. Ernstberger and Grüning, 2013; and Cormier and Magnan, 2014).

One of the ways to improve the overall firm governance is to improve the transparency of disclosure (Nowland, 2008). Meanwhile, disclosure and transparency is one of the main principles of the OECD principles of CG, which is internationally recognised as an effective framework for CG (2004). In addition, the CG ranking in Russia developed by the Brunswick Warburg investment bank assigns the biggest weight to the disclosure and transparency aspect

(Rutherford and Costello, 1999). Nonetheless, greater transparency prompts corporate governance. Furthermore, transparency is hoped to reduce the diversion of cash flow to the management and the controlling shareholders (Coffee, 1999). Additionally, corporate governance may improve operational transparency by improving the ability of shareholders to discern the quality of management and the true value of a firm (Chung et al., 2010). Beekes and Brown (2006) report a positive relationship between better-governed firms and disclosure[59] informativeness. They posit that better CG structure leads to more informative disclosure and definitely influences market efficiency. Their results suggest that if the quality of CG affects the quality of disclosure, then CG will be valued more highly by the market. In this vein, Beekes and Brown (2006) implicitly refer to the importance of considering DQ when evaluating the influential nature of CG with regards to the market valuation. Interestingly, these arguments are consistent with the findings of chapter Six, whereby the study demonstrates the impact of certain CG mechanisms on firms' disclosure practices.

Surprisingly, although the link between DQ and CG is well established in the literature and the effect of DQ on FV is paramount at least in the theory. Very few studies have examined some proxies for disclosure quality in conjunction with CG when assigning the effect of CG on FV (Cheung et al., 2010; Shue et al., 2010; Al-Najjar et al., 2011; and Nekhili et al., 2010).

Generally, those studies have many caveats, including the use of proxies for quality disclosure (i.e. Cheung et al., 2010), or restriction to only one type of disclosure (i.e. Shue et al., 2010; Al-Najjar et al. 2011; and Nekhili et al. 2010), the use of a small set of governance mechanisms (Chueng et al., 2010), or utilising a composite measure of governance (Al-Najjar et al., 2011). In conclusion, the empirical evidence on the joint effect of DQ and CG structure on FV is limited and suffers from many limitations.

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[59] The disclosure here is price-sensitive announcements.

Generally, Larcker et al. (2007) attribute the mixed results to a modest level of reliability and validity in examining governance measures (few individual mechanisms or composite measure). In line with this reasoning, the mixed results regarding the link between DQ and FV are likely to hold inaccurate quality measurements.

The third research objective; determining the extent to which DQ and CG mechanisms are substitutes or complements is achieved through model 3. Following Henry (2008), and Ernstberger and Grüning (2013), the current study generally proposes three different scenarios. First, if the coefficient of the interaction is insignificant, this indicates that the effect of DQ on FV does not vary with the existence of a certain CG mechanism. This means that, best practice disclosure and CG are different ways of conveying the same information, then firms having higher DQ but lower governance quality should exhibit roughly the same value as firms with higher DQ and governance quality. Similarly, firms that have higher governance quality should have roughly the same value irrespective of their level of disclosure quality.

Second, a positive significant interaction coefficient indicates a complementary effect between DQ and a certain CG mechanism. Stated differently, DQ and governance quality produces related information that is 'reinforcing' (i.e. if there is a multi-applicative effect), then FV would be the greatest for firms that have high DQ and governance quality.

Third, a negative significant interaction coefficient indicates a substitutive effect between DQ and a certain CG mechanism. if disclosure quality and governance quality convey related information, but some of the information is common to both, i.e. 'partially additive', then FV for firms that have high levels of disclosure quality and governance quality should be higher than firm value when firms have high levels of DQ but with low governance quality or FV. In

this case, there is a partial substitution effect and the interaction term should be negative and statistically significant.

The present study tests to see which of these three possibilities is present in the data by allowing for an interactive effect in our model.

7.4 Summary and Conclusions

The current chapter reviewed and analysed prior research on the effect of DQ and CG on FV. It also developed hypotheses to investigate whether there is a substitution or a complementary effect between DQ and CG mechanisms.

There has been a wealth of research studies on the various outcomes of CG and DQ, which justifies why firms would like to strengthen their CG structure and improve their DQ. CG serves to improve stock market performance -e.g. equity returns (Giroud and Mueller, 2011). In addition, in the absence of the efficient stock market, CG helps in creating portfolios which achieve an abnormal return (Bagshi, 2011). Additionally, CG and DQ reduce financing costs. In doing so, CG reduces the cost of capital and consequently improves the firm's external financing capacity (Brown et al., 2011). Similarly, high quality disclosure reduces financing costs (Botosan 1997; and Hassan et al., 2009), since the cost of capital is influenced by DQ (Brown et al., 2011).

Moreover, CG controls earnings management, detects re-statements and fraud, and enhances earnings' quality, timeliness and informativeness (Brown et al., 2011). Additionally, high DQ increases stock liquidity (Healy et al., 1999). Notably, as argued by Lang and Lundholm (1996), if CG influences the level of firm transparency (as discussed in chapters Five and Six), it will be reflected in increased analyst following, greater precision of earnings forecasts, smaller forecast revisions and less disagreement among analysts. Lastly, and which is the scope of the current research, CG and DQ improve FV (Cheung et al., 2010; Jiao, 2010; and Sami et al., 2011).

It is widely acknowledged that any mechanism that contributes in mitigating agency problems through narrowing the information asymmetry gap is profound to the success of the financial

market and influences firm value. Of particular interest are high-quality disclosure (Cheung et al., 2010) and effective corporate governance mechanisms (Gompers et al., 2003).

The underlying chapter deals with three research streams, DQ, CG, and FV. High-quality disclosure helps to reduce information asymmetry among the market participants (Dhaliwal et al., 2011). Additionally, better information environments are associated with higher market valuation (Lang et al., 2004). Thus, high-quality disclosure helps to correct any firm mis-valuation (Healy et al., 1999).

Similarly, CG increases a firm's cash flow, which is then reflected into higher firm value (Bozec et al., 2010). This applies to internal and external CG mechanisms. For instance, board independence −as an internal CG mechanism- is regarded as an important governance mechanism that promotes FV (Black and Kim, 2011). Another example for an internal CG mechanism is board meeting frequency. Board meeting frequency is an essential governance mechanism that can influence FV (Vafeas, 1999). As an example of external CG mechanism, threat to auditor independence is said to have an influential effect on FV (Lai and Krishnan, 2009).

In conclusion, high-quality disclosure is considered as an important CG mechanism (Black et al., 2006; Cheung et al., 2010; and Sheu et al. 2010), which improves FV (Haggard et al., 2008).

Although this vein of research is growing, however, the current state of research suffers from some limitations. The main limitation addressed is the doubts expressed with regard to ignoring the joint effect of both DQ and CG on FV. The second limitation is the use of narrow proxies for CG mechanisms and/or using proxies for DQ rather than employing a sound

quality measure. These limitations therefore raise concerns about the soundness of prior research findings and could explain the mixed results issue.

Chapter Eight: Examining the Joint Effect of DQ and CG mechanisms on FV: An Exploratory Study

8.1 Overview

While the previous chapter builds the theoretical background and develops hypotheses to investigate the joint effect of DQ and CG on FV, the current chapter empirically examines this association and answers the three research objectives presented in chapter Seven. Section 8.2 elaborates the study design; mainly, the current study employs panel data to overcome the endogeneity problem associated with FV in similar studies. Section 8.3 discusses results of the regression analysis, additionally and presents robustness tests. Finally, the chapter summarises the findings in section 8.4.

8.2 Study Design

In general, FV has always been considered as an endogenous variable in the literature (e.g. Brown and Caylor, 2006; and Benson and Davidson, 2010). Chapter Two, section 2.2.4.4 discusses in details the endogeneity problem and approaches to overcoming this problem, with a review and justification of the chosen approach. The following sub-section however, retrieve this point in summary again.

8.2.1 Definition of Variables

Firm Value

A common valuation model is Ohlson (1995), where FV is a function of net assets, residual income and other information. However, Ohlson and Feltham-Ohlson models have been criticised in the literature. The main limitations are that the Ohlson model is of limited empirical validity and that the Feltman-Ohlson model is not accurate (Callen and Segal, 2005). Thus, Ohlson-type models are not widely used as a measure for FV (Lee et al., 2011).

This explains why most studies investigating the association between FV and CG use Tobin's Q and not an Ohlson-type model. Moreover, Ohlson-type model is an accounting-based valuation model (Lee and Lin, 2010), and market-based valuation model (e.g. Tobin's Q) is more extensively used in the literature as discussed below.

Tobin's Q reflects the current stock market value of the firm (Thomsen et al. (2006). It has been used in research linking CG with FV (e.g. Brown and Caylor, 2006; and Cheung et al., 2011) since the first work of Demsetz and Lehn (1985) (Gompers et al., 2003). It has also been used in studies linking disclosure with FV (e.g. Hassan et al., 2009; Cheung et al., 2010, and Sheu et al., 2010). Tobin's Q "measures the extent to which the company is expected to earn an above average return on its invested capital" (Abdullah and Page, 2009, p. vii). Consequently, the underlying study follows this trend and measures firm value using Tobin's Q (Q hereafter).

Following the most relevant study (i.e. Cheung et al., 2010), which investigates the link between a proxy for DQ,[60] some CG mechanisms, and FV, Tobin's Q is defined as: (total debt + market value of equity) / book value of total assets. This definition is widely used by others (e.g. Beak et al., 2004; Klapper and Love, 2004; and Beiner et al., 2006). Such kind of advanced measures of Tobin's Q has been introduced in light of complexities involved in the more sophisticated measures of Tobin's Q, such as Lindenberg and Ross (1981)[61] (Jiao, 2010), and also overcomes the data availability problems seen in early adopted measurements such as the one used by Lewellen and Bardrinath (1997).

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[60]This is a subjective proxy for DQ where disclosure is scored based on 32 criteria with scores ranging from 1 – indicating poor – to 3 – which implies higher transparency. For more information on this index see Cheung et al. (2010).
[61] See Lewellen and Badrinath (1997) and Lee and Tompkins (1999) for a detailed discussion of different Tobin's Q measurements.

Data on Tobin's Q is collected from Datastream. Total debt is Datastream item WC03255, defined as all interest-bearing and capitalised lease obligations; the sum of long- and short-term debt. Following Brown and Caylor (2006) and Hassan et al. (2009), market value is defined as the number of common shares outstanding at the financial year-end. Datasteam item W05301 is defined as the number of shares outstanding at the company's year-end, multiplied by the median of stock prices over three months[62] after the annual report date. (Stock price is Datastream item UP, defined as the closing price which has not been historically adjusted for bonus and rights issues. This figure therefore represents actual or "raw" prices as recorded on the day.) In principle, including the median of stock prices three months after the annual report date allows prices to capture information revealed in OFR statements incorporated in the annual reports. Total assets is Datastream item WC02999, representing the sum of total current assets, long-term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.

Importantly, a common practice is to use an industry-median adjusted Tobin's Q (e.g. Bebchuk et al., 2009). One advantage of this approach is controlling for potential bias resulting from differences in industry mechanisms and associated operating nature across sample firms. Another advantage is to control for variation of Tobin's Q across different industries because, by definition, Tobin's Q is highly dependent on the future of the firm as reflected in the share price, and therefore widely varies from one industry to another (Abdullah and Page, 2009). Using the industry-median adjusted Tobin's Q rules out the potential for simultaneity (Brown and Caylor, 2006), which helps to mitigate endogeneity.

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[62] In principle, Hassan et al. (2009) allow six months after the financial year-end, assuming that the annual report is usually published three months later, and then allow three months to capture information disclosed. However, investigating our sample shows that firms widely vary in the period it takes them to publish the annual report, ranging from a short period of two months to up to four months. Accordingly, to be more precise, each firm's annual report publication date is identified when the stock price median over three months is calculated.

Accordingly, the current study employs the industry-median adjusted Tobin's Q as the dependent variable to measure FV. The industry-median adjusted Tobin's Q is a firm's Q minus the median Q in the firm's industry in the observation year. As commonly found with Tobin's Q the distribution of industry-median adjusted Tobin's Q does not fulfil the normality assumption (e.g. Klapper and Love, 2004; and Brown and Caylor, 2006). The mean is 0.551, the minimum is -0.349 and the maximum is 137.85, indicating a wide variation in firm values in the sample. When checking the residuals for the possible existence of outliers, it appears that outliers do not represent a problem at all and are at a fairly normal level.[63] Therefore, following Bebchuk et al. (2009) among others, the industry-median adjusted Tobin's Q is transformed using a natural logarithm (Log) to correct for non-normality.

Disclosure Quality

As discussed in chapter Four, an innovative measure for DQ has been developed. In essence, each firm has been assigned a score representing the quality of its OFR statement. These scores are the measures of DQ, the first independent variable in the model. Importantly, in testing the FV normality of the model under investigation, it was found that the model is not perfectly normal.[64] To improve the normality, the quality score was transferred using the LOG function. Thus, the quality score is represented by the LOG quality in this chapter.

Corporate Governance Mechanisms

As mentioned earlier, one of the approaches to mitigate endogeneity is to include a broad set of CG mechanisms.[65] Therefore, one of the current study's contributions is to examine an extensive set of CG mechanisms simultaneously. The current study examines 14 CG

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[63] Outliers are defined as observations with standard deviation values of more than 3 and less than -3. Usually a 1% level is acceptable (Pallant, 2007). Outliers only account for 0.19 %
[64] See Appendix no.7
[65] Refer to chapter Five for a detailed discussion of CG mechanisms and mechanisms (see also Figure 5.1).

mechanisms.[66] These include, board independence *(BIND)*, board size *(BSIZE)*, lack of separation in leadership structure *(LEAD)*, board meeting frequency *(BMF)*, remuneration committee independence *(REMIND)*, remuneration committee size *(REMSIZE)*, managerial ownership *(MOWNER)*, ownership concentration *(CONCEN)*, Audit committee independence *(ACIND)*, Audit committee size *(ACSIZE)*, The presence of financial expertise in the audit committee *(ACCEXP)*, Audit committee meeting frequency *(ACMF)*, Threat to auditor independence *(AIND)*, audit firm size *(ASIZE)*.

Control Variables

As mentioned earlier, it is important to account for possible endogeneity problems in investigating FV, so as to obtain robust results. In this regard, the current study controls for the common variables representing a potential cause for endogeneity, as identified in the existing literature.

The first and most commonly used variable that might cause endogeneity is firm size *(SIZE)*. Firm size has a contentious association with FV. On one hand, large firms might suffer from greater agency problems because they are harder to manage, and thus respond by adopting a better governance structure (Klapper and Love, 2004) as well as higher DQ to restore market confidence, both of which result in higher FV. On the other hand, small firms are more likely to have growth opportunities and require external finance, and thus improve their governance structure to gain market confidence and consequently have high FV, while large firms can easily use their assets as collateral and rely more heavily in bank borrowings (Beak et al., 2004). Accordingly, the current study controls for firm size, measured through the natural logarithm of total assets.

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[66] For definitions of CG variables and associated data sources see Table 6.1.

Similar to firm size, the expected direction of the association between leverage *(LEV)* and firm value is ambiguous. Where a positive relationship implies effective usage of debt (Myers, 1977), a negative association signals the likelihood of potential financial problems or increased cost of capital (Henry, 2008). Basically, leverage is used to control for default risk (Klein et al., 2005). Meanwhile, Firms with a high leverage ratio are more likely to elicit information to avoid litigation risk (Watts and Zimmerman, 1990) and are more likely to have a stronger governance structure (Cremer and Nair, 2005). Additionally, firms with high debts are perceived to have a better governance structure, which enables them to attract creditors and therefore be valued higher (Hassan et al., 2009). In line with many studies (e.g. Bebchuk et al., 2009; Benson and Davidson, 2010; and Braga-Alves and Shastri, 2011), leverage is computed as percentage of total debt divided by total assets.

Firm profitability *(PROF)* is the third control for the link between FV, DQ, and CG. It is widely recognised that a firm's profitability positively influences its market value (Yermack, 1996; Henry, 2008; Hassan et al., 2009; and Price et al. 2011). Nonetheless, profitability captures the likely interrelationship between FV and CG mechanisms (Beiner et al., 2006). Profitability is measured using return on equity (ROE).

The fourth control variable is firm growth *(GROWTH)*. It is widely established that firms with better growth opportunities are more attractive and thus are more likely to receive better valuation (Myers, 1977; Klein et al., 2005; and Henry, 2008). Similarly, as presumed by agency theory, better governance is assumed to lower the cost of capital and thus, firms with growth opportunities tend to maintain a strong governance structure to fulfil their external financing needs (Beiner et al., 2006). Therefore, since growth is expected to affect FV, and meanwhile influence CG structure, it is likely to cause endogeneity of CG on firm value. Consequently, following relevant literature (e.g. Klapper and Love, 2004; and Beiner et al.,

2006) the current study controls for growth opportunity via sales growth. Sales growth is Datastream item WC08633, defined as: ((current year's net sales or revenues / net sales or revenues four years ago, reduced to a compound annual rate) – 1) * 100.

Finally, market share may affect a firm's profitability and consequently affect its governance choices, and therefore indirectly affect FV (Black et al., 2006). Thus, the current study controls for market share *(SHR)*. Market share is computed as the firm's market share over the total industry sector's sales in the observation year.

In sum, drawing on the previous discussion, the current study regresses the industry-median adjusted Tobin's Q on DQ, 14 CG mechanisms, the interaction between DQ and each of the CG mechanisms to investigate the joint effect, and lastly control variables using the following fixed-effect model (for *i* firms over *t* years):

$$Q_{it} = \alpha + \beta_h QUALITY_{it} + \sum_{j=1}^{n} \beta_j (Gov_{jit}) + \sum_{j=n+1}^{n+m} \beta_k (Interaction_{kit}) + \sum_{l=n+m+1}^{n+m+o} \beta_l (Control_{lit}) + \theta_t + \delta_i + u_{it}$$

α	= intercept term,
$QUALITY_{it}$	= natural log of disclosure quality score, for firm i, in year t,
Gov_{jit}	= individual corporate governance mechanisms, j, for firm i, in year t; where j =1 to n.
$Interaction_{kit}$	= the interactions between individual corporate governance mechanisms and disclosure quality for firm i, in year t; where k =1 to m,
$Control_{lit}$	= the control variables, l, for firm i, in year t; where l =1to o.
θ_t	= a vector of 3 dummy variables representing the four sample years.
δ_i	= the firm-specific fixed effects, including a vector of 122 variables to represent the 123 sample firms.
u_{it}	= the unobserved error component.

Consistent with Cheung et al. (2010), the 4-years' time data is used in the fixed-effect for the panel data regression model. This is a firm-specific fixed effects model which controls for time-invariant omitted variables (Bebchuk et al., 2009) and company-invariants (O'Sullivan

and Diacon, 2003). In doing so, the software (Stata 11) asks for the panel settings whereby the software controls for the time and firm-invariants. These are two settings: the first is the time variable and the second is the firm ID variable. Technically, in fixed effect models researchers assign a code for each firm, which is considered as the firm ID by the software. Also researchers identify the relevant year for each observation, for example, in this study the researcher assigns 2006, 2007, 2008, and 2009 to the relevant firm observation, this is the time variable.

This type of fixed effects model is suitable to the current study as it controls for the unobserved firm heterogeneity over the time series of the panel. In addition, it gives robust regression estimates (Henry, 2008). It also controls for invariant-time mechanism (Chi, 2005). F statistic, which reports the significance of the model, is provided for each analysis to provide an evidence of the appropriateness of employing this fixed effects model.

8.3 Empirical Analysis

8.3.1 Univariate Analysis (Correlation Matrix)

Following the literature (e.g. Henry, 2008), Table 8.1 reports the pair-wise Pearson correlation coefficients between Tobin's Q, D, and the 14 CG mechanisms examined in the underlying study.

Of special interest, and consistent with the foregoing reasoning about the importance of disclosure quality in promoting firm value is the positive and statistically significant correlation coefficient of 0.083 at the 10% level between disclosure quality *(QUALITY)* and firm value *(Q)*.

Board independence[67] is not correlated with firm value *(Q)*. Notably, most work does not find a significant link between board independence and firm value (Dahya et al., 2008; Bebchuk and Weisbach, 2010). The same conclusion applies for affiliated committees. As indicated by the correlation matrix, remuneration committee independence and audit committee independence are not associated with FV.

The correlation coefficient of 0.074 between remuneration committee size and firm value *(Q)* is statistically significant at the 1% level. Similarly, audit committee size is positively associated with firm value. The coefficient is 0.075 at the 1% level. This is in consistent with the agency perspective, that, larger boards mean more people reviewing management performance (Kiel and Nicholson, 2003). On the other side, the correlation analysis does not indicate an association between board size and firm value. Such relationship is ambiguous in the existing literature, with two competing theoretical views existing in this regard.

Similar to Cheung et al. (2010), the correlation matrix suggests no relationship between lack of separation in leadership structure and firm value *(Q)*. Regarding the ownership structure, managerial ownership shows a statistical association with firm value *(Q)*. The coefficient is 0.163 at the 1% significant level. This is in line with the convergence of interest hypothesis, the greater the managerial ownership is, the greater the firm value (Ryu and Yoo, 2011). At the other end, consistent with Desetz and Villalonga (2001), Beiner et al. (2006) and Thomsen et al. (2006) correlation analysis reveals that there is no significant association between ownership concentration and FV.

Correlation analysis does not report a relationship for board meeting frequency *(BMF)*, audit committee meeting frequency *(ACMF),* the presence of an accounting expertise in the audit committee and firm value.

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[67] Board independence is discussed in more detail in the regression analysis.

Similar to Brown and Caylor (2006), the correlation coefficient of threat to auditor independence does not support a relationship with firm value. Similarly, audit firm size *(ASIZE)* is not associated with firm value.

For control variables, the correlation matrix shows a significant negative association between firm size and its value *(Q)* at the 5% level. As argued by (Beak et al., 2004), small firms are more likely to have growth opportunities and require external finance, and thus improve their governance structure to gain market confidence and consequently have high FV, while large firms can easily use their assets as collateral and rely more heavily in bank borrowings. Similar to Beiner et al. (2006) and Henry (2008), leverage is also influential at the 1% significance level with a positive coefficient of 0.573. This is consistent with the agency theory proposition that better-covered firms will receive higher credit ratings, allowing them to raise capital using debt rather than equity. Thus, investors are likely to favourably value such firms (Brown et al., 2011). Nonetheless, profitability, sales growth, and market share are not significantly associated with FV.

Table 8.1: Pearson Correlation Matrix (FV, DQ and CG Mechanisms and Control Variables)

	Q	QUALITY	BIND	BSIZE	LEAD	BMF	COMIND	COMPSIZE	MOWNER	CONCEN	ACIND	ACSIZE	ACCEXP	ACMF	AIND	ASIZE	SIZE	PROF	LEV	GROWTH
QUALITY	0.071*																			
	0,066																			
BIND	0.015	0.081**																		
	0.374	0.061																		
BSIZE	0.070	0.120***	0.025																	
	0.345	0.005	0.565																	
LEAD	-0.202	-0.138***	-0.060	-0.027																
	0,706	0.001	0.165	0.533																
BMF	0.011	0.054	0.083*	0.063	-0.014															
	0.581	0.216	0.056	0.147	0.738															
REMIND	0.024	-0.002	0.320***	0.057	0.014	0.040														
	0.638	0.969	0.000	0.189	0.749	0.351														
REMSIZE	0.176*	0.063	0.243***	0.359***	-0.042	0.104**	0.002													
	0.099	0.407	0.000	0.000	0.333	0.016	0.966													
MOWNER	0.790	0.042	-0.193***	-0.023	0.022	-0.120**	-0.064	-0.124***												
	0.000	0.337	0.000	0.598	0.616	0.005	0.142	0.004												
CONCEN	-0.066	0.016	-0.074*	-0.184***	0-089**	-0.120***	-0.098**	-0.121***	0.062											
	0.849	0.710	0.088	0.000	0.040	0.004	0.023	0.005	0.151											
ACIND	0.014	0.087**	0.287***	0.024	0.001	0.103**	0.550***	0.003	0.030	0.101**										
	0.782	0.043	0.000	0.575	0.978	0.017	0.000	0.947	0.490	0.020										
ACSIZE	0.107*	0.073*	0.253***	0.515***	-0.012	0.069	0.005	0.682***	-0.110**	-0.124***	-0.032									
	0.097	0.092	0.000	0.000	0.785	0.113	0.902	0.000	0.010	0.004	0.464									
ACCEXP	-0.010	0.021	0.004	0.072*	0.114***	-0.017	-0.015	0.018	0.008	0.103**	0.019	0.063								
	0.740	0.663	0.931	0.095	0.008	0.701	0.726	0.681	0.858	0.017	0.656	0.145								

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
ACMF	0.048	0.130***	0.182***	0.247***	0.011	0.198***	-0.004	0.176***	-0.090**	-0.041	0.039	0.224***	0.026							
	0.614	0.003	0.000	0.000	0.803	0.000	0.930	0.000	0.038	0.341	0.367	0.000	0.550							
AIND	0.003	-0.005**	-0.093	-0.013	-0.028	-0.003	-0.026	-0.019	-0.002	0.008	-0.032	-0.014	-0.004	0.019						
	0.588	0.911	0.368	0.758	0.583	0.944	0.550	0.668	0.957	0.845	0.455	0.754	0.917	0.653						
ASIZE	-0.045	0.131***	0.099**	0.067	0.024	-0.041	-0.015	0.140***	-0.015	-0.064	-0.028	0.125***	0.069	0.055	0.032					
	0.814	0.002	0.022	0.124	0.758	0.341	0.726	0.001	0.724	0.137	0.514	0.004	0.111	0.207	0.464					
SIZE	-0.040	0.247***	0.318***	0.552***	-0.107**	0.063	-0.004	0.277***	-0.130***	-0.164***	0.089**	.0424***	0.083*	0.292***	0.052	0.198***				
	0.031	0.000	0.000	0.000	0.013	0.144	0.930	0.000	0.003	0.000	0.040	0.000	0.056	0.000	0.227	0.000				
PROF	0.012	-0.009	-0.009	-0.016	-0.017	0.019	-0.026	0.081*	0.018	-0.071*	0.034	0.012	-0.052	-0.002	-0.054	-0.025	-0.062			
	0.951	0.837	0.837	0.406	0.697	0.655	0.550	0.061	0.680	0.099	0.436	0.773	0.229	0.959	0.212	0.667	0.149			
LEV	0.999***	0.075*	0.023	0.075***	-0.016	0.005	-0.021	0.182***	0.080*	-0.064**	0.012	0.113***	-0.088**	0.048	0.001	0.001	-0.123***	0.010	0.010	
	0.000	0.084	0.590	0.083	0.704	0.908	0.635	0.000	0.064	0.137	0.780	0.009	0.041	0.269	0.986	0.802	0.004	0.814	0.814	
GROWTH	-0.024	-0.097**	-0.068	-0.057	-0.017	-0.148***	0.081*	-0.149***	0.103**	0.043	-0.001	-0.093**	-0.033	-0.007	-0.027	0.035	0.020	-0.073	-0.042	0.076*
	0.627	0.032	0.133	0.205	0.701	0.001	0.072	0.001	0.022	0.344	0.985	0.038	0.459	0.871	0.549	0.439	0.656	0.104	0.350	0.093
SHARE	0.004	0.105**	0.142***	0.182***	-0.031	0.002	0.023	0.084	-0.054	-0.196***	0.046	0.159***	-0.085*	0.172***	-0.007	0.035	0.281**	-0.040***	0.029	0.076*
	0,912	0.019	0.002	0.000	0.486	0.971	0.605	0.062	0.232	0.000	0.313	0.000	0.060	0.000	0.870	0.436	0.019	0.000	0.373	0.093

Table constructed by author using data from Stata 14 analysis. *(Q)* Tobin's Q, *(QUALITY)* the quality score, *(BIND)* board independence, *(BSIZE)* board size, *(LEAD)* lack of separation in leadership structure, *(BMF)* board meeting frequency,*(REMIND)* remuneration committee independence, *(REMSIZE)* remuneration committee independence, ,*(MOWNER)* managerial ownership, *(CONCEN)* ownership concentration,*(ACIND)* audit committee independence, *(ACSIZE)* audit committee size, *(ACCEXP)*, the presence of accounting expertise in the audit committee, *(ACMF)* audit committee meeting frequency, *(AIND)* threat to auditor independence, *(ASIZE)* external auditor size, *(SIZE)* firm size,, *(PROF)* profitability,, *(LEV)* leverage,, *(GROWTH)* sales growth, and *(MSHARE)* market share. Number of observations *(n=488)*, ***, **, * Significant at 1%; 5% and 10% respectively.

8.3.2 Multivariate Analysis (Regression Analysis)

Most prior studies do not properly address endogeneity (e.g. Black et al., 2006). The present study considers the endogenous nature of FV in general, and the omitted-variables bias (i.e. the omission of CG mechanisms) in particular. The main purpose of the underlying analysis, is to highlight and mitigate the effect of the omitted-variables bias exhibited in the existing literature when relating FV to DQ, or CG mechanisms independently. This is accomplished mainly through incorporating the joint effect of both DQ and CG mechanisms.

Table 8.2 reports fixed-effect regression for three models using the natural logarithm of industry-adjusted Tobin's Q *(Q)* as the dependent variable. *Model 1* regresses FV on the DQ independently while ignoring the CG mechanisms. *Model 2* considers the association between CG mechanisms and FV. It regresses Q on CG mechanisms, irrespective of DQ. Both models suffer from omitted-variables bias, where *Model 1* ignores the governance mechanisms and *Model 2* overlooks DQ. Apparently, *Model 3* is intended to overcome the omitted-variables bias and test the combined influence of DQ and each of the CG mechanisms on FV. As illustrated earlier in chapter Seven, section 7.3, *Model 3* reports results of regressing FV on DQ, CG mechanisms and their interaction.

The idea of testing the interactions of two variables on a specific dependent variable is used in the literature to figure out whether the interacted variables have a complementary or substitutive effect on the dependent variable (e.g. Ernstberger and Grüning, 2013). Ernstberger and Grüning (2013) test whether the legal environment and CG have complementary or substitutive effect on the disclosure level.

Table 8.2: Fixed-Effect Regression of Industry-Median Tobin's Q on DQ and Individual1 CG Mechanisms

	Model 1 Coef. Est.	P> |t|	Model 2 Coef. Est.	P> |t|	Model 3 Coef. Est.	P> |t|
QUALITY	-0.013	0.883			**1.815***	**0.084**
BIND			**0.127****	**0.014**	**-0.753***	**0.065**
REMIND			-0.023	0.538	-0.112	0.731
ACIND			-0.018	0.642	**0.552***	**0.081**
BSIZE			-0.001	0.826	-0.034	0.126
REMPSIZE			0.008	0.286	-0.028	0.641
ACSIZE			-0.010	0.161	0.109	0.105
LEAD			-0.026	0.290	-0.060	0.713
BMF			0.000	0.865	0.004	0.801
ACMF			-0.001	0.654	-0.002	0.938
MOWNER			0.000	0.666	0.003	0.418
CONCEN			0.000	0.234	0.001	0.705
ACCEXP			0.006	0.488	-0.052	0.479
AIND			0.012	0.515	-0.009	0.957
ASIZE			**-0.134***	**0.063**	0.602	0.247
*QUALITY * BIND*					**0.239****	**0.029**
*QUALITY * REMIND*					0.031	0.733
*QUALITY * ACIND*					**-0.166***	**0.067**
*QUALITY * BSIZE*					0.009	0.127
*QUALITY * REMSIZE*					0.010	0.520
*QUALITY * ACSIZE*					**-0.033***	**0.073**
*QUALITY * LEAD*					0.007	0.892
*QUALITY * BMF*					-0.001	0.781
*QUALITY * ACMF*					0.000	0.961
*QUALITY * MOWNER*					-0.001	0.446
*QUALITY * CONCEN*					0.000	0.797
*QUALITY * ACCEXP*					0.016	0.437
*QUALITY * AIND*					0.000	0.994
*QUALITY * ASIZE*					-0.218	0.187
SIZE	**-0.057****	**0.003**	**-0.064****	**0.001**	**-0.063****	**0.002**
PROF	0.000	0.293	0.000	0.333	0.000	0.218
LEV	**0.013****	**0.000**	**0.013****	**0.000**	**0.013****	**0.000**
GROWTH	0.000	0.409	0.000	0.476	-0.0003	0.251
SHARE	**0.049***	**0.062**	**0.050***	**0.056**	**0.047***	**0.076**
Intercept	0.537	0.002	0.7***	0.000	-0.251	0.654
R-Squared	61%		63%		64.4%	
F-Value	**10.64***		**6.52***		**6.36***	
		0.000		**0.000**		**0.000**

Table constructed by author using data extracted from the Stata 14 analysis. Refer to Table 6.1, column No. 4 for the source of data. (*QUALITY*) quality, (*BIND*) board independence, (*BSIZE*) board size, (*LEAD*) lack of separation in leadership structure, (*BMF*) board meeting frequency,(*REMIND*) remuneration committee independence, (*REMSIZE*) remuneration committee independence, (*MOWNER*) managerial ownership, (*CONCEN*) ownership concentration, (*ACIND*) audit committee independence, (*ACSIZE*) audit committee size, (*ACCEXP*), the presence of accounting expertise in the audit committee (*ACMF*) audit committee meeting frequency, (*AIND*) threat to auditor independence, (*ASIZE*) external auditor size, (*QUALITY*BIND*) the interaction between the disclosure score and board independence, (*QUALITY*BSIZE*), the interaction between the disclosure score and board size, (*QUALITY *LEAD*) the interaction between the disclosure score and lack of separation in leadership structure, (*QUALITY * BMF*) the interaction between the disclosure score and board meeting frequency, (*QUALITY * REMIND*) the interaction between the disclosure score and board remuneration committee independence, (*QUALITY * REMSIZE*) the interaction between the disclosure score and board remuneration committee size, (*QUALITY * MOWNER*) the interaction between the disclosure score and managerial ownership, (*QUALITY * CONCEN*) the interaction between the disclosure score and ownership concentration, (*QUALITY*ACIND*) the interaction between the disclosure score and audit committee independence, (*QUALITY *ACSIZE*) the interaction between the disclosure score and audit committee size, (*QUALITY*ACCEXP*) the interaction between the disclosure score and audit committee accounting expertise, (*QUALITY*ACMF*) the interaction between the disclosure score and audit committee meeting frequency, (*QUALITY*AIND*) the interaction between the disclosure score and threat to auditor independence, (*QUALITY * SIZE*) the interaction between the disclosure score and auditor size, (*SIZE*) firm size, (*PROF*) profitability, (*LEV*) leverage, (*GROWTH*) sales growth, (*MSHARE*) market share. Number of observations (*n=488*), ***, **, * Significant at 1%; 5% and 10% respectively. Model 1 includes disclosure quality only, model2 regress governance mechanisms only, model 3 includes disclosure quality and corporate governance mechanisms.

8.3.2.1 Model 1 Regressing FV on DQ Independently While Ignoring CG Mechanisms

In *Model 1,* DQ is introduced with the control variables. It is worth mentioning that prior research does not examine the effect of narrative DQ on FV; rather, it examines the effect of one type of disclosure (i.e. Al-Najjar et al., 2011) or uses some proxies of DQ (e.g. Hassan et al., 2009) instead of using a direct measure for quality. Therefore, the current study contributes to the literature by testing the relationship between a measure for OFR disclosure quality and FV in the UK. Results show that DQ is not significantly associated with FV. This result highlights the endogeneity problem and enforces the consequences of overlooking the complementary/supplementarty relationship between DQ and CG.

8.3.2.2 Model 2 Regressing FV on the DQ Independently While Ignoring CG mechanisms

In *Model 2,* CG mechanisms are introduced beside the control variables, to examine what would be the association between CG and FV in the absence of DQ. Model 2 reports two CG mechanisms influencing FV *(Q)*, namely; board independence *(BIND)*, and audit firm size *(ASIZE)*. The coming paragraphs discuss results of regressing each of the 14 CG mechanisms on FV.

Consistent with the theory, the coefficient estimate for board independence *(BIND)* provides evidence that firms with more independent directors on board, experience higher FV. The relationship is significant with a coefficient of 0.127 at the 5% significance level. Such finding is similar to that identified by many other studies (e.g. Black and Kim, 2011). Accordingly, hypothesis number 2 that there is a relationship between board independence and FV is accepted.

Generally, it is well known that the board structure could be used to anticipate management's performance and thus in turn, FV. This conclusion is consistent with Dahya and McConnell 's (2007) UK study. They find improved performance for U.K. firms which previously had only one or two outside directors, but increased this number to three to comply with the Cadbury Committee "comply or explain" recommendation to have at least 3 outside directors. Referring to the regression results on chapter Six, results content that in the FTSE 350 context, board independence does not promote DQ, yet, is positively associated with FV.

A different conclusion applies for affiliated committees. As shown in Model 2, the remuneration committee independence and audit committee independence are not statistically associated with FV. Therefore, hypothesis number 3 that there is a relationship between remuneration committee independence and FV is rejected. Similarly, hypothesis number 4 that there is a relationship between audit committee independence and FV is rejected.

With regard to board size, Model 2 shows that the coefficient estimate for board size *(BSIZE)* is insignificant. The relationship between board size and FV is ambiguous in the existing literature, with two competing theoretical views existing in this regard.[68] Accordingly, hypothesis number 5 that there is a relationship between board size and FV is rejected.

Similarly, remuneration committee size and audit committee size are not significantly associated with FV. Consequently, hypothesis number 6 that there is a relationship between remuneration committee size and FV is rejected. Additionally, hypothesis number 7 that there is a relationship between audit committee size and FV is rejected.

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[68] See chapter Five, section (5.2.1).

Model 2 shows that the lack of separation in leadership structure *(LEAD)* is not associated with FV. This is consistent with Cheung et al. (2010)'s finding. They do not find evidence on the effect of the lack of separation in leadership structure on FV. Therefore, hypothesis number 8 that there is a relationship between lack of separation in leadership structure and FV is rejected.

With regard to board meeting frequency *(BMF)*, model 2 does not support the notion that BMF is an essential CG mechanism that can influence FV. Accordingly, hypothesis number 9 that there is a positive relationship between lack of separation in leadership structure and FV is rejected. Similarly, Model 2 does not show an evidence for a significant association between audit committee meeting frequency *(ACMF)* and FV, then, hypothesis number 10 is rejected.

Model 2 does not provide an evidence to support hypothesis number 11 that there is a relationship between managerial ownership and FV. This is consistent with Jensen and Meckling's (1976) convergence of interest hypothesis[69] that the association between managerial ownership and FV takes a non-linear form, where a positive relationship holds for a time, until managers start to sacrifice FV for their own benefit (Demsetz, 1983). Results suggest that the market is indifferent as to the managerial ownership when perceiving firm's value. Notably, the average managerial ownership percentage in the sample is about 4%.[70] Such a low percentage might explain the insignificant association reported.

 This conclusion is further supported by the findings of chapter Six, where regressing DQ on managerial ownership implies an insignificant relationship. If managers become entrenched, this relationship should have been significantly negative. If managers had conflicting interests

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[69] For more detail on this view and the competing one, see chapter Five, section (5.2.2).
[70] See Table 6.2 for full details on the descriptive statistics of CG mechanisms.

with shareholders, they should have been expected to lower DQ to evade monitoring by shareholders.

Model 2 shows that ownership concentration *(CONCEN)* is not statistically associated with FV. The empirical evidence on the effect of ownership concentration on firm value is limited and is mixed (Konijn et al., 2011). Accordingly, hypothesis number 12 that there is a relationship between ownership concentration and FV is rejected.

Model 2 shows that the presences of accounting expertise in the audit committee *(ACCEXP)* is not associated with FV. This suggests the hypothesis number 13 that there is a positive relationship between the presence of an accounting expertise in the audit committee and FV is rejected. The underlying study is the first to examine the effect of the presence of accounting expertise on FV. Other studies (e.g. Defond et al., 2005) investigate the link between the appointment of accounting expertise and market reaction using cumulative abnormal returns (CARs), and does not find a positive association.

Model 2 reports an insignificant relationship between threat to auditor independence and FV. The literature is very scarce in this research filed to allow for a meaningful comparison of the findings. Based on the reported results, hypothesis number 14 that there is a positive relationship between threat to auditor independence and FV is rejected.

Finally, regression analysis (Model 2) shows an insignificant coefficient for audit firm size. Such results suggest that investor do not view the audit firm size as an indicator for audit quality and thus do not evaluate firms on this basis. Therefore, hypothesis number 15 that there is a relationship between audit firm size and FV is rejected.

Up until this point, Model 2 provides evidence that board independence positively influences FV. This suggests that shareholders highly value the presence of independent directors in the board. Shareholders thus, view independent directors as a powerful CG element that safeguards their rights. This is apparently consistent with agency theory suggesting that, agency problems are eliminated through independent board, where shareholders view independent directors as minimising the agency conflict between the managers and shareholders. The remaining CG mechanisms are not statistically associated with FV.

Having only few CG mechanisms associated with FV is very common in the literature. As contented by Brown et al. (2011, p. 118), "overall, research that takes the endogenous relationship into account finds at best only weak support for the proposition that better corporate governance practices create value". Because the current study considers the endogeneity problem using fixed effects model, and testing many variables including DQ, 14 CG mechanisms and 5 controls, such result is not surprising.

Another two reasons justify the reported insignificance of many CG mechanisms. Firstly, the rigid nature of CG. Stated differently, most CG mechanisms within firms typically change slowly from year to year or do not change over short periods. Secondly, countries with high levels of legal protection (e.g. the U.S. and the UK), are less likely to have many CG mechanisms influencing FV (La Porta et al., 2002; Klapper and Love, 2004; Dahya et al., 2008, Bebchuk and Weisbach, 2010; and Braga-Alves and Shastri, 2011). Similarly, Mak and Kusnadi (2005) find little evidence for most governance mechanisms investigated in their study and FV.

8.3.2.3 Model 3: Regressing FV on DQ, CG Mechanisms, and The Joint Effect of Both

In an effort to account for the endogenous nature of FV in general and the omitted-variables bias in particular, the underlying study adopts two approaches. Firstly, DQ and CG mechanisms are entered simultaneously to avoid the omitted-variables bias, i.e. ignoring CG mechanisms in model 1, and DQ in model 2. Secondly, model 3 incorporates the joint effect of both DQ and CG mechanisms on FV. This is hoped to overcome the deficiencies of considering DQ or CG mechanisms independently in prior studies. To evaluate the interaction of DQ and CG in affecting FV, the current study introduces the interaction terms as defined earlier (see section 8.3). Accordingly, Model 3 introduces interaction terms between DQ and each of the CG mechanisms as shown below.

$$Q_{it} = \alpha + \beta_h QUALITY_{it} + \sum_{j=1}^{n} \beta_j (Gov_{jit}) + \sum_{j=n+1}^{n+m} \beta_k (Interaction_{kit}) + \sum_{l=n+m+1}^{n+m+o} \beta_l (Control_{lit}) + \theta_t + \delta_i + u_{it}$$

Where:

α	= intercept term,
$QUALITY_{it}$	= natural log of disclosure quality score, for firm i, in year t,
Gov_{jit}	= individual corporate governance mechanisms, j, for firm i, in year t; where j =1 to n.
$Interaction_{kit}$	= the interactions between individual corporate governance mechanisms and disclosure quality for firm i, in year t; where k =1 to m,
$Control_{lit}$	= the control variables, l, for firm i, in year t; where l =1to o.
θ_t	= a vector of 3 dummy variables representing the four sample years.
δ_i	= the firm-specific fixed effects, including a vector of 122 variables to represent the 123 sample firms.
u_{it}	= the unobserved error component.

There are three main reasons behind the structure of Model 3. Firstly, the model considers the combined influence of DQ and each of the CG mechanisms on FV. Secondly, the interaction terms are employed to examine whether there are complementary or supplementary impacts on firm valuation resulting from the interrelationship between DQ and CG mechanisms.

Thirdly, it helps to demonstrate how the results would differ in the presence of endogeneity, especially, when running the analysis while omitting some variables (CG in Model 1, and DQ in Model 2).

The regression coefficient B_k, measures the interaction of each of the CG mechanisms and DQ with respect to affecting FV. A non-significant regression coefficient indicates that the impact of DQ on FV does not vary with CG. A significant positive regression coefficient indicates a complementary effect between these two variables, and a negative regression coefficient indicates a substitutive effect between these two variables.

The fifth and the sixth columns of Table 8.2 report the coefficients and t-statistics from using the fixed–effect regression where, DQ, CG mechanisms and the interaction of these two variables are tested. Model 3 shows that the association between disclosure quality *(QUALITY)* and firm value *(Q)* is improved after mitigating endogeneity issues. Model 3 shows a statistically positive relationship between DQ and FV. The coefficient is 1.185 at the 1.% significant level. Notably, in Model 1, considering the DQ independently did not provide evidence on a statistical relationship between FV and DQ.

In relation to the economic impact of incremental DQ change, a one standard deviation change in DQ increases industry-adjusted Tobin's Q by 0.710 [0.391 (quality standard deviation) ×1.815 (quality coefficient)]. Whereas in Model 1, a one standard deviation change in D does not significantly affect industry-adjusted Tobin's Q. Thus, DQ has a greater association with FV when considering CG mechanisms. This reinforces the general notion that, high-quality disclosure conveys value-relevant information, and that such information is significantly valued by the market and reflected in FV. Therefore, results support the proposition widely claimed in the extant literature that disclosure is one of the fundamental elements contributing to restoring market confidence. It is obvious that high-quality disclosure

reduces information asymmetry and helps in mitigating agency problems among the market participants, as well as between insiders and outsiders.

This result further supports Healy and Palepu's (1993 and 1999) arguments that firstly, high-quality disclosure is a vital approach for corporate managers to impart their knowledge to outside investors, even if capital markets are efficient. Secondly, this positively significant association indicates that high-quality disclosure adds more credibility to financial reports and enhances investors' perceptions of the firm, which is then represented in high FV. In this vein, managers find that the benefits of disclosure outweigh its associated costs (Healy and Palepu, 2001).[71]

Nonetheless, this conclusion provides empirical support to the assumption made by regulatory bodies (i.e. the ASB and the IASB) that information provided voluntarily helps users to evaluate firms' prospects and provide more in-depth insights into management performance; in turn, investors use such information and consider it when valuing firms in the market. Most significantly, since results reveal that investors, and the market in general, evaluate firms' DQ, this strongly underscores the importance of having a valid measure of DQ. Based on these results, hypotheses number 1 that there is association between is accepted.

With respect to the joint effect of different CG mechanisms and DQ, the last two columns of Table 8.2 reports the coefficients and *t*-statistics respectively. The first interaction term is *D.BIND*. This is the interaction between DQ and the first CG mechanism, namely; board independence. This interaction term is used to reflect the joint effect of board independence and DQ on FV. It also helps to identify if DQ and board independence are supplementary or complementary. The coefficient of *D.BIND* is significantly positive at the 5% significance level, indicating that the impact of DQ on FV is higher for firms with more independent

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[71] See chapter Three for a detailed discussion on the benefits and costs of DQ.

boards. The positive sign of this coefficient indicates a complementary relationship between DQ and board independence with respect to affecting firm value. The overall impact of DQ which is indicated by the sum of the coefficients of *D* and *D.BIND*, is positive and significant (2.054), providing evidence that disclosure quality has a greater impact on firm value when combined with independent board of directors.

The incremental effect of *BIND* on the slope which is indicated by the sum of the coefficients of *BIND* and *D.BIND* (-0.514), where, the coefficient for *BIND* is negative and greater than the combined coefficient of the interaction. Notably, the incremental effect (0.514) is lower than the coefficient estimate for *BIND* (0.753). Therefore, this provides evidence that FV is higher for firms with high quality disclosure and independence boards. In conclusion, DQ and board independence complement each other in affecting FV. Regression analysis provides an evidence to support hypothesis number 2 that board independence is associated with FV.

The second interaction term is *D.REMIND*. This is the interaction between DQ and remuneration committee independence. This interaction term is used to reflect the combined influence of remuneration committee independence and DQ on FV. It also helps to identify if DQ and remuneration committee independence are supplementary or complementary.

The coefficient of is *D.REMIND* is insignificant, indicating that the impact of DQ on firm value does not vary with the remuneration committee independence level. The overall impact of disclosure which is indicated by the sum of the coefficients of *D* and *D.REMIND*, is positive, yet insignificant (1.846), providing evidence that DQ's impact on FV does not vary with the independence level of the remuneration committee. At the other end, the incremental effect is *REMIND* on the slope which is indicated by the sum of the coefficients of *REMIND* and *D.REMIND* is (-0.081) but insignificant, and is lower than the coefficient estimate for *REMIND* (0.112).

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To sum up, results do not provide evidence to support hypothesis number 3 that remuneration committee independence is associated with FV. Consequently, hypothesis number 3 is rejected. Since the interaction term is not significant, results suggest that remuneration committee independence is not significantly associated with FV either in firms providing high disclosure quality, or in firms with low disclosure quality. Stated differently, remuneration committee independence is not associated with FV regardless of the quality of disclosure being reported. It also suggests that remuneration committee independence does not complement or supplement disclosure quality.

The third interaction term is *D.ACIND*. This is the interaction between disclosure quality and audit committee independence. This interaction term is used to reflect the combined influence of audit committee independence and high disclosure quality on firm value. It also helps to identify if disclosure quality and audit committee independence are supplementary or complementary.

The coefficient of *D.ACIND* is significantly negative at the 1% significance level, indicating that the impact of DQ on firm value is higher for firms with more independent audit committees. The sign of this coefficient indicates a substitutive relationship between DQ and audit committee independence with respect to affecting FV. The overall impact of disclosure which is indicated by the sum of the coefficients of *D* and *D.ACIND*, is positive and significant (1.649), providing evidence that DQ has a greater impact on firm value in firms with more independent audit committee.

At the other end, coefficient of *ACIND* in the model is significantly positive at the 1% significance level. This shows that *ACIND* is positively associated with FV. The incremental effect of *ACIND* on the slope, which is indicated by the sum of the coefficients of is *ACIND* and *D.ACIND* is (0.386), and is higher than the coefficient estimate for *ACIND* (0.552). These

conclusions provide evidence that DQ and audit committee independence are substitutive mechanisms that influence FV. Apparently, the impact of disclosure quality *D* on FV is higher than that of *ACIND*. Thus, firms that provide high quality disclosure but less independent audit committees enjoy higher firm value than firms with low disclosure quality but more independent audit committee. Accordingly, Hypothesis number 4 regarding the association between DQ and audit committee independence is accepted.

The fourth interaction term is *D.BSIZE*. This is the interaction between disclosure quality and board size. This interaction term is used to reflect the combined influence of board size and high disclosure quality on firm value. It also helps to identify if disclosure quality and board size are supplementary or complementary. The regression coefficient of *D.BSIZE* is insignificant. The insignificant relationship reflects that the impact of DQ on FV does not vary with board size. Stated differently, DQ is positively associated with FV regardless of the board size. The coefficient of *BSIZE* is insignificant indicating that board size as a CG mechanism is not associated with FV. Accordingly, regression results do not support hypothesis number 5 regarding the relationship between board size and firm value is rejected.

The fifth interaction term is *D.REMSIZE*. This is the interaction between disclosure quality and remuneration committee size. This interaction term is used to reflect the combined influence of remuneration committee size and high disclosure quality on FV. It also helps to identify if disclosure quality and remuneration committee size are supplementary or complementary.

The regression coefficient of *D.REMSIZE* is insignificant. The insignificant relationship reflects that the impact of DQ on FV does not vary with remuneration committee size. Indeed, model 3 shows that DQ is positively associated with FV regardless of remuneration committee size. The coefficient of *REMSIZE* is insignificant indicating that remuneration

committee size as a CG mechanism is not associated with FV whether firms disclose information at high or low quality. Accordingly, regression results do not support hypothesis number 6 regarding the relationship between remuneration committee size and FV is rejected.

The sixth interaction term is *D.ACSIZE*. This is the interaction between disclosure quality and audit committee size. This interaction term is used to reflect the combined influence of audit committee size and high disclosure quality on FV. It also helps to identify the nature of the joint effect if any, whether supplementary or complementary. The coefficient of *D.ACSIZE* is significantly negative at the 1% significance level, indicating that the impact of DQ on FV is higher for firms with bigger audit committees. The sign of this coefficient indicates a substitutive relationship between DQ, and audit committee size structure with respect to affecting FV. The overall impact of disclosure which is indicated by the sum of the coefficients of *D* and *D.ACSIZE*, is positive and significant (1.782), providing evidence that DQ has a greater impact on firm value in firms with bigger audit committees.

At the other end, coefficient of *ACSIZE* is insignificant. This shows that *ACSIZE* does not significantly affect FV when firms provide high quality disclosure. The incremental effect of *ACSIZE* on the slope, which is indicated by the sum of the coefficients of is *ACSIZE* and *D.ACSIZE* is (0.076), and is lower than the coefficient estimate for *ACSIZE* (0.109). These conclusions provide evidence that DQ and audit committee independence are substitutive mechanisms that influence FV. Apparently, the impact of disclosure quality *D* on firm value is higher than that of *ACSIZE*. Thus, firms that provide high quality disclosure and smaller audit committee size enjoy higher firm value than firms with low disclosure quality but bigger audit committee size. Accordingly, Hypothesis number 7 regarding the association between DQ and audit committee independence is accepted.

The seventh interaction term is *D.LEAD*. This is the interaction between DQ and lack of separation in leadership structure. This interaction term is used to reflect the combined influence of audit committee size and high DQ on FV. It also helps to identify if DQ and lack of separation in leadership structure are supplementary or complementary.

The coefficient of *D.LEAD* is insignificant, indicating that the impact of disclosure quality on FV does not vary with lack of separation in leadership structure. The coefficient of *LEAD* is insignificant suggesting that leadership structure, as a CG mechanism is not associated with FV whether firms disclose information at high or low quality. Accordingly, regression results do not evidence to support hypothesis number 8 regarding the relationship between remuneration committee size and firm value is rejected.

The eighth interaction term is *D.BMF*. This is the interaction between disclosure quality and board meeting frequency. This interaction term is used to reflect the combined influence of board meeting frequency and high disclosure quality on FV. Additionally, it helps to identify if disclosure quality and board meeting frequency are supplementary or complementary.

The coefficient of *D.BMF* is insignificant, indicating that board meeting frequency is not significantly associated with FV, either in firms providing high disclosure quality or firms with low disclosure quality. This suggests that board meeting frequency is not associated with FV regardless of the quality of disclosure being reported. Similarly, the coefficient of *BMF* is insignificant. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with FV, this suggests that, board meeting frequency does not complement or supplement disclosure quality. To sum up, regression results provide no evidence to support hypothesis number 9 that board meeting frequency is positively associated with FV, and hence, hypothesis number nine is rejected.

The ninth interaction term is *D.ACMF*. This is the interaction between disclosure quality and audit committee meeting frequency. This interaction term is used to reflect the combined influence of audit committee meeting frequency and high disclosure quality on firm value. It also helps to identify if disclosure quality and audit committee meeting frequency, are supplementary or complementary.

The coefficient of *D.ACMF* is insignificant, indicating that audit committee meeting frequency is not significantly associated with FV, either in firms providing high disclosure quality or firms with low disclosure quality. This suggests that audit committee meeting frequency is not associated with FV regardless of the quality of disclosure being reported. Similarly, the coefficient of *ACMF* is insignificant. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with FV, this suggests that the number of audit committee meetings does not complement or supplement disclosure quality.

In summary, regression results provide no evidence to support hypothesis number 10 that audit committee meeting frequency is positively associated with FV, and hence, hypothesis number ten is rejected.

The tenth interaction term is *D.MOWNER*. This is the interaction between disclosure quality and managerial ownership. This interaction term is used to reflect the combined influence of managerial ownership and high disclosure quality on FV.

This suggests that managerial ownership is not associated with FV regardless of the quality of disclosure being reported. Similarly, the coefficient of *MOWNER* is insignificant. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with FV, this suggests that managerial ownership does not complement or supplement disclosure quality. To sum up, regression results provide no evidence to support hypothesis number

eleven that managerial ownership is associated with FV, and hence, hypothesis number eleven is rejected.

The eleventh interaction term is *D.CONCEN*. This is the interaction between disclosure quality and ownership concentration. This interaction term is used to reflect the combined influence of ownership concentration and high disclosure quality on FV. It also helps to identify if disclosure quality and ownership concentration are supplementary or complementary.

This suggests that ownership concentration is not associated with FV regardless of the quality of disclosure being reported. Similarly, the coefficient of *CONCEN* is insignificant. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with FV, this suggests that managerial ownership does not complement or supplement disclosure quality. Therefore, regression results do not support hypothesis number 12 that managerial ownership is associated with FV, and hence, hypothesis number 12 is rejected.

The twelfth interaction term is *D.ACCEXP*. This is the interaction between disclosure quality and the presence of an accounting expertise in the audit committee. This interaction term is used to reflect the combined influence of accounting expertise and high disclosure quality on FV. It also helps to identify if disclosure quality and accounting expertise are supplementary or complementary.

Model 3 suggests that the presence of accounting expertise in the audit committee is not associated with FV. The coefficient of *ACCEXP* is insignificant. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with firm value, this suggests that managerial ownership does not complement or supplement disclosure quality.

To sum up, regression results provide no evidence to support hypothesis number 13 that the presence of accounting expertise in the audit committee is associated with FV, and hence, hypothesis number 13 is rejected.

The thirteenth interaction term is *D.AIND*. This is the interaction between disclosure quality and threat to auditor independence. This interaction term is used to reflect the combined influence of threat to auditor independence and high disclosure quality on FV. It also helps to identify if disclosure quality and threat to auditor independence are supplementary or complementary.

The coefficient of the interaction term is insignificant indicating that threat to auditor independence is not significantly associated with FV. Similarly, the regression coefficient of the threat to auditor independence variable (*AIND*) in model 3 does not support hypothesis number 14 that threat to auditor independence is positively associated with FV. Recalling that the coefficient of disclosure quality *D*, shows a positive significant association with FV, this suggests that threat to auditor independence does not complement or supplement disclosure quality. To conclude, hypothesis number 14 that threat to auditor independence is positively associated with FV is rejected.

The final interaction term in model 3 is *D.ASIZE*. This is the interaction between disclosure quality and audit firm size. This interaction term is used to reflect the combined influence of audit firm size and high disclosure quality on FV. It also helps to identify if disclosure quality and audit firm size are supplementary or complementary.

The coefficient of the interaction term is insignificant indicating that audit firm size is not significantly associated with FV. Similarly, the regression coefficient of the audit firm size variable (*ASIZE*) in model 3 does not support hypothesis number fourteen that threat to

auditor independence is positively associated with FV. Recalling that the coefficient of disclosure quality *D* shows a positive significant association with FV, this suggests that audit firm size does not complement or supplement disclosure quality. To conclude, hypothesis number 15 that audit firm size is positively associated with FV is rejected.

Firm size *(SIZE)*, leverage *(LEV)*, and market share (*SHAR*) show a consistent relationship with firm value *(Q)* over the three models.[72] Similar to the common findings in the literature, firm size appears to be negatively associated with FV (e.g. Klapper and Love, 2004; Klein et al., 2005; Shue et al. 2010; Benson and Davidson, 2010; and Kohlbeck and Mayhew, 2010), implying that large firms defend their extensive assets base as collateral and therefore do not need to raise external capital. Investors consequently suspect the governance of these firms, and underestimate their value (Beak et al., 2004). Most significantly, this result is consistent with a recent study on FTSE 350 firms by Abdullah and Page (2009). The authors confirm the underlying study's findings of the negative relationship between firm size and firm value, measured by *(Q)*. They explain these relationships by stating that large firms are less likely to have growth opportunities, and therefore require less finance than smaller ones.

Leverage has a strong positive relationship with FV, supporting the notion contended by some scholars that leverage has a role in mitigating agency conflict, as discussed earlier (e.g. Beiner et al. 2006; and Aggarwal et al., 2009). As reported in prior studies (e.g. Black et al., 2006), Market share is positively associated with FV at the 1% significance level.

Overall, results of *Model 3* support agency theory, that disclosure quality *(QUALITY)* is an effective mechanism that mitigates the agency problem and promotes FV. Additionally, results provide evidence that there are two CG mechanisms influencing firm value in the UK,

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[72] The significance level of firm size is 5% in Model 1 and Model 2, yet, weakly significant at the 10% level in Model 3.

namely; board independence *(BIND)* and audit committee independence *(ACIND)*. Both are significantly positively associated with FV. Accordingly, the first hypothesis, that firms which provide high levels of disclosure exhibit high value, is accepted. Similarly, results suggest that hypothesis number 2 that there is a relationship between board independence and FV and that hypothesis 4 that a positive relationship between the audit committee independence and FV are accepted. The remaining CG variables do not appear to be associated with firm value and therefore, the related hypotheses to such mechanisms are rejected. Importantly, as discussed and justified above in section 7.3.2, having only a few governance mechanisms affecting firm value is very common in the literature (e.g. Beiner et al., 2006; Henry, 2008; Henry 2010; and Kohlbeck and Mayhew, 2010).

With respect to the joint effect of DQ and CG mechanism, Table 8.2, model 3 shows that, the impact of DQ on FV is particularly pronounced in firms with smaller and less independent audit committees. Thus, these results provide evidence for a substitutive relationship between DQ and CG with respect to effects on firm value. Additionally, results intend to report that the impact of DQ on FV is particularly pronounced in firms with more independent board of directors. Therefore, such results support a complementary relationship between DQ and CG with respect to effects on FV. Accordingly, hypothesis number 16 that relationship between DQ and FV varies with the existence of different CG mechanisms in a firm is accepted.

Notably, the relationship between DQ, CG mechanisms and FV is different across the three models. This reports and highlights the effect of omitted-variables bias discussed earlier in chapter Seven where only one and/or few variables are considered in evaluating the relationship with FV. Particularly, it identifies the limitations of prior studies that examine DQ in isolation of other influencing variables on FV, or studies that consider CG

independently, or studies that use a very limited number of CG mechanisms where the possibility of omitted-variables bias is intensified.

These findings can be regarded as one reason for the mixed evidence in the literature investigating factors influencing FV. The different results reported over the three models are consistent with the findings of prior literature, where different studies, using different variables, provide different results. Nonetheless, while the current study attempts to mitigate variable bias, it cannot be confidently argued that the study eliminates such bias completely.

8.3.3 Robustness Test (Sensitivity Analysis)

Usually studies of a similar nature, investigating the effect of CG and/or DQ on FV run an OLS regression analysis as their main test. Afterwards, the authors run a robustness test using instrumental variable equations to tackle the endogeneity problem (e.g. Beiner et al., 2006) or run a different regression test (e.g. logit regression). Notably they defend their results on the basis of having similar results over different regression analyses. Unfortunately, this approach has been criticised and is argued to be imprecise. Larcker and Rusticus contend that:

> *"One unusual aspect of the typical robustness analysis is that the researchers frequently comment that their results are 'robust' to endogeneity if the IV and OLS results produce similar estimates. Unfortunately, if there are theoretical reasons to suspect serious endogeneity concerns, the similarity of the results may also indicate that the selected IVs are inadequate, as opposed to the reported results being unaffected by endogeneity"* (2010, p. 188).

While Larcker and Rusticus (2010) question using this approach to signal mitigation of endogeneity, Lent (2007, p. 202) raises concerns about this approach, stating that in general, the fact that "the results do not change in the robustness checks in most papers has less to do with the soundness of the research as with self selection". Lent (2007) questions editors' tendency to reject papers on the premise of changing results in the robustness section. In

contrast, arguably, researchers should analyse the data until the results change significantly if scientific progress is to be best served (Lent, 2007).

Drawing on the above concerns about the traditional approach[73] of robustness tests, the current study responds to Lent's (2007) call for courageous researchers to implement a new approach in robustness tests, and thus this section addresses how the results might differ. Specifically, the current study devotes this section to answering the question of whether or not investors value a multidimensional quality concept. Or rather, whether investors have some preferences in terms of the sub-dimensions of DQ.

Several possibilities are predicted. The first possibility is consistent with the theoretical premise that quality is a multidimensional concept, and that it is hard to tell what specific dimensions are most valued by investors (i.e. dimensions that affect firm value). If this is true, it is expected that there will be no association between individual quality dimensions and FV. The second possibility is that investors concentrate on some individual quality dimensions. In this case, there should be a positive significant association between the preferred dimensions and FV. The third possibility is that the overall quality contains some individual dimensions that investors find less helpful, and therefore, such dimensions would negatively affect FV.

The most relevant example here is the readability of OFR statements. If investors find it very difficult to read the information provided, it is expected that it will affect FV negatively. Similarly, if OFR statements are perceived as being very difficult, this is most likely to impact the qualitative dimension. Whatever possibility is identified, analysing the individual

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[73]Following Konijn et al. (2011), two traditional robustness tests are conducted. The first is the inclusion of alternative measures of control variables and the second involves adding more controls to the model. In applying the first approach, earnings per share (EPS) was included as a substitution for return on equity (ROE) in measuring profitability, and results were robust. Additionally, in measuring firm size, sales were included as an alternative to total assets and results were not sensitive to this change. Therefore, it is concluded that, results are not sensitive to changes in control variable definitions. As a second approach for traditional robustness tests, a new control variable, which is not heavily used in prior research but only used by one or two studies (i.e. analysts following), is included in the analysis. Results show consistent findings and are not sensitive to the inclusion of analysts following.

dimensions of quality would either reinforce the current proposed quality framework or attract attention to the specific quality dimensions that are more valued, or those that are less valued – for which recommendations could be made to improve the OFR statement's usefulness.

To answer the question of whether some quality dimensions are more important for investors than others, or rather, whether investors evaluate the overall quality, the current section presents comparisons among the seven individual quality dimensions. In doing so, a replication of fixed-effect regression is necessary. Therefore, individual dimensions substitute the quality score, one at a time. This results in having seven models. For valid and meaningful comparisons with the overall quality score, each model includes the following independent variables: the individual quality dimension, the same set of CG mechanisms examined in the main analysis, and the interactions between the specific individual quality dimension and each corporate governance mechanism. Table 8.4 reports the results of the seven models. Table 8.4 shows the effect of overall and individual DQ attributes on FV. Model 1 shows findings of the overall DQ. Models 2 to 8 show results of the individual DQ attributes.

Table 8.3: Fixed-Effect Regression of Industry-Median Tobin's Q (*Q*) on Individual DQ Dimensions and CG Mechanisms

	Overall Quality Score		FL		FLQ		Qualitative		Spread		BLG		30/LIX		KPIs	
	Coef. Est.	P>|t|	Coef. Est.	P>|t|	Coef. Est.	P> |t|	Coef. Est.	P> |t|	Coef. Est.	P> |t|	Coef. Est.	P> |t|	Coef. Est.	P> |t|	Coef. Est.	P> |t|
QUALITY	1.815*	0.084	-1.259	0.387	-1.289	0.406	-4.518	0.431	0.359	0.492	-0.138	0.709	-0.790	0.786	0.542	0.200
BIND	-0.753*	0.065	0.304*	0.050	0.090	0.553	-0.054	0.848	0.337	0.268	0.117	0.503	0.753	0.171	-0.066	0.443
REMIND	-0.112	0.731	-0.086	0.444	-0.033	0.698	-0.160	0.343	-0.147	0.549	-0.240	0.169	0.007	0.986	0.002	0.968
ACIND	0.552*	0.081	-0.033	0.762	0.017	0.872	0.127	0.480	0.142	0.665	0.076	0.577	-0.360	0.486	0.075	0.203
BSIZE	-0.034	0.126	0.005	0.585	0.0001	0.990	-0.001	0.966	-0.009	0.538	-0.005	0.619	0.046	0.178	-0.008	0.112
REMSIZE	-0.028	0.641	0.012	0.642	-0.022	0.313	0.022	0.533	-0.019	0.660	-0.002	0.941	0.090	0.332	0.001	0.929
ACSIZE	0.109	0.105	-0.039	0.146	0.008	0.737	0.075*	0.093	0.017	0.722	0.013	0.668	-0.140	0.178	0.009	0.477
LEAD	-0.060	0.713	0.057	0.545	-0.040	0.526	0.001	0.994	0.103	0.458	-0.041	0.460	-0.404	0.178	-0.047	0.135
BMF	0.004	0.801	-0.006	0.376	0.005	0.479	-0.016	0.230	-0.003	0.788	0.003	0.716	0.024	0.351	0.001	0.880
ACMF	-0.002	0.938	-0.007	0.620	-0.009	0.548	-0.014	0.541	0.013	0.590	0.014	0.369	-0.045	0.318	-0.002	0.781
MOWNER	0.003	0.418	-0.001	0.393	0.0003	0.862	-0.001	0.664	0.003	0.171	0.001	0.595	0.008*	0.099	0.001	0.451
CONCEN	0.001	0.705	-0.001	0.490	0.001	0.368	0.0003	0.835	-0.0004	0.804	0.0004	0.710	-0.002	0.615	0.0003	0.450
ACCEXP	-0.052	0.479	-0.005	0.869	0.049	0.107	-0.078	0.149	-0.019	0.742	-0.025	0.407	0.117	0.260	0.003	0.852
AIND	-0.009	0.957	-0.082	0.223	-0.031	0.618	-0.003	0.981	0.140	0.287	-0.013	0.848	0.124	0.598	0.022	0.487
ASIZE	0.602	0.247	-0.151	0.477	-0.590	0.277	-2.950	0.400	0.014	0.958	-0.165	0.365	-0.895	0.506	0.026	0.836
QUALITY * BIND	0.239**	0.029	-0.975	0.270	0.092	0.804	0.297	0.530	-0.272	0.478	0.004	0.983	-1.239	0.260	0.515***	0.002
QUALITY *REMIND	0.031	0.733	0.398	0.580	0.014	0.946	0.252	0.415	0.158	0.623	0.238	0.203	-0.060	0.940	-0.034	0.797
QUALITY * ACIND	-0.166*	0.067	0.076	0.912	-0.071	0.781	-0.257	0.434	-0.209	0.634	-0.099	0.510	0.683	0.511	-0.310**	0.028
QUALITY * BSIZE	0.009	0.127	-0.030	0.540	-0.003	0.895	-0.001	0.980	0.012	0.518	0.005	0.609	-0.089	0.179	0.018**	0.043
QUALITY*REMSIZE	0.010	0.520	-0.026	0.856	0.072	0.163	-0.023	0.706	0.035	0.534	0.012	0.678	-0.171	0.363	0.015	0.507
QUALITY * ACSIZE	-0.033*	0.073	0.180	0.258	-0.042	0.448	-0.148*	0.057	-0.037	0.562	-0.026	0.417	0.266	0.211	-0.045*	0.070
QUALITY * LEAD	0.007	0.892	-0.455	0.395	0.041	0.781	-0.043	0.860	-0.181	0.339	0.011	0.866	0.733	0.207	0.093	0.206
QUALITY * BMF	-0.001	0.781	0.042	0.299	-0.010	0.511	0.029	0.220	0.005	0.756	-0.003	0.753	-0.049	0.346	-0.004	0.568
QUALITY * ACMF	0.0003	0.961	0.031	0.686	0.016	0.605	0.022	0.600	-0.017	0.555	-0.016	0.321	0.092	0.328	0.001	0.948
QUALITY*MOWNER	-0.001	0.446	0.009	0.301	-0.0004	0.921	0.002	0.627	-0.004	0.195	-0.001	0.707	-0.015	0.107	-0.001	0.554
QUALITY *CONCEN	0.000	0.797	0.007	0.278	-0.001	0.633	0.000	0.999	0.001	0.639	-0.0001	0.936	0.004	0.556	-0.0003	0.758
QUALITY * ACCEXP	0.016	0.437	0.065	0.710	-0.109	0.132	0.139	0.130	0.035	0.645	0.035	0.298	-0.222	0.282	0.002	0.963
QUALITY * AIND	0.0003	0.994	0.461	0.257	0.046	0.765	-0.016	0.938	-0.199	0.244	0.003	0.969	-0.266	0.573	-0.073	0.296
QUALITY X ASIZE	-0.218	0.187	0.081	0.944	1.311	0.390	4.602	0.421	-0.221	0.538	0.078	0.800	1.516	0.572	-0.494	0.196
SIZE	-0.063***	0.002	-0.067***	0.001	-0.062***	0.002	-0.068**	0.001	-0.070***	0.001	-0.067***	0.001	-0.064***	0.001	-0.061***	0.003
PROF	0.0002	0.218	0.0001	0.214	0.0001	0.323	0.0001	0.293	0.0001	0.306	0.0001	0.350	0.0001	0.238	0.0001	0.224
LEV	0.013***	0.000	0.013***	0.000	0.013***	0.000	0.012***	0.000	0.013***	0.000	0.013***	0.000	0.013***	0.000	0.013***	0.000
GROWTH	-0.0003	0.251	-0.0002	0.447	-0.0002	0.394	-0.0002	0.459	-0.0002	0.489	-0.0002	0.355	-0.0002	0.405	-0.0003	0.263
SHARE	0.047*	0.076	0.045*	0.091	0.051*	0.055	0.048	0.074	0.048*	0.070	0.050*	0.062	0.054*	0.043	0.041	0.114
Intercept	-0.251	0.654	0.913***	0.003	1.127*	0.054	3.509	0.319	0.485	0.275	0.807*	0.011	1.076	0.462	0.512	0.031
							-4.518									
R Squared	34.85%		64%		63.8%		64.5%		63.7%		63.5%		64.2%		65%	
F-Value	5.51***	0.000	17.3***	0.000	17.2*	0.000	17.7***	0.000	17.1***	0.000	6***	0.000	187.5%	0.000	18.1**	0.000

(FL) the proportion of forward-looking information, *(FLQ)* the proportion of forward-looking qualitative information, *(QUAL)* the proportion of qualitative information, *(SPREAD)* the spread of topics disclosed, *(BLG)*, the proportion of bad to good news given the industry leader n proportion, *(I/LIX)* readability measure, *(QUALITY)* the quality score, *(BIND)* board independence, *(BSIZE)* board size, *(LEAD)* lack of separation in leadership structure, *(BMF)* board meeting frequency, *(REMIND)* remuneration committee independence, *(REMSIZE)* remuneration committee independence, *(MOWNER)* managerial ownership, *(CONCEN)* ownership concentration, *(ACIND)* audit committee independence, *(ACSIZE)* audit committee size, *(ACCEXP)* the presence of accounting expertise in the audit committee, *(ACMF)* audit committee meeting frequency, *(AIND)* threat to auditor independence, *(ASIZE)* external auditor size, *(QUALITY)* quality, *(BIND)* board independence, *(BSIZE)* board size, *(QUALITY * BIND)* the interaction between the disclosure score and board independence, *(QUALITY * BSIZE)*, the interaction between the disclosure score and board size, *(QUALITY * LEAD)* the interaction between the disclosure score and lack of separation in leadership structure, *(QUALITY * BMF)* the interaction between the disclosure score and board meeting frequency, *(QUALITY * REMIND)* the interaction between the disclosure score and board remuneration committee independence, *(QUALITY * REMSIZE)* the interaction between the disclosure score and board remuneration committee size, *(QUALITY * MOWNER)* the interaction between the disclosure score and managerial ownership, *(QUALITY * CONCEN)* the interaction between the disclosure score and ownership concentration, *(QUALITY * ACIND)* the interaction between the disclosure score and audit committee independence, *(QUALITY * ACSIZE)* the interaction between the disclosure score and audit committee size, *(QUALITY * ACC*P)* the interaction between the disclosure score and audit committee accounting expertise, *(QUALITY * ACMF)* the interaction between the disclosure score and audit committee meeting frequency, *(QUALITY *AIND)* the interaction between the disclosure score and threat to auditor independence, *(QUALITY * SIZE)* the interaction between the disclosure score and auditor size, *(SIZE)* firm size, *(PROF)* profitability, *(LEV)* leverage, *(GROWTH)* sales growth, *(MSHARE)* market share. Number of observations *(n=488)*, ***, **, * Significant at 1%; 5% and 10% respectively. Model 1 includes disclosure quality only, model2 regress governance mechanisms only, model 3 includes disclosure quality and corporate governance mechanisms.

Model 2 shows that the proportion of forward-looking information *(FL)* is not significantly associated with FV. This result implies that investors do not value it in isolation from the overall DQ. Bearing in mind that *(FL)* reflects disclosure relevance, results indicate that although relevance contributes to the overall DQ, it is not enough for disclosure to be relevant to bear an effect on FV.

Considering the coefficient of other independent variables does not add to the robustness test, as long as this test is condensed to focus on investigating whether investors value one quality dimension more than the others do. However, one conclusion merits notice here. *(FL)* has been used by several studies as a proxy for quality, resting on the notion that both measures are related and would result in similar conclusions. Significantly, noting the different associations between CG mechanisms and FV than the ones reported using the quality measure (column one) casts doubt on this proposition. These findings are similar to the conclusions drawn from the analysis conducted in chapter Six with regards to identifying disclosure quality determinants. Accordingly, there is clear evidence that using disclosure quantity *(FL)* as a proxy for quality is misleading, and is not recognised.

Model 3 presents results of regressing the second and third quality dimensions, namely future-looking orientation and verifiability of disclosure measured via the proportion of forward-looking quantitative information *(FLQ)*. No evidence found that investors rely solely on the verifiability of disclosures or its future-orientation scope when making decisions on firm value.

Model 4 of Table 8.4 reports results of regressing the proportion of qualitative *(QUAL)* information as a quality dimension, on FV. Notably, as discussed in chapter Four, the proportion of qualitative *(QUAL)* information is used to measure to what extent the disclosure

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supplements the financial statements. Accordingly, looking at Model 4, one can conclude that supplementing the financial statements, as a quality dimension does not convey value-relevant information when other quality dimensions are overlooked.

When considering how comprehensive the disclosure is, measured through the spread of topics disclosed *(SPREAD)*, results reported in Model 5 suggest that being comprehensive is not significantly important for users in the absence of other quality dimensions. This is evident from the insignificant association between *(SPREAD)* and FV when controlling for CG mechanisms and FV.

Recalling that this quality dimension is referred to in the extant literature as the "occurrence", and that a vast number of studies use proxies for quality,[74] some conclusions that have essential implications are worthy of note.

Firstly, from the investors' point of view, this dimension by itself does not add valuable information that in turn will be reflected in FV. Secondly, from an academic viewpoint, having different results in terms of CG mechanisms affecting FV when using this proxy, compared to those reported when using the overall quality (Model 1), implies that, using "occurrence" as a proxy for quality is fraught with potential problems. More severely, this is likely to shift the reported results on different quality aspects away from being accurate, and accordingly researchers may draw misleading conclusions. Comparing column five's conclusions with similar ones drawn from Model 1 when using disclosure quantity highlights the importance of researchers using DQ rather than proxies in examining research questions linked with DQ.

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[74] See chapter Three for a comprehensive discussion of different proxies for DQ.

Column six shows results of regressing FV with regards to different CG mechanisms and the balance of disclosure *(BGL)*. Similar to prior findings, the regression shows an insignificant relationship between *(BGL)* and FV. Accordingly, fairly balanced disclosure does not influence FV.

Column seven reports results associated with the readability *(LIX)* of OFR statements. Again, there is no evidence to support the idea that easily readable disclosure positively influences FV. Though results show that UK firms' disclosures are often very difficult to read, this does not negatively affect FV. One likely justification could be that investors in the UK market are highly experienced, like US investors (e.g. Bebchuk and Weisbach, 2010). The second possibility could be that investors seek advice from financial analysts who are highly experienced in reading and analysing annual reports, and that therefore, the readability of the disclosure does not negatively affect FV. However, a policy implication is to stress the need to simplify the wording of disclosure statements to an acceptable level that would enable inexperienced investors to easily comprehend their content. Obviously, the model is insignificant as apparent from the F value significance figure; thus, results should be taken with caution.

Model 8 presents results of considering only the comparability of disclosure measured through *(KPIs)* in isolation from other quality dimensions. There is a weak significant relationship between the comparability of disclosure statements and FV.

In sum, the regression models presented in Table 8.4 shows evidence supporting the academic and regulatory bodies' premise that disclosure is a complicated concept that is difficult to sub-divide. In this sense, DQ gains its powerful impact on different aspects in a broad sense, and specifically on FV, in the underlying study, from being a multidimensional concept. Such conclusions justify the IASB's recently introduced framework for high-quality disclosure

(known as Management Commentary (2010)), which includes the same dimensions included in the disclosure quality measure proposed here.

8.4 Summary and Conclusions

This chapter empirically investigated the association between, DQ, CG, and FV using fixed-effect model. Results underscore and support the proposition that DQ is a key determinant of FV in UK firms. Results also suggest that DQ enjoys a substitutive relationship with two CG mechanisms (audit committee independence and audit committee size) and a complementary association with board independence. These findings highlight the fact that DQ has been an omitted variable in prior studies that test and evaluate the relationship between CG and FV. Looking at the result variations across the three models presented in Table 8.2 emphasises the importance of controlling for possible endogeneity between FV and CG, either through the model used (i.e. fixed-effect) or through including omitted variables (i.e. DQ and comprehensive CG mechanisms), to derive a valid causality relationship.

The following Table 8.4 links chapter Seven and Eight by listing the 15 hypotheses developed in chapter Seven, along with results of the analysis conducted in the current chapter (Eight). Columns 1 and 2 are extracted from chapter Seven whereas; columns 4 and 5 are concluded from chapter Eight. Column 1 lists the independent variables. Column 2 shows the expected association as highlighted in each hypothesis (chapter Seven). Column 3 lists the actual direction of the relationship found between each of the CG variables and DQ. Column 4 shows result of the analysis (rejecting/accepting the hypothesis).

Table 8.4: Summary of Results

Hypothesis number	Corporate Governance Mechanisms	Expected Association	Reported Association	Results of the Analysis (Rejecting/Accepting the hypothesis)
1	Disclosure Quality	+	Significant	**Accept**
2	Board Independence	?	significant	**Accept**
3	Remuneration Committee Independence	?	Insignificant	Reject
4	Audit Committee Independence	**?**	significant	**Accept**
5	Board Size	**?**	Insignificant	Reject
6	Remuneration Committee Size	?	Insignificant	Reject
7	Audit Committee Size	?	significant	**Accept**
8	Lack of Separation in Leadership Structure	?	Insignificant	Reject
9	Board Meeting Frequency	+	Insignificant	Reject
10	Audit Committee Meeting Frequency	+	Insignificant	Reject
11	Managerial Ownership	?	insignificant	Reject
12	Ownership Concentration	?	Insignificant	Reject
13	Accounting Expertise	+	significant	**Accept**
14	Threat to auditor independence	+	Insignificant	Reject
15	Audit Firm Size	?	Insignificant	Reject

Robustness test shows that investors value overall DQ rather than focusing on individual quality dimensions. This re-confirms the validity of the DQ measure developed in chapter Four.

This study puts forward some contributions to the limited, but growing body of literature on the joint effect of DQ and CG mechanisms on firm value through multiple dimensions. Firstly, the underlying study presents an integrated empirical framework, which measures the joint effect of DQ and CG mechanisms proposed by The Code on firm value in the UK.

Secondly, utilising the fixed-effect model, incorporating extensive sets of CG mechanisms and controls using the industry-median adjusted Tobin's Q provides reasonable assurance that the current study's results are not attributable to simultaneity or other endogeneity issues.

Therefore, in contrast to most studies, this study is able to introduce a clear and strong claim regarding the causality of governance on firm valuation, since the findings are not restricted to a partial correlation.

Results of this study have several essential implications. One aspect of these is the academic and research implications. Importantly, results highlight the importance of using DQ in examining different disclosure-related research areas, because using different proxies is most likely to provide spurious conclusions. Therefore, this study opens avenues for re-examining disclosure relationships, especially research areas that do not have persuasive conclusions.

Many policy implications are emphasised through this study. Firstly, having reported an influential role of disclosure quality in the market, this study provides empirical support for the views put forth by the ASB and the IASB that improving narrative DQ is important for investors. For example, the ASB (2006, Objective, para. c) contends that the OFR is "prepared to assist to assess the strategies adopted by the entity and the potential for those strategies to successes". Similarly, the IASB (2010, para. 14) states that "Management commentary should provide information to help users of the financial reports to assess the performance of the entity and the actions of its management relative to stated strategies and

plans for progress".

Secondly, because none of the individual quality dimensions are associated with FV, it is apparent that investors value the overall score rather than individual dimensions. This is in line with ASB's argument that a best practice statement is composed of several quality dimensions (ASB, 2006, para. b&c).

One important conclusion is that, in spite of finding evidence supporting the link between only a few CG mechanisms and FV, and the conclusion that high-quality disclosure substitute

and complements an effective governance structure, the importance of other governance mechanisms to other perspectives cannot be underestimated, because CG is not solely directed to enhancing FV. Brown and Caylor (2006) maintain that CG mechanisms that are unrelated to FV are important for other purposes. For example, results reported in chapter Six on the association between CG mechanisms and DQ reveal that the lack of separation in leadership structure, the audit committee meeting frequency, and audit firm size are positively associated with high-quality disclosure. Future research should investigate other avenues such as the governance impact on the cost of equity and future accounting outcomes.

Chapter Nine: Summary and Conclusions

9.1 Overview

This research comprised three inter-related studies, each of which had certain defined objective(s). The present chapter, therefore, summarises the main findings of each study and the implications of these findings on the literature settings and for policy-makers and public interest. The chapter then highlights the limitations of the current research and suggests areas for further research.

9.2 Summary of Research Objectives, Questions and Approach

Research Objectives

Prior studies examining the association between DQ, CG mechanisms and FV are limited, with inconclusive results. Chapter One presented a preliminary discussion for research motivations and elaborated research gaps intended to be overcome by the underlying research. To best achieve the research objectives, this research is comprised three inter-related studies. The first study (chapters Three & Four) mainly worked to meet three research objectives, which represent three research gaps associated with DQ literature.

The first gap was the absence of a well-defined measure for DQ and, therefore, the first objective of this study was to introduce a new valid and reliable measure for DQ. The second research objective was to develop a multi-dimensional computerised content analysis approach to avoid the limitations of ready-made dictionaries whose suitability to disclosure context is questionable (e.g. Berger, 2011), and improve upon the prior attempt (i.e. Hussainey et al.'s (2003) regarding the development of a computerised approach to identify forward-looking disclosures in UK annual reports). Prior research used measures of disclosure quantity as a proxy for disclosure quality (e.g. Beekes and Brown, 2006, Celik et al., 2006,

Abraham and Cox, 2007; Boesso and Kumar, 2007, and Cerbioni and Parbonetti, 2007), assuming that disclosure quality and quantity are positively correlated. This assumption, however, has been criticised in prior research (see Beattie et al., 2004 and Beretta and Bozzolan, 2004a; 2008 for more details). Hence, the third objective of this research was to empirically examine the extent to which disclosure quantity can be used as a proxy for disclosure quality.

The fourth objective of this research was to explain the mixed results of the association between DQ and CG. This objective is achieved in the second study through chapters Five and Six.

The third study (chapters Seven and Eight) handles the most prominent research gap in relevant literature by investigating the association between DQ, CG, and FV, namely the omitted-variable bias. Generally, studies investigate either disclosure with FV, or CG with FV Accordingly, the fifth objective of the underlying research was to bridge the gap in FV literature and investigate the joint effect of DQ and CG on FV.

Research Questions

Four research questions were derived from the research objectives. The first question addressed in the underlying research covered the first and the second objectives. The first question was articulated as: is it possible to provide a practical definition and a reliable measure for disclosure quality? If so, to what extent are the OFR quality dimensions recommended by ASB (2006) measurable?

The second question addressed was whether disclosure quantity provides a proper proxy for DQ. The third research question dealt with identifying what the CG and firm mechanisms are that influence DQ in the UK. The fourth research question concentrated on investigating the joint effect of DQ and firm-level CG mechanisms on FV in the UK. Figure 1.1 illustrates the interrelation between research objectives and questions.

Research Approach

The current research was built on the positivism philosophy. The research used quantitative techniques in answering the research questions. OFR narrative section for each firm was downloaded from NorthCote database, available online. CG data are partially hand collected from the financial statements; for example, to identify the presence of an accounting expertise in the audit committee the researcher read each of the audit committee members' bibliographies to identify background; another example is board and audit committee meeting frequency. Some other CG data were collected from the Boardex database after some necessary work on the raw data. For example, the researcher summed up the number of committee members to identify the overall board size. Managerial ownership was collected from Datastream. All firm characteristics data and Tobin's Q were collected from Datastream.

In meeting the first and the second research objectives, an innovative computerised[75] content analysis approach was used and five new keyword lists relevant to the disclosure context were developed. Such an approach provided the premise for the proposed DQ measure. This should allow for large-scale disclosure studies. Each keywords list was developed through three steps and a reliability test was conducted before the final keywords list was reached.

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[75] Of the seven quality dimensions, only one dimension (comparability) was captured through manual content analysis.

In achieving the third and the fourth research objectives, the underlying research used an OLS regression model in investigating whether disclosure quantity provides a proper proxy for disclosure quality. OLS was also used in examining the association between firm-level CG mechanisms and DQ.

The fifth research objective answered the question of whether firm value was jointly affected by DQ and certain CG mechanisms in large UK firms. Given the endogenous nature of FV as a dependent variable, the current study used a fixed-effect panel data regression model to consider the endogeneity problem. Following Palia (2001), the current study compared three estimation methods: OLS, random effect, and fixed effect estimations. In doing so, a Lagrangian Multiplier test was conducted, which compared OLS estimations against random effect estimations. Results recommended the use of random effect over OLS; this is clear with $Chi^2 = 85.27$, at the 1% significance level. Next, the Hausman test of fixed versus random effects estimations was conducted, which suggested the use of fixed effect over random effect technique. $Chi^2 = 617.49$, at the 1% significance level. Accordingly, and in line with Palia (2001), the fixed effect was the optimal estimation method to mitigate endogeneity.

9.3 Research Findings, Contributions and Implications

Summary of Findings

The first and the second objectives were achieved through chapters Three and Four. In chapter Three, the framework used as the basis for the proposed disclosure quality measure, OFR was discussed. Afterwards, the proposed definition for DQ was presented with a detailed discussion of its seven quality dimensions. Finally, chapter Three ended by elaborating on how each quality dimension was captured to reach the overall quality score. This allowed a

more considered definition of DQ rather than using proxies. Chapter Four concluded by presenting the formula employed to derive the aggregated quality score and discussed reliability and validity tests. Accordingly, chapters Three and Four fulfilled the first objective and introduced a new, valid and reliable measure of DQ, and presented an innovative multi-dimensional computerised content analysis approach to avoid the limitations of ready-made dictionaries.

The second study (chapters Five & Six) dealt with the research gap associated with the relationship between DQ and CG mechanisms, namely the mixed results problem that even sometimes contradicts the theory. The first probable reason for this problem was the use of different proxies for DQ, which is likely to mislead the analysis. The second reason was argued to be the use of narrow and different combined proxies of governance mechanisms (García-Meca and Sánchez-Ballesta, 2010).

Chapter Five discussed the theoretical background of the association between DQ and CG chapter Six answered the third and the fourth research questions (objectives) and suggested that disclosure quantity is not a proper proxy for DQ. This chapter also presented the empirical results of the association between DQ and CG mechanisms.

Correlation analysis showed that all governance mechanisms are in line with agency theory, with no contradictory results. Accordingly, the problem of mixed results is likely to be explained by improper DQ measurement and narrow proxies of CG. Regression results suggest that the most effective governance mechanisms in improving DQ are leadership structure, audit committee meeting frequency, and audit firm size.

Accordingly, the current study presented a novel contribution to both CG and disclosure literature, being timely and relevant in light of the recent worldwide appraisals of CG

structure (i.e. The Code 2010) and disclosure regulations (the latest Management Commentary published by the IASB). Interestingly, the present developed quality measure could be generalised for Management Commentary statements because they involve the same quality dimensions proposed by the IASB.

Chapters Seven and Eight were concerned with achieving the fifth research objective (question) on the joint effect of DQ and CG mechanisms on FV. Chapter Seven presented the theoretical foundations of the association between DQ, CG mechanisms and FV. Chapter Eight empirically investigated such associations. Results suggested that in a UK context, DQ enjoys a substitutive relationship with audit committee independence and firm size and a complementary association with board independence in relation to firm value. Overall, this research introduced the first empirical evidence regarding what CG mechanisms – prevailing in the UK – influence disclosure quality, and which of these mechanisms influence FV.

Contributions

The current research contributes to the extant disclosure literature along various channels. Mainly three types of contributions could be distinguished. These are contribution to knowledge, methodological contribution and contribution to the theory. The following paragraphs discuss each contribution.

Firstly, regarding contribution to knowledge, the underlying research responds to continuous and recent research calls (e.g. Beyer et al., 2010; Berger, 2011) for developing a sound measure for disclosure quality. In doing this, the current research extends prior work done in developing a valid measure for disclosure quality. Thus, it improves prior attempts for developing a measure of disclosure quality through overcoming current limitations in those attempts. There are three remarkable attempts in the relevant literature.

The first pioneering attempt is presented by Beattie et al. (2004). The authors use multiple dimensions to define disclosure quality. The second attempt to develop a disclosure quality measure is developed by Beretta and Bozzolan (2004a). They propose a framework for analysing firms' risk communication processes. Beretta and Bozzolan (2008) introduce the third framework for measuring disclosure quality, where they refined their prior risk framework.

In sum, prior attempts to develop a measure for disclosure quality represent a major step forward in the construction of a valid measure. However, the three afore-mentioned attempts have some limitations. First, there is no clear definition for the concept of disclosure quality. Second, there is no justification for the assumption that disclosure quality is a function of the stated disclosure quality dimensions. Thus, Botosan (2004) argues that any measure for disclosure quality should start with a well-supported and convincing discussion of the information dimensions proposed by a regulatory framework. Third, some of these measures are restricted to one type of disclosure (i.e. risk disclosure in Beretta and Bozzolan, 2004a, and forward-looking disclosure in Beretta and Bozzolan, 2008).

Accordingly, the first contribution of the underlying research is developing a proposed measure of DQ that mitigates existing limitations. This research is distinguished from prior work in that it responds to Botosan's (2004) argument that any measure for DQ should start with well-supported information dimensions proposed by a regulatory framework. Therefore, the proposed DQ measure is mainly based on the qualitative dimensions of information issued by the Accounting Standards Board (ASB, 2006), which aims to enhance the usefulness of information to stakeholders.

As a second contribution, the current research adds to the disclosure literature by developing a highly reliable computerised content analysis approach. Arguably, current attempts to develop a computerised approach for content analysis do suffer some weaknesses (Berger, 2011). The most common limitation is the use of ready-made language processing software (e.g. Kothari et al., 2009; and Li, 2010a). The ability of such general dictionary software to analyse the special corporate filling language is, however, questionable (Berger, 2011). Therefore, the underlying study uses a customised approach for content analysis. The second limitation in similar studies is that reliability is not considered (e.g. Grünin (2011) introduces an artificial intelligence measurement of disclosure (AIMD) but its reliability is not examined).

A prior attempt was Hussainey et al. (2003) who developed a customised forward-looking keywords list. However, Hussainey et al.'s approach had some limitations. The most important is that it is able to correctly capture only 55% of what they could have captured if the narratives are manually analysed. Additionally, the keywords list was only for the forward-looking context.

Accordingly, the current study further improves Hussainey et al.'s (2003) approach. Through employing a more conservative approach in constructing the customised forward-looking keywords list, the developed forward-looking list captures 95.3% of forward-looking disclosures, compared to Hussainey et al.'s (2003) 55%.

In an attempt to eliminate the manual coding to the minimum, the current research introduces five keyword lists relevant to the OFR disclosure context. These lists are: forward-looking, quantitative, good news, bad news, and scope. Each of these keywords lists is examined for reliability. Regarding the overall reliability of the suggested computerised approach, the

correlation between manual and computerised content analysis shows a strong association of is 98.5%.

Importantly, as a third contribution, the underlying research has some reflection as to agency theory, which is used as the main platform in explaining the association among DQ, CG mechanisms and FV. The first sub-contribution is related to the association between CG and DQ, and the second sub-contribution is related to the association between the joint effect of DQ and CG mechanisms on FV.

The nature of an agency relationship is defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling, 1976, p. 308). Agency theory models the relationship between the principal and agent. Jensen and Meckling (1976) establish that managers have advantages over shareholders by virtue of having access to information not available to other users (i.e. information asymmetry problem). Consequently, any mechanism intended to narrow the information asymmetry gap is profound to the success of the financial market (Ronen and Yaari, 2002), of these mechanisms, CG and DQ.

As contended earlier in chapter One, Section 1.6.3, agency theory is heavily used in explaining motivations for disclosure (Lang and Lundholm, 1993). Agency theory suggests that corporate governance induces managers to provide high quality disclosure to mitigate the information asymmetry problem. In this sense, disclosure should help investors to better evaluate the decision-making process, and restores market confidence (Healy and Palepu, 2001). This association is tested in the second study (chapters Five & Six). Results are mixed

with regard to which CG mechanism is associated with DQ, either worldwide or at the UK level.

In relation to the first sub-contribution to the theory, regression analysis confirms the agency theory viewpoint regarding the association between three CG mechanisms and the DQ of OFR section of the UK FTSE 350 non-financial firms. These are: leadership structure, audit committee meeting frequency and audit firm size.

As to the leadership structure, based on the agency theory, the combined functions of both the chairman and the Chief Executive Officer can significantly impair boards' pivotal monitoring and controlling functions (Cerbioni and Parbonetti, 2007; Donnelly and Mulcahy, 2008). While prior literature does not provide conclusive evidence on this, the current study confirms the theory underpinning the association between leadership structure and disclosure quality. The combined roles of both the chairman and the Chief Executive Officer are negatively associated with disclosure quality. Nonetheless, results should be taken with caution because there are few observations exhibiting duality in the Chairman and CEO roles.

The second CG mechanism, which is associated with DQ, is audit committee meeting frequency. From an agency perspective, for effective disclosure decisions, boards need to devote a significant amount of time and resources (Laksamana, 2008). Results reinforced this agency view and reported a positive association between audit committee meeting frequency and DQ.

The third CG mechanism correlated with DQ is audit firm size. Arguably, big audit firms might influence firms to provide more information to increase the perceived audit quality of the annual reports as a whole (Archambault and Archambault, 2003). Therefore, from an agency perspective, audit firm size can mitigate the information asymmetry problem by

providing high quality disclosure. Moreover, big audit firms have more resources than smaller firms; these resources enable them to allocate many more resources to the training and development of the auditors, which in turn promotes the audit quality (Nekhili et al., 2010). Results support this notion and a positive association between audit firm size and DQ is documented.

The second sub-contribution to the theory is related to the association between DQ, CG mechanism and FV. Agenic theory frames the association between disclosure quality, corporate governance, and firm value (Dhaliwal et al., 2011). Beyer et al. (2010) argue that the valuation role of accounting information permits capital providers to evaluate the return potential of a certain investment opportunity. In addition, better information environments are associated with higher market valuation (Lang et al., 2004). High-quality disclosure is regarded as one of the most influential CG mechanisms (Black et al., 2006; Cheung et al., 2010; and Sheu et al. 2010). Overall, disclosure is presumed to contain value-relevant information (Al-Najjar et al., 2011) and consequently affects FV (Haggard et al., 2008).

Similarly, agency theory assumes that corporate governance increases returns to shareholders via reducing transaction and agency costs (Hooper et al., 2009). In addition, better governed firms have higher firm value (Gompers et al., 2003). While theoretically such association is clear however, the literature provides inconclusive evidence.

The third study (chapters Six & Seven) provides explanation for the agency theory. Results confirm the agency view that high quality disclosure helps investors to accurately evaluate firms. Additionally, results show that managerial ownership and the presence of accounting expertise in the audit committee works as effective corporate governance mechanisms, and both mechanisms contain value relevant information which investors use in valuing firms.

Results support the theory that when managers have a high ownership percentage in the firm, their interests will be consistent with those of the investors. In this case, investors will have more confidence and give high value to these firms.

Interestingly, results also document a complementary effect between disclosure quality and managerial ownership in high quality disclosure firms. This suggests that both disclosure quality and managerial ownership contain value-relevant information that affects market value.

The second governance mechanism that affects firm value is the presence of accounting expertise in the audit committee. This variable is not previously tested in the literature investigating the association between disclosure quality, corporate governance, and firm value. The results suggest that investors value firms, which have accounting expertise in their audit committee more than firms that do not have such expertise in their audit committee.

Notably, few CG mechanisms were empirically found associated with either DQ or FV. Having said that, the literature shows that this is very common. This could be justified in three different ways. First; research that takes the endogenous relationship into account finds at best only weak support for an association between CG and different dependent variables (see for example Brown et al., 2011). Second; the rigid nature of CG that typically change slowly from year to year does not allow for capturing a significant association over short-term. Third, with high levels of legal protection in UK, it is less likely to have many CG mechanisms influencing FV (La Porta et al., 2002; Klapper and Love, 2004; Dahya et al., 2008, Bebchuk and Weisbach, 2010; and Braga-Alves and Shastri, 2011).

In terms of the adequacy of the agency theory as a platform for investigating the various relationships in this research, correlation analysis showed that all governance mechanisms are in line with agency theory, with no contradictory results. Therefore, agency theory remains the best theory to provide explanation regarding DQ and CG.

Implications

The present research serves the interest of many groups and has several essential implications. At the academic and research level, many implications are noticeable. Firstly, developing a novel and valid DQ measure evokes the possibility of re-shaping some unsettled disclosure inter-relationships, because using different proxies is most likely to provide spurious conclusions. Therefore, this study opens avenues for re-examining disclosure relationships, especially in research areas that do not have persuasive conclusions.

Secondly, the present study successfully develops five highly reliable keyword lists pertaining to narrative reporting (forward-looking, quantitative, bad news, good news and scope), which allows for the computerisation of the content analysis. Importantly, the study provides an innovative measure for evaluating the balance of disclosure tone. This is hoped to promote the efficiency of the related research areas with a low-cost, time-saving approach. Moreover, this would help in undertaking large-scale studies and hence, derive more reliable results than previous findings based on small-sample, manual analysis studies.

Thirdly, this research has implications pertaining to three research streams (i.e. DQ, CG and FV). The extant literature suffers from mixed and contradictory results on the determinants of DQ, as well as on the association between DQ, CG mechanisms, and FV. Through using a reliable measure for DQ and using a wide proxy for CG, the current study provides explanations for such mixed results.

Additionally, many policy implications are emphasised through this study. Firstly, having reported the influential role of DQ on the market, this study provides empirical support for the views put forth by The ASB and The IASB that investors pay special attention to the quality of disclosure provided. Secondly, the study provides in-depth empirical feedback on the practical implementation of a multidimensional quality concept. The results highlight the difficulty imbedded in OFR statements in the UK. The ASB is advised to highlight to firms the preference of having easily readable disclosures. Additionally, findings reveal that UK firms tend to be biased against bad news disclosure. Such findings are of interest to policy-makers in the UK in general. Thirdly, with the new DQ score, policy-makers could measure the applicability of their guidance and accordingly make informative decisions to promote current reporting standards or induce new modifications. Fourthly, results show deficiencies in some principles in the UK governance code that need modification in order to improve the overall governance structure of firms.

Finally, the computerised approach for scoring disclosure quality facilitates the evaluation process of the narratives' (i.e. OFR) reporting quality. This improves the efficiency of analysts' work and enables other stakeholders, for example creditors, to easily evaluate the disclosure practices of different firms.

9.4   Research Limitations

As is the case with any research, the current research has some limitations. Firstly, it is focused on large firms. Small firms might have different disclosure patterns, and thus results of this study might be inapplicable to small firms. For example, small firms might not find it economically beneficial to provide disclosure at high quality. Consequently, those firms might

use firm level CG mechanisms different from those employed by large firms to mitigate agency conflicts and consequently influence FV.

Secondly, while the present study uses a comprehensive set of 14 CG mechanisms, it focuses only on CG from an accounting perspective. The CG from a finance perspective (for example, different compensation related research strands, including level and structure of executives' compensations) is beyond the scope of the current research.

Thirdly, some data items are few and thus, results related to those items should be interpreted with caution. This is audit firm size. Firms in the sample are big firms (FTSE 350), and therefore big firms are more likely to have resources to higher big audit firms. However, it was necessary to include this variable in the research because it is extensively investigated in the related literature without any clear evidence provided. Additionally, one approach through which the current research mitigates the endogeneity problem is by testing a wide set of CG mechanisms.

The fourth limitation is related to the KPI's calculation. Two information elements about KPIs are not evaluated due to their inapplicability and assessment difficulty. There are cost and time constraints surrounding these two elements. This requires extensive manual coding and such extensive manual coding would hinder the applicability of this research, at either the academic level, or the practical level. When the researcher compares the benefits and limitations of extensive manual coding, as discussed earlier in chapter Three, the limitations outweigh the benefits.

Finally, the researcher investigates the usefulness of DQ through an economic measure (i.e. Tobin's Q) through a quantitative approach. An alternative approach would be to utilise a qualitative approach. A questionnaire could be used to determine what the quality dimensions

are that investors use in valuing firms. Another questionnaire could be distributed to financial analysts to identify their view on which quality dimensions they use in valuing firms. The qualitative approach gives a practical view of which quality dimensions users of the disclosure statements (i.e. investors and financial analysts) utilise in valuing firms. However, this research by itself will entail a high degree of subjectivity and its generalisability is doubtful. Therefore, the best approach would be to supplement the underlying research by a qualitative approach. This is an interesting point that could be covered in future research.

9.5 Suggestions for Future Research

The current study opens various research avenues. Firstly, the newly-developed DQ measure offers a promising research area where researchers could re-investigate research questions previously tested through different quality proxies (for example, the association between disclosure quality and cost of capital; and informativeness of stock prices).

Secondly, while FV is one indicator of investors' perceptions of information content, it would be interesting to investigate other models that consider investor reaction, such as the event study method. This will help in examining the investors' reaction around the date of releasing annual reports to users. Other models, such as the return-earnings association models, will help in examining the degree to which DQ increases the investors' ability to better anticipate future earnings changes.

Thirdly, the present study focuses on the overall quality score because, based on the literature, and confirmed by the empirical findings, stakeholders are interested in the overall quality of disclosure. However, from another angle – perhaps from policy-makers' and professional bodies' perspectives – it would be interesting to analyse how individual quality dimensions are related with specific firm characteristics. This is a wide area of research, with many

research questions that could be examined; for example, one research strand would be when firms are usually biased towards good or bad news. This could be linked with many variables, including firm characteristics such as profitability and liquidity. Another link could be addressed through examining whether the tone of voluntarily disclosed information is related to the type of auditor report. Similarly, one can investigate circumstances where firms provide disclosure that is comprehensive, future-oriented, comparable, and so on.

Fourthly, at the time of starting this research, only one guide for disclosure quality had been issued (ASB, 2006); consequently, the study is UK-focused. On December 2010, The IASB issued a similar guidance statement (Management Commentary, 2010), which interestingly has almost the same quality dimension as the OFR statement. Accordingly, the present study's proposed quality measure is applicable to firms using Management Commentary. Consequently, with the possibility of worldwide generalisation of the proposed quality measure, a new research avenue is to replicate the present study into the context of different countries and identify how governance mechanisms differ across these countries.

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APPENDIX 1: Examples on KPIs' Calculation

Consider the following examples on the calculation of KPIs:

Cent (2009)

This firm provides the maximum expected information about KPIs. These are: source of data, purpose, description, a comparison with the previous year, and the target. See the following information provided for adjusted basic earnings per share (EPS):

KPI	Source	Purpose	Description	Result	Target
Adjusted basic earnings per share (EPS)	The measure of adjusted basic EPS is reported in note 14 of the audited Financial Statements.	EPS is an industry standard determining corporate profitability for shareholders. This measure is used as one of the performance conditions in the Long Term Incentive Scheme, outlined on pages 50 and 51.	This measure of performance is calculated as profit before other costs and depreciation of fair value uplifts to property, plant and equipment from Strategic Investments and exceptional items and certain re-measurements for the year, attributable to equity shareholders of the parent company, divided by the weighted average number of shares in issue during the year.	In 2009 EPS remained unchanged at 21.7 pence despite a 22% increase in the average number of shares in issue. 2007 was an exceptional year as a result of favourable commodity prices experienced in the first half of 2007 which drove profitability in the residential supply business	To deliver growth in adjusted EPS over a three-year period.

Accordingly, the score is 5/5 = 1

Below are examples for firms providing only four information items about each KPI

Anglo American (2006)

The maximum information this firm provides about KPIs is four information items. These are: purpose, description, a comparison with the previous year, and the target. Below is one example of a KPI for which the company provides the four information items.

KPI	Purpose	Description	Results	targets (if applicable)
Lost time injury frequency rate (LTIFR)	**Measuring Safety**	The number of lost time injuries (LTIs) per 200,000 hours worked. An LTI is an occupational injury which renders the person unable to perform his/her duties for one full shift or more the day following the one on which the injury was incurred, whether a scheduled work day or not.	2006: 1.16 2005: 0.94	2007 target: 0.94

Accordingly, the score is 4/5 = 0.8

Compas (2007)

The maximum information this firm provides about KPIs is four information items. These are: purpose, a comparison with the previous year, and the target. Below is one example of a KPI for which Compas (2007) provides the four information items.

Purpose	Result	Target
Measuring energy efficiency	Energy consumption (gas & electricity) of our corporate offices of our 'Top Ten' countries was reduced by 3% against a baseline of 2007-2008	3% reduction against 2008-2009 baseline

Accordingly, the score is 4/5 = 0.8

Below are examples for firms providing only three information items about each KPI

BG (2008)

The maximum information this firm provides about KPIs is three information items. These are: purpose, description, and a comparison with the previous year. Below is one example of a KPI for which the company provides the four information items.

Purpose	KPI	Description	Results
BG Group believes that measuring its TSR performance relative to that of its industry peers provides a more meaningful indicator of shareholder return. It is also used to determine vesting levels under the Group's long-term incentive plans.	Total shareholder return (TSR)	Total shareholder return (TSR) is defined as the return on investment obtained from holding BG Group shares over a period of time. It includes dividends paid, the change in capital value of the shares and any other payments to or by shareholders. The absolute level of TSR varies with stock market performance, commodity price changes and other extraneous factors.	The graph shows the annualised US Dollar TSR of BG Group shares over a three year performance period and the corresponding average TSR of its industry peer group over the same period. For the three year performance period ending 1 September 2008, BG Group was ranked first within its peer group, reflecting BG Group's continuing delivery of its key strategic aims.

Accordingly, the score is 3/5 = 0.6

SIG (2009)

The maximum information this firm provides about KPIs is three information items. These are: purpose, description, and a comparison with the previous year. Below is one example of a KPI for which the company provides the three information items.

KPI	Purpose	Description	Results
Like for Like Sales Growth	The measure reflects the underlying sales growth in the business which typically arises from increased sales volumes to both new and existing customers, product price inflation and selling new products through the existing infrastructure. The growth is supported by investment in new Brownfield trading site openings and trading site relocations into larger premises with additional stockholding capability. Maintaining positive like-for-like growth in every business is a key target by which every business is measured and is a key component of being able to drive profit growth.	Like-for-like sales growth is defined as the percentage growth/(decline) in the sales of the Group excluding the impact of current year and prior year acquisitions. Given the significant exchange rate volatility in recent years, the percentage is calculated on a constant currency basis to provide a realistic understanding as to underlying performance.	Like-for-like sales growth rates/(rates of decline) on a constant currency basis are set out below:

Accordingly, the score is 3/5 = 0.6

Note:

The above examples are selected randomly by the supervisor.

APPENDIX 2: Examples on Calculating the Aggregated Quality Score

The following examples elaborate how the aggregated score is calculated:

$$QUALITY = \% \ FLQ + \% \ FL + \% \ QUAL + SPREAD + \% \ BGL + KPIs + 30/LIX$$

Refer to Table (3.14) for the descriptive statistics for the overall quality score and the individual quality dimensions. Below are three examples for calculating the score. The first example shows a very low quality score (eleventh lowest firm). The second example presents a below average quality. The third firm displays the highest quality score).

Example 1: Seve (2006)

Forward-Looking Quantitative Percentage	Forward-Looking Percentage	Qualitative percentage	Spread	Balance	KPIs	Readability (30/LIX)	Total Score
0.390	0.193	0.494	0.867	0.27	0	0.51	**2.724**

This is the eleventh lowest firm in disclosure quality. The total quality score attained= 2.724. This score is the submission of the above seven measures; the details of the calculations are explained below.

Forward-Looking Quantitative (FLQ): *(Forward-Looking Orientation)* = **0.390**

The frequency of forward-looking quantitative sentences **(34)** scaled by the frequency of forward-looking sentences **(87)**

Forward-Looking (FL): *(Relevance)* = **0.193**

The frequency of forward-looking sentences **(87)** divided by the total number of sentences **(451)**.

Qualitative Percentage (QUAL): *(supplement the financial statement)* = **0.494**

The frequency of qualitative sentences **(223)** divided by the total number of sentences **(451)**.

Where; Qualitative sentences = total number of sentences - number quantitative sentences
451-228 = 223

Spread: *(Comprehensiveness)* = **0.867**

The number of topics addressed in the OFR statement **(13)** divided by **(15)**

The breakdown of the spread:

Objective: 1, Strategy: 1, Market: 1, Competition: 1, Regulation: 1, Capital Structure: Zero, Present Performance: 1, Resources: 1,Commercial Risk: Zero, Financial Risk

1, Relations: 1, Accounting policy: 1, Treasury: 1, Financial Instruments: 1, Liquidity: 1, Total: 13.

BGL *(Balance and Neutrality):* **0.27**

Number of bad news **sentences (18)** over number of good news sentences **(144) =0.125.**

The percentage of bad to good news for the industry leader = **0.46, and** therefore, Seve's balance dimension is 0.125/ 0. 46 = **0.27**

30/ LIX *(Readability)* = 30/58 = **0.051**

KPIs *(Comparability)* = None of the 5 items about KPIs are disclosed, 0/5 = 0

Notable, the score is not driven by the spread dimension. In the above example, although the firm (Seve) has a high spread score of 0.867, it is the eleventh lowest firm in the overall disclosure quality. If the spread was the driver of the score, this firm would have been assigned a high score.

Example 2: First (2009)

Forward-Looking Quantitative Percentage	Forward-Looking Percentage	Qualitative percentage	Spread	Balance	KPIs	Readability (30/LIX)	Total Score
0.339	0.195	0. 519	0.733	0.57	0	0.53	**2.886**

This is a below average disclosure quality firm (the average quality score = 3.13). The total quality score attained= 2.374. This score is the submission of the above seven measures; the details of the calculations are explained below.

Forward-Looking Quantitative (FLQ): *(Forward-Looking Orientation)* = **0.339**

The frequency of forward-looking quantitative sentences **(40)** scaled by the frequency of forward-looking sentences **(118)**

Forward-Looking (FL): *(Relevance)* = **0.195**

The frequency of forward-looking sentences **(118)** divided by the total number of sentences **(605)**

Qualitative Percentage (QUAL): *(supplement the financial statement)* = **0.519**

The frequency of qualitative sentences **(314)** divided by the total number of sentences **(605)**

Where; Qualitative sentences = total number of sentences – number quantitative sentences
$$605\text{-}291 = 314$$

Spread: *(Comprehensiveness)* = **0.733**

The number of topics addressed in the OFR statement **(11)** divided by **(15)**

The breakdown of the spread:

Objective: 1, Strategy: 1, Market: 1, Competition: Zero, Regulation: 1, Capital Structure: Zero, Present Performance: 1, Resources: 1, Commercial Risk: Zero, Financial Risk: 1, Relations: 1, Accounting policy: Zero, Treasury: 1, Financial Instruments: 1, Liquidity: 1. Total = 11.

BGL *(Balance and Neutrality):* **0.57**

Number of bad news **sentences (39)** over number of good news sentences **(179)** =**0.218.**

The percentage of bad to good news for the industry leader = **0.38, and** therefore, First balance dimension is 0.218/ 0.38 = **0.**57

KPIs *(Comparability)* = 0/5= 0

30/ LIX *(Readability)* = 1/57 = **0.53**

Example 3: Cent (2008):

Forward-Looking Quantitative Percentage	Forward-Looking Percentage	Qualitative percentage	Spread	Balance	KPIs	Readability (30/LIX)	Total Score
0.358	0.184	0.563	0.867	1	1	0.652	**4.624**

This is the highest firm in disclosure quality. The quality score = 3.988. As observed from the above table, the firm is achieving high scores in almost every quality dimension.

Forward-Looking Quantitative (FLQ): *(Forward-Looking Orientation)* = **0.358**

The frequency of forward-looking quantitative sentences **(43)** scaled by the frequency of forward-looking sentences **(120)**

Forward-Looking (FL): *(Relevance)* = **0.184**

The frequency of forward-looking sentences **(120)** divided by the total number of sentences **(652)**

Qualitative Percentage (QUAL): *(supplement the financial statement)* = **0.563**

The frequency of qualitative sentences **(367)** divided by the total number of sentences **(652)**

Where; Qualitative sentences = total number of sentences − number quantitative sentences
652-285 = 367

Spread: *(Comprehensiveness)* = **0.867**

The number of topics addressed in the OFR statement **(13)** divided by **(15)**

The breakdown of the spread:

Objective: 1, Strategy: 1, Market: 1, Competition: 1, Regulation 1, Capital Structure: Zero, Present Performance: 1, Resources: 1, Commercial Risk: Zero, Financial Risk: 1, Accounting policy: 1, Treasury: 1, Financial Instruments: 1, Liquidity: 1, Total = 13.

BGL *(Balance and Neutrality):* **1**

Number of bad news sentences **(92)** over number of good news sentences **(148)** =**0.**622

Since Cent is the industry leader therefore, Cent's balance dimension equals to 1.

KPIs *(Comparability)* = 5 (numbers of items disclosed)/5 = 1

30/ LIX *(Readability)* = 30/46 = **0.652**

APPENDIX 3 : Constructing Forward-looking Keyword List

Examples of doubtful forward-looking keywords accompanied by other forward-looking keyword(s)

Looking ahead, 2007 production *is expected* to move well ahead of 2006 levels and the company *remains* on target to increase production capacity to 40,000 hoped by the end of the year (Dana – OFR, 2006).

Shell *expects* to be able to *renew* or increase these facilities on commercially acceptable terms (Royal – OFR, 2007).

Should either the first option or the second option not be exercised, all or some of these later payments *will* be expensed immediately (Astrazeneca – OFR, 2007).

Globally, new additions to industry capacity coupled with the *prospect* of suppressed economic growth *are expected* to put continued downward (Royal – OFR, 2008).

There has been significant government *investment* to provide longer platforms, which *will* enable ATW to run longer trains at some time in the *future* (Arriva – OFR, 2007)

APPENDIX 4: Constructing Bad News Keyword List

An example of words that are generally perceived as bad news keywords when in fact they are not is the word "weak". Weak comes in a bad news context only in 55% of the sentences. The following example illustrates this:

> Significant bus and train tender contracts are compared with current experience to identify
>
> *weaknesses* and potential improvements in the tender process (Arriva – OFR, 2007).

This sentence is not a bad news one; rather; it is a good news sentence indicating that the company is taking action to maintain its competitive position.

The reliability result shows that "below" denotes a bad news context only in 14% of the sentences. By observation, the word "below" is usually used to summarise figures, introduce a table, and so on. Even if it is not used in this manner, it still does not primarily come in a bad news context. The following examples clarify this point:

> In calculating the net present value of the future cash flows, certain assumptions are required to be
>
> made in respect of highly uncertain matters, as noted *below* (Vodafone – OFR, 2007).

> Operating profit increased 17% at constant exchange rates and the margin increased 2.4
>
> percentage points, reflecting SG&A growth *below* the rate of turnover growth (Glaxosmithkline
>
> – OFR, 2006).

The word "poor" is used by oil firms as the name of a debt rating agency. The next two examples demonstrate this fact:

> The Group's current long-term credit rating is A1 by Moody's and AA- by Standard and *Poor*'s,
>
> both with a stable outlook (Astrazeneca – OFR, 2008).

> On September 1, 2008, Standard and *Poor*'s Ratings Services (S&P) raised its corporate
>
> credit rating for Royal Dutch Shell Plc and its related subsidiaries to AA+ stable outlook from
>
> AA positive outlook (Royal – OFR, 2008).

Although "hard" is considered a bad news keyword by Hussainy and Walker (2008), it often comes in a good news context in OFR statements. The following example highlights this observation:

> We will be working hard to ensure our operations make the most of this passenger growth and will be looking to expand our bus operations and build upon our rail presence in Sweden (Arriva – OFR, 2008).

The remaining examples support the previously discussed facts:

> To help reverse this problem, Sainsbury's is funding an exclusive project aimed at boosting bumblebee numbers by as much as 600 per cent. If our strategy follows the *wrong* direction or is not effectively communicated then the business may suffer (Sainsbury's – OFR, 2008).

> We have clear processes for *crisis* management, pulling together expert teams should we need to respond quickly on issues (Tesco – OFR, 2007).

APPENDIX 5 : Constructing Good News Keyword List

Increase is an example of a word that is usually recognised as a good news keyword. Similar to decrease, "increase" could be good as well as bad depending on the object being increased. This would justify why it comes in a good news context in only 46.6% of the cases. See the following examples, where in the first one "increase" comes in a neutral context, while in the second, it comes in a bad news context.

> Higher demand goes hand in hand with **_increasing_** passenger expectations for safe, reliable and timely services (Arriva – OFR, 2007).

> Recent insurance loss experience, including pharmaceutical product liability exposures, has **_increased_** the cost of, and narrowed the coverage afforded by, insurance for pharmaceutical companies in general including the group (Glaxosmithkline – OFR, 2008).

The word "above" is normally used to refer to tables, pages, and so on.

> For more details for the **_above_** three items, see the Financial Review page 30 (Arriva – OFR,

The next examples present three more words that are not considered as good news keywords in the OFR context:

> We aim to become a truly global software-driven services company, with a **_great_** global brand, helping our customers get the best from globalisation (BT Group – OFR, 2007).

> This is not a **_desirable_** outcome given the projected demand/supply tension still predicted early in the next decade (Dana – OFR, 2008).

> The **_significant_** impact from the impairment of 89.5 million means that the group has reported an operating loss from operations of 70.1 million (Kcom Group – OFR, 2006).

The first example illustrates a sentence where "great" comes in a positive rather than a good news context. In the second example "desirable" is preceded by "not", which converts it into a bad news sentence. The third sentence represents an example where "significant" is associated with a bad news context

APPENDIX 6 : Studies Investigating the Association between Disclosure and Corporate Governance

Study	Sample Size and Type	Country	Disclosure Type	Proxy for DQ (Dependent Variable)	Independent Variable(s)	Methodology	Results	Limitations
Ho and Wong (2001)	98 firms for the year 1997.	China	Overall	Self-constructed voluntary disclosure index.	1. Board composition. 2. Leadership structure. 3. Existence of audit committee. 4. Percentage of family members.	1. Questionnaire for 610 firms' chief financial officers, and 535 financial analysts to identify the existence of the audit committee. 2. Traditional content analysis. 3. Ordinary Least Squares (OLS) regression.	1. Board composition (?). 2. Leadership structure (?). 3. Existence of audit committee (+). 4. Percentage of family members (-).	1. The short analysis period. 2. More disclosed information does not necessarily imply disclosure quality. 3. Weighting the disclosure based on the analysts' viewpoints which may imply subjective judgement.
Anderson et al. (2004)	1,241firms during 2001.	US	NA	Informativeness of earnings.	1. Board size. 2. Board composition. 3. Meeting frequency. 4. Leadership structure. 5. Independence of audit committee members. 6. Meeting frequency. 7. Audit committee size.	Ordinary Least Squares (OLS) regression.	1. Board size (?). 2. Board composition (+). 3. Meeting frequency (+). 4. Leadership structure (-) 5. Independence of audit committee members (+). 6. Meeting frequency (+). 7. Audit committee size (-).	1. The short analysis period of one year. 2. Examining only two sets of corporate governance elements.
Evans (2004)	513 firms for the year 2001.	US	Corporate	Modified Botosan's (1997) disclosure index.	1. Board size. 2. Board composition. 3. Audit committee independence. 4. Leadership structure. 5. Managerial ownership. 6. Institutional ownership.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board size (?). 2. Board composition (?). 3. Audit committee independence (?). 4. Leadership structure (?). 5. Managerial ownership (?). 6. Institutional ownership (?).	1. One year analysis period. 2. No clear justification is mentioned for the results which ultimately contradict all previous literature. 3. Claiming the use of the quality of disclosure as the dependent variable, while it is a quantity-based proxy.
Willekens et al. (2005)	70 firms for the year 2001.	Belgium	Corporate	A balanced-scorecard disclosure index.	1. Board composition. 2. Big audit firms. 3. Internal audit department. 4. Board size. 5. Existence of audit committee.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board composition (+). 2. Big audit firms (+). 3. Internal audit department (+). 4. Board size (?). 5. Existence of audit committee (?).	1. Limited analysis period. 2. Using quantity based score as a proxy for disclosure quality.

Frankel et al. (2006)	75,875 firm-quarter observations from 1988 to 2002.	US	NA	Street earnings as an example of voluntary disclosure but represented by street exclusions. Where: Street Exclusions = Street Earnings – GAAP Earnings.	1. Board composition.	Logistical regression analysis.	1. Board composition (-).	1. Using IBES database which is based on analyst forecasts as a proxy for firm's disclosure on Wall Street Journal. Usually analysts' forecasts are a highly subjective way of determining disclosure.
Karamanou and Vafeas (2005)	1,274 firm years for the year 2000.	US	NA	Management earning forecasts	1. Board independence. 2. Board size. 3. Meeting frequency. 4. Institutional ownership. 5. Managerial ownership. 6. Audit committee size. 7. Audit committee independence. 8. Audit committee financial expertise. 9. Audit committee meeting frequency.	Logistical regression analysis.	1. Board independence (-). 2. Board size (?). 3. Meeting frequency (?). 4. Institutional ownership (+). 5. Managerial ownership (-). 6. Audit committee size (-). 7. Audit committee independence (?). 8. Audit committee financial expertise (-). 9. Audit committee meeting frequency (?).	1. Limited investigation period of one year. 2. Indirect measure of disclosure quality.
Lakhal (2005)	207 firms from 1998 to 2001.	France		Earnings disclosure.	1. Board composition. 2. Board size. 3. Board leadership structure. 4. Institutional ownership. 5. Foreign institutional ownership. 6. Stock option compensation.	1. Traditional analysis of number of voluntary earning-disclosure. 2. Logistical regression analysis.	1. Board composition (?). 2. Board size (?). 3. Board leadership structure (-). 4. Institutional ownership (-). 5. Foreign institutional ownership (+). 6. Stock option compensation (+).	The main limitation is the method used for measuring disclosure, giving 1 for firms having at least 1 disclosure and zero otherwise, this biases the results.
Mangena and Pike (2005)	262 firms for the period 2001-2002.	UK	Corporate interim reporting	Self-constructed weighted and un-weighted disclosure scores.	1. Shareholding of audit committee. 2. Financial expertise. 3. Size of audit committee. 4. Board composition. 5. Ownership structure.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Shareholding of audit committee (-). 2. Financial expertise (+). 3. Size of audit committee (?). 4. Board composition (?). 5. Institutional ownership (+).	1. Limited time span may bias the results. 2. Possibility of omitted variables in the regression model. 3. Analysis of interim reports only rather than the annual reports.

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Barako et al. (2006)	34 firms analysed from 1992 -2001.	Kenya	Corporate	Self-constructed disclosure score.	1. Governance attributes (board size, composition, leadership structure, audit committee). 2. Ownership structure (shareholder concentration, foreign ownership, institutional ownership).	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Audit committee (+). 2. Board size (+). 3. Board composition (-). (Unlike most studies.) 4. Leadership structure (?). 5. The foreign ownership (+). 6. Institutional Ownership (+). 7. Ownership dispersion (+).	1. The study uses annual reports for constructing information; other sources such as internet, business press, etc. are not analysed. 2. The sample size is too small for generalisation.
Beekes and Brown (2006)	250 firms for the year 2002.	Australia		1. Frequency of disclosure. 2. Timeliness of share price reflection on the net effect of value relevant information. 3. Analysts' earnings forecasts.	Corporate governance quality.	1. Using Horwath Report which ranks the Australian top 250 firms depending on the fulfilment of the "Principles of Good Corporate Governance and Best Practice" report of ASX's. 2. Disclosure frequency tested by number of documents submitted to the ASX's. 3. Ordinary Least Squares (OLS) regression.	1. Frequency of disclosure (+). 2. Timeliness of share price reflection on the net effect of value relevant information (+). 3. Analysts' Earnings Forecasts (+).	1. It is not obvious which elements of corporate governance strongly affect disclosure. 2. Disclosure informativeness is being tested by counting the number of documents submitted without analysing the content of such documents, since the number does not represent the quality of the content.
Brammer and Pavelin (2006)	447 firms for the year 2000.	UK	Environmental	Disclosure index based on PIRC Environmental Reporting (2000).	1. Board independence. 2. Ownership concentration.	1. Traditional content analysis. 2. Probit estimation model.	1. Board independence (?). 2. Ownership concentration (-).	1. Limited analysis period. 2. One type of disclosure (environmental). 3. One quality dimension (occurrence).
Celik et al. (2006)	233 firms for the year 2004.	Turkey	Corporate	1. Number of sentences reflecting forward-looking voluntary disclosure. 2. Number of sentences reflecting financial forward-looking voluntary disclosure.	1. Ownership diffusion. 2. Foreign investment. 3. Institutional investors. .	1. Traditional content analysis for disclosure. 2. Ordinary Least Squares (OLS) regression.	**1. Total forward-looking voluntary disclosure:** 1. Ownership diffusion (-). 2. Foreign investment. (-). 3. Institutional investors (-). **Financial forward-looking voluntary disclosure:** 1. Ownership diffusion (-). 2. Foreign investment. (-). 3. Institutional investors (?).	1. The researchers didn't provide explanations for the different impact of independent variables in the two models. 2. The analysis period is limited to only one year. 3. Examines only one aspect of corporate governance (ownership structure).

Cheng and Courtenay (2006)	115 firms for 2000.	Singapore	Corporate	Luo at al.'s (2006) disclosure index.	1. Board independence. 2. Board size. 3. Leadership structure.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board independence (+). 2. Board size (?) 3. Leadership structure (?)	1. One dimension of quality (occurrence). 2. Small sample size and a limited analysis period of one year.
Abraham and Cox (2007)	71 firms for the year 2002.	UK	Risk	Number of sentences reflecting risk disclosure.	1. Board composition. 2. Institutional ownership.	1. Traditional content analysis. 2. Logistical regression analysis.	1. Board composition (+). 2. Institutional ownership (+).	1. Testing risk information disclosed in annual reports only. 2. Short time analysis of one year. 3. Measuring disclosure quantity.
Aljifri and Hussainey (2007)	46 firms for 2004.	UAE	Corporate	The percentage of FL information.	1. Auditor size.	1. Computerised content analysis. 2. Backward cross sectional regression (OLS regression).	1. Auditor size (?).	1. Examining information in the annual reports only without looking at other channels of disclosure. 2. Considering the auditor firm size as one firm characteristic although it is generally used as a corporate governance element since the issuance of corporate governance principles. 3. Examining the firm characteristics by itself isn't enough as the most important point is to examine corporate governance variables – firm characteristics are only control variables. 4. The one-year analysis period is too short for the purpose of results generalisations.

Boesso and Kumar (2007)	72 firms for one year.	Italy, US	KPIs	**Voluntary disclosure:** Percentage of Key Performance Indicators (KPIs). **Disclosure score capturing some KPI characteristics;** 1. Quantitative vs. qualitative. 2. Financial vs. non-financial. 3. Historical vs. forward-looking.	1. Board composition. 2.Company emphasis on stakeholder engagement.	1. Traditional Content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board composition (?). 2. Company emphasis on stakeholder management (+) with disclosure quantity. 3. Company emphasis on stakeholder management (?) with disclosure quality. 4. Company emphasis on stakeholder engagement is the stronger driver for disclosing voluntary information.	1. The small sample size. 2. The time period of one year is not suitable for generalising results. 3. The researchers measure quality by weights which are not representative. 4. No definition of good corporate governance is addressed. 5. Using one element only as a proxy for corporate governance structure (board composition).
Lim et al. (2007)	181 firms for 2001.	Australia	Corporate	1. Modified disclosure score of Meek et al. (1995) based on Australian regulations. Total voluntary disclosure. FL quantitative disclosure. Strategic disclosure. Historical disclosure.	1. Board composition. 2.Firm characteristics firm size, industry classification, and investment growth.	1. Traditional content analysis. 2. Two-stage least square regression 2SLS.	1. Board independence (+) with total FL quantitative information, and strategic disclosure.	1. Disclosure is based on the bases of quantity not quality. 2. Information is extracted from annual reports only; other sources such as continuous, internet and press disclosure are not considered.

Cerbioni and Parbonetti (2007	145 firms for the period of 2002-2004.	Europe	Intellectual Capital	1. Score for total amount of disclosure. 2. Score for the amount of intellectual Fl disclosure. 3. Score for the amount of intellectual historical disclosure. 4. Score for the amount of intellectual positive disclosure. 5. Score for the amount of intellectual negative disclosure. 6. Score for the amount of FL disclosure.	1. Board independence. 2. Board size. 3. Leadership structure.	Poisson random effect estimation.	1. Board independence (+). 2. Board size (-). 3. Leadership structure (-).	1. Narrow proxy for CG. 2. One industry sector (biotechnology).
Donnelly and Mulcahy (2008)	51 firms for 2002	Ireland	Corporate	Eng & Mak disclosure Index.	1. Board size. 2. Board independence. 2. Institutional ownership. 3. Managerial ownership.	1. Traditional content analysis. 2. Poisson regression analysis.	1. Board size (+). 2. Board independence (+). 2. Institutional ownership (?). 3. Managerial ownership (?).	One year analysis. 1. One dimension of disclosure (occurrence). 2. Using quantity as a proxy for disclosure quality. 3. Short analysis period. 4. Examining only two aspects of corporate governance.
Kelton and Yang (2008)	248 firms over 2003	US	Corporate internet reporting	FASB 2002, chapter two index.	1. Board Independence. 2. Managerial ownership. 3. Audit committee financial expertise. 4. Audit committee meeting frequency.	1. Traditional content analysis. 2. Poisson regression analysis.	1. Board Independence (+). 2. Managerial ownership (?). 3. Audit committee financial expertise (+). 4. Audit committee meeting frequency (+).	1. Limited investigation period of one year. 2. Limited proxy for CG. 3. One quality dimension (occurrence).

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Chen et al. (2008)	1311 firms for four years from 1996 to 2000 forming 4415 firm years.	US	NA	Management's forecasts.	1. Institutional ownership. 2. Ownership concentration. 3. Board independence. 4. Board size.	1. Traditional content analysis. 2. Logistical regression analysis	1. Institutional ownership (+). 2. Ownership concentration (?). 3. Board independence (?). 4. Board size (+).	Management forecasts is a subjective proxy for quality.
Laksamana (2008)	218 firms for the year 1993 and 232 for the year 2002. Firms are located in 6 industries: manufacturing, wholesale and retail, service, transportation, mining, and construction.	US	Management compensation	Self-constructed index for management performance and rewards.	1. Board size. 2. Board and compensation committee meeting frequency. 3. Board composition. 4. Leadership structure.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board size (+). 2. Board and compensation committee meeting frequency. (+). 3. Board composition (+). 4. Leadership structure (-).	Investigating only two variables for board quality.
Li et al. (2008)	100 firms for financial year-ends between March 2004 and February 2005.	UK	Intellectual capital	Haniffa and Cooke (2005) disclosure index.	1. Board composition. 2. Shareholdings concentrations. 3. Leadership structure. 4. Size of audit committee. 5. Frequency of audit committee meetings.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Board composition (+). 2. Shareholdings concentrations (+). 3. Leadership structure (?). 4. Size of audit committee (+). 5. Frequency of audit committee meetings (+).	1. Small sample size. 2. Short analysis period. 3. Disclosure quantity.
Beak et al. (2009)	374 firms for the period June-September 2000.	US	Corporate	The overall percentage score for Standards and Poor's (S&P) Transparency and Disclosure Survey	1. Board independence. 2. Institutional ownership. 3. Managerial ownership.	Ordinary Least Squares (OLS) regression.	1. Board independence (+). 2. Institutional ownership (+). 3. Managerial ownership (?).	1. Subjective measure of DQ. 2. Small sample size.

Felo et al. (2009)	121firms from the AIMR disclosure ratings in 1994, 1995, and 1997.	US	NA	AIMR disclosure ratings as a measure for corporate disclosure level.	1. Independence of Financial expertise. 2. Board composition. 3. Institutional ownership. 4. Audit committee meeting frequency. 5. Audit committee size.	Ordinary Least Squares (OLS) regression.	1. Independence of financial expertise (?) 2. Board composition (+). 3. Institutional ownership (?). 4. Audit committee meeting frequency (?). 5. Audit committee size (+).	1. Using AIMR scores is criticised for its subjectiveness as a measure for disclosure quality. 2. The two periods of analysis are before the execution of the Blue Ribbon report (1998), which set recommendations for the audit committee.
Chau and Gray (2010)	273 listed firms in Hong Kong for the year 2002.	Hong Kong	Corporate	Meek's et al. (1995) disclosure index.	1. Family ownership. 2. Independent directors. 3. Leadership structure.	Ordinary Least Squares (OLS) regression.	1. Family ownership (-). 2. Independent directors (+). 3. Leadership structure (+).	1. Short analysis period. 2.Disclosure quantity
Cheung et al. (2010)	100 largest listed firms from 2004 until 2007.	China	Corporate	Three different indexes based on the OECD principles.	1. Board independence. 2. Leadership structure.	1. Traditional content analysis. 2. Logistical regression analysis	1. Board independence (?). 2. Leadership structure (-).	One dimension of quality (occurrence).
Jiang et al (2010)	103 firms for the period of 2001 to 2005.	New Zealand	Corporate	Botosan's (1997) disclosure index.	1. Institutional ownership. 2. Managerial ownership. 3. Ownership concentration.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Institutional ownership (-). 2. Managerial ownership (-). 3. Ownership concentration (-).	1. One dimension of quality (occurrence). 2. Narrow proxy for CG structure.
Hussainey and Al-Najjar (2011)	357 non-financial firms for the period from 1996 to 2002 inclusive.	UK	Corporate	The percentage of FL information.	1. Board size. 2. Board composition. 3. Insider ownership.	Computerized content analysis. Fixed effect, Tobit, and Logit regression models.	1. Board size (+). 2. Board composition (+). 2. Insider ownership (?).	1. Analysis is restricted to year 2002. 2. Only non-financial firms are included. 3. Using a quantity-based score.
Wegener et al (2013)	319 Canadian firms from 2006 until 2009.	Canada	Environmental	Carbon Disclosure Project (CDP)'s questionnaire	1. Institutional shareholders. 2. Litigation risk. 3. Low cost puplicity.	1. CDP's questionnaire. 2. Logistic regression analysis.	1. Institutional shareholders (?). 2. Litigation risk (-). 3. Low cost puplicity (-).	The use ot the CDP questionnaire which only measures the occurrence of disclosure, i.e. whether firms respond to the questionnaire and disclosure tier environmental disclosure or not.

Khiari (2013)	46 Tunisian firms for the period of 2001 to 2010.	Tunis	Corporate	Botosan's (1997) disclosure index.	1. Board size. 2. Independent directors. 3. Leadership structure. 4. Directors mandatory. 5. Managers mandatory. 6. Ownership structure. 7. Audit committee size. 8. Audit firm size	1. Traditional content analysis. 2. Decision tree method.	Results are unique for each firm.	The use of the Decision tree method does not allow for generalising results.
Ernstberger and Gruning (2013)	1014 European firms for the year 2007.	EU	Corporate	Artificial intelegence measurement of disclosure (AIMD)	Agregated corporate governance score	1. Computerised content analysis. 2. Ordinary Least Squares (OLS) regression.	Corporate governance improves disclosure in less regulated environments.	1. The use of factor analysis to aggregate the disclosure score. 2. The use of one composite measure for corporate governance.
Hyun et al (2014)	634 firms for the nperiod from 2000 to 2009.	Korea	Executive compensation	A disclosure score of 1 if a firms disclose the level of executive pay.	1. Board meeting frequency. 2. Board size. 3. 3. Institutional ownership. 4. Independent directors.	1. Traditional content analysis. 2. Probit regression analysis.	1. Board meeting frequency (-).. 2. Board size (+).. 3. Institutional ownership 4. Independent directors (-).	1. The study does not examine the economic consequence of strategic executive pay disclosure. 3. Not controlling for omitted variables.
Khan et al. (2013)	119 firms for the period from 2005 and 2009.	Bangladeshi	Environmental	Modefied Haniffa and Cook (2002, 2005) disclosure index	1.Managerial ownership. 2. Public ownership. 3. Forign ownership. 4. Board independence. 5. Dual 6. The presence of an audit committee.	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	1. Managerial ownership (-). 2. Public ownership (+). 3. Forign ownership (+). 4. Board independence (+). 5. Dual (?). 6. The presence of an audit committee (+).	
Mendes-Da-Silva, and Onusic (2014)	314 firms from Augest to October 2011	Brazil	Corporate	Index Score	An aggregated index for corporate governance	1. Traditional content analysis. 2. Ordinary Least Squares (OLS) regression.	An aggregated index for corporate governance (?)	The use of an aggregated score for corporate governance which eliminates the ability to identify the specific governance mechanism that influence e - disclosure.

Up to the researcher's knowledge, the literature does not investigate the relationship between mandatory narratives disclosure and corporate governance, yet, articles on mandatory disclosure and corporate governance are either use IFRS reporting or earnings management for the disclosure side, which is irrelevant to the current research, therefore, the above table lists some studies on best practice disclosure only.

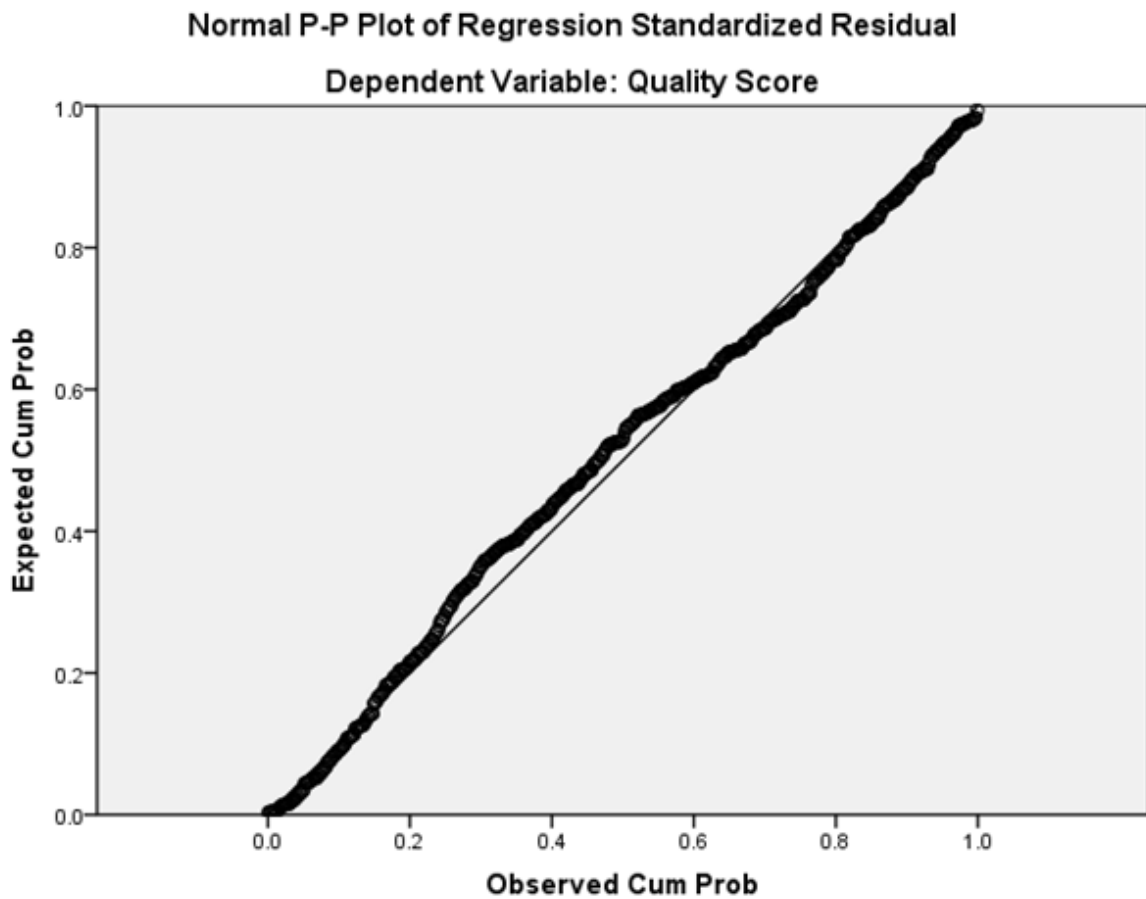# APPENDIX 7 : Normality Tests

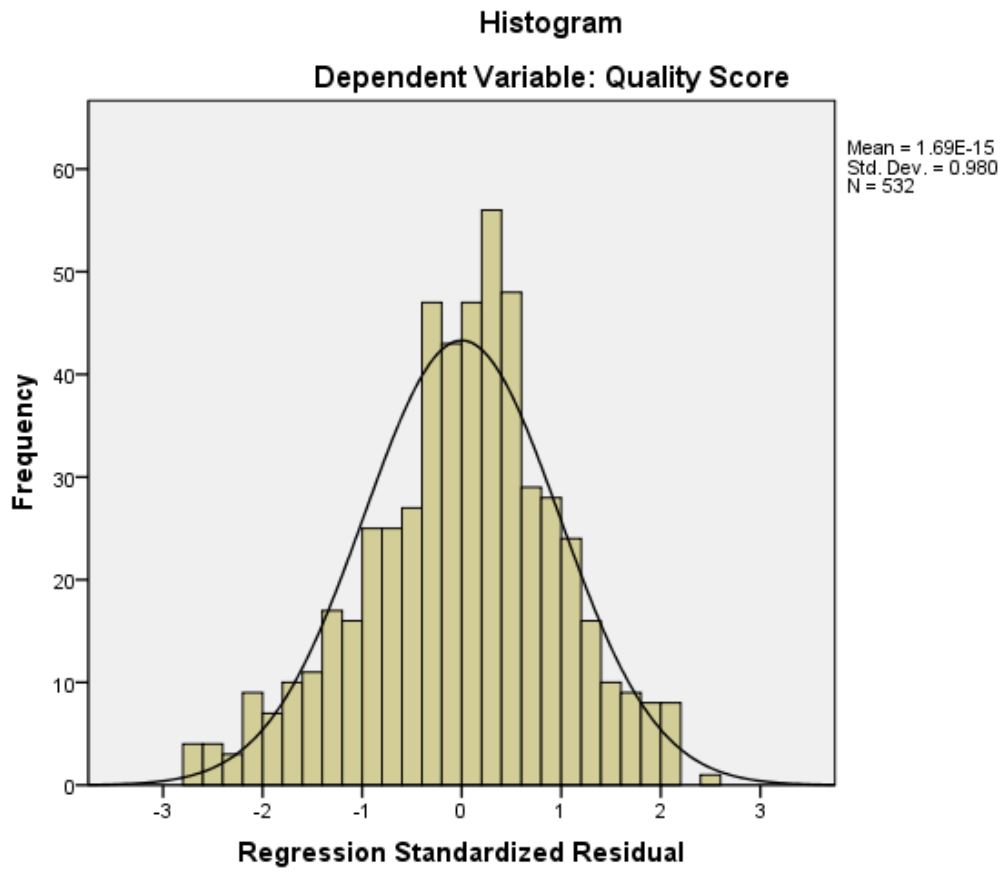**Second Study: The effect of CG mechanisms on DQ**

To examine the normality assumption, four main tests were conducted: 1- Skewness/Kurtosis tests for Normality, 2- Shapiro-Wilk W test for normal data, 3- Histogram, 4- P-P Plots for Regression Residuals. All of which show that the model meets the normality assumption as follows:

1- Skewness/Kurtosis Tests for Normality

Variable	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2	
quality	0.0051	0.5878	7.84	0.0198	Normal

2- Shapiro-Wilk W test for normal data

Variable	W	V	z	Prob>z	
quality	0.99062	3.337	0.00184	2.905	Normal

Histogram

Dependent Variable: Quality Score

Mean = 1.69E-15
Std. Dev. = 0.980
N = 532

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Quality Score

Third Study: The Joint Effect of DQ, and CG mechanisms on FV

To examine the normality assumption, four main tests were conducted: 1- Skewness/Kurtosis tests for normality, 2- Shapiro-Wilk W test for normal data, 3- Histogram, 4- P-P Plots for Regression Residuals. Tests show that normality assumption is not perfectly met. To improve the normality of the model, the researcher follows the most popular procedure, i.e transformation. Quality is transformed using Log to rule the potential for simultaneity, which helps to mitigate endogeneity. Conducting Skewness/Kurtosis tests and Shapiro-Wilk W test on the transformed quality score shows an improvement in the normality.
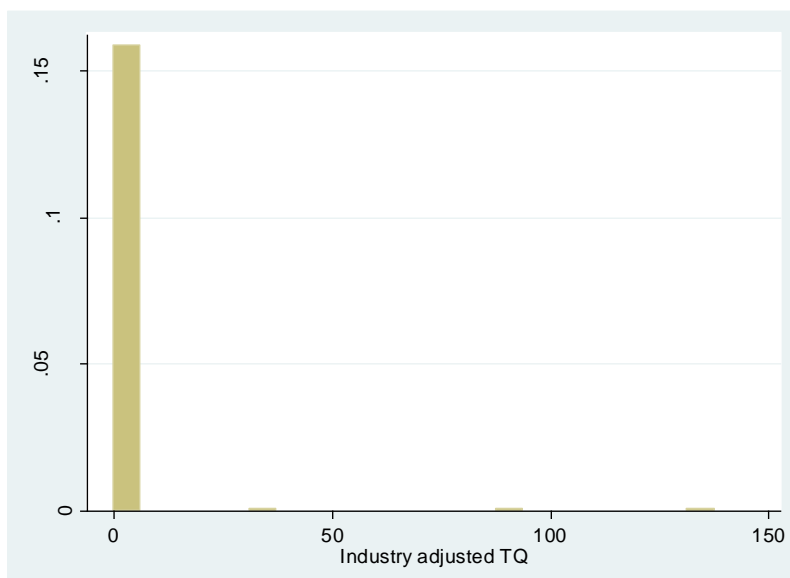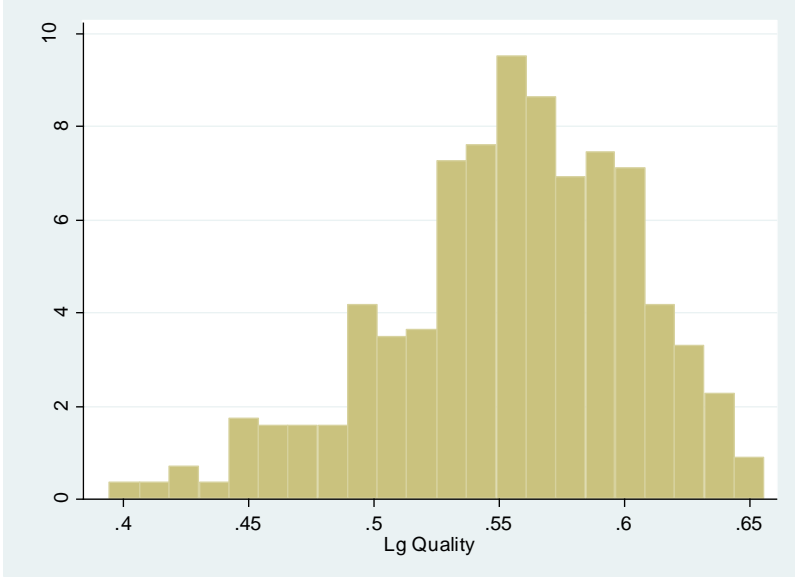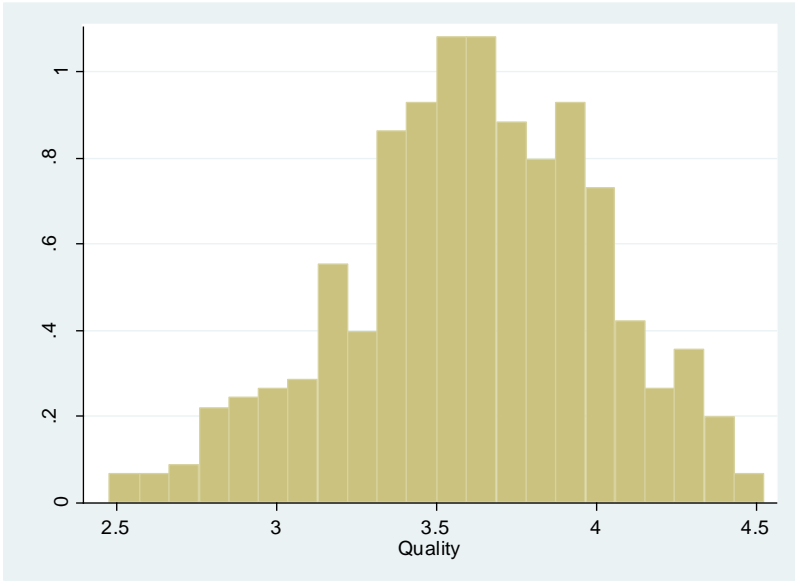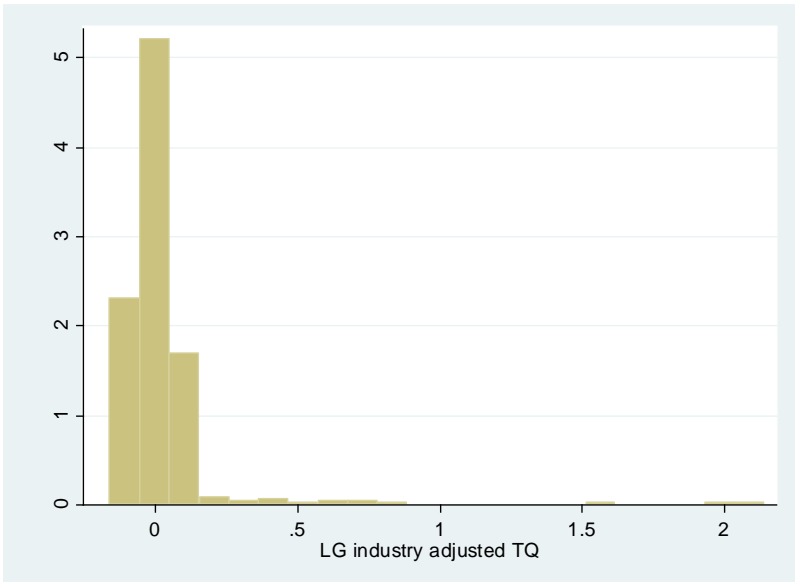

1- Skewness/Kurtosis Tests for Normality

Variable	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
quality	0.0143	0.3897	6.65	0.0361
Lg quality	0.0000	0.3409	21.06	0.000

2- Shapiro-Wilk W test for normal data

Variable	W	V	z	Prob>z
quality	0.99155	2.780	2.455	0.00705
Lg quality	0.97688	7.610	4.873	0.00000

3- Histogram

4- Normal Probability Plots