The effects of multi-layer governance on risk disclosures: EU evidence

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The effects of multi-layer governance on risk disclosures: EU evidence

A Thesis Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Accounting at the University of Westminster

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Dedication

To my parents and siblings

To the soul of my grandmother

Thank you for your love and support

Acknowledgements

All praise and thanks be to God, the Most Gracious and the Most Merciful, for giving me the strength to pursue and complete this work.

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May God reward them all.

Abstract

Disclosure of risks provides information on current and potential risks that firms are facing that may affect their continuity, which is a critical issue for stakeholders. Despite this, most studies examining the impact of firm-level governance structures on risk disclosure are generally rare and focus only on a single country and the amount of information disclosed. Consequently, this study examines how corporate governance is related to the quantity and quality of risk disclosure by EU firms and whether national governance quality (NGQ) reinforces this relationship.

Using one of the largest datasets of corporate governance and risk disclosures to date, research sample includes 4851 observations from firms in the UK, Germany, France, and Italy, covering the period 2012-2018. In this study, an automated content analysis method is used to measure the quantity and quality of risk disclosure practices. The estimation results indicate that firms report risk disclosures with a large degree of variability and inconsistency. In addition, risk disclosures tended to be qualitative, positive, and historical during the seven-year period covered. Furthermore, the multivariate analysis indicates that independent directors, board gender diversity, female leadership, audit quality, institutional ownership, and corporate governance quality are positively associated with the extent and quality of risk disclosures at the firm level. In contrast, concentrated ownership and managerial ownership are negatively related to the extent and quality of risk disclosures.

At the country level, the evidence suggests that the NGQ, particularly voice and accountability, control of corruption, and government effectiveness, have a positive impact on risk disclosure. Furthermore, the results indicate that NGQ has a moderating effect on the relationship between corporate governance and risk disclosures. These findings are largely consistent with the multi-theoretical framework that has been adopted, which integrates agency, resource-dependence, stakeholder, legitimacy and institutional theories. Overall, the results suggest that firms' disclosure decisions are not only influenced by firm-level governance, but also by country-level governance structures. This study has important implications for firms, policymakers, and other stakeholders in regard to the development of the firm and national governance.

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List of Abbreviations

EU	European Union
UK	United Kingdom
CRD I_Quantity	Corporate risk disclosure quantity index
CRD II_Scale	Corporate risk disclosure quality index based on a scale from 1 to 6
CRD III_AHP	Corporate risk disclosure quality weighted index based on AHP
BR	Business risks
OR	Operational risks
MR	Management risks
FR	Fluctuation risks
2SLS	Second stage least square
IFRS	The international financial reporting standards
IAS	international accounting standard
CG	Corporate governance
H	Historical risk information
FL	Forward-looking risk information
NT	No-Time oriented risk information
P	Positive risk information
N	Negative risk information
NR	Neutral risk information
AHP	Analytic hierarchy process technique
CR	Consistency ratio
CV	Consistency vector
CI	Consistency index
NVivo 12 Plus	NVivo software version 12 for automated content analysis
MANOVA	multivariate analysis of variance
VA	Voice and accountability
PS	Political stability
RQ	Regulator quality
RO	Rule of law
COC	Control of corruption
Brd_ Indep	Board of Directors Independence
Brd_Size	Board Size
Audit_Q	Audit quality
Brd_Gend	Gender diversity in Boardroom
F-Lead	Female leadership

Risk _COM	Risk management committee
GOV_Score	Governance score
CON_OWM	Ownership Concentration
MAN_OWN	Management ownership
FOR_OWN	Foreign ownership
GOV_OWN	Government ownership
NGQ	National governance quality
MAS	Masculinity
UA	Uncertainty Avoidance
LTO	Long–term orientation
LS	Legal System

Chapter One: Introduction

1.1. Background and Overview of the Research

There is increasing attention paid by all stakeholders to the extent and quality of risk disclosure due to the increased demand for information about the ability of a firm to manage various risks and maintain long-term stability (e.g., Abraham & Cox, 2007; Bhimani, 2009; Linsley & Shrives, 2006; Ntim et al., 2013). The disclosure of risks can be viewed as an effective strategy to gain stakeholders' confidence and support by reducing the information asymmetry between managers and different stakeholders (e.g., Amran et al., 2009; Donaldson & Preston, 1995; Elzahar & Hussainey, 2012; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021; Hao & Dong; 2022). As a result, firms that disclose more risk information may enhance their legitimacy by facilitating stakeholder support and increasing their reputation and goodwill (Holm & Laursen, 2007; Rhodes & Soobaroyen, 2010; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021; Hao & Dong; 2022). Additionally, increasing risk disclosures can increase access to crucial resources, such as finance, by minimising capital and political costs through improved corporate image and reputation (Pfeffer & Salancik, 1978; Branco & Rodrigues, 2006; Oliveira et al., 2011; Elamer et al., 2019; Kamaruzaman et al., 2019; Elamer, Ntim, and Abdou, 2020).

The financial crisis of 2007/2008 and the Brexit referendum in the United Kingdom have led to a surge of interest in risk disclosures, particularly in the EU countries (Elamer et al., 2019; Elmagrhi et al., 2018). It also highlighted the importance of good corporate governance structures in improving risk management and disclosure practices (Iatridis, 2010; Mallin, 2003; Ntim et al., 2013; Hao & Dong, 2022). Despite the growing interest in disclosure in general and risk management in specific, most of the prior studies mainly focused on firm

characteristics that drive the differences in the extent of risk disclosure (e.g., Abraham & Cox, 2007; Beretta & Bozzolan, 2004; Li, 2008; Linsley & Shrives, 2006; Hao & Dong, 2022). Several firm-level characteristics have been examined in prior studies, such as firm size, industry, and leverage (e.g., Lajili & Zeghal, 2009; Raj & Handley-Schachler, 2009). Other studies suggest that risk disclosure is largely at the discretion of the board of directors (Abraham & Cox, 2007; Beretta & Bozzolan, 2004; Elamer et al., 2019; Elzahar & Hussainey, 2012; Oliveira et al., 2011). However, prior studies investigating the impact of governance structure at the firm level on risk disclosure across multi-countries are rare (Barakat & Hussainey, 2013; Dobler, 2011; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020).

In addition, many studies investigate the impact of country-level variables on corporate disclosure in general, such as inflation, GDP per capita, cultural variables, and legal systems (see, for example, Elshandidy, 2011; Jaggi & Low, 2000; Hope, 2003). However, less attention has been paid to institutional pressures where fewer studies examined risk disclosure practices at the country level, such as its link to national governance (Barakat & Hussainey, 2013; Elamer et al., 2019; Kaufmann et al., 2011). La Porta et al. (2000) and Elamer, Ntim, and Abdou (2020) argue, for example, that strong investor protection provided by national governance mechanisms may cause firms that operate in strongly regulated countries to disclose higher levels of risk, as a means of signalling their good performance as well as their future potential. National governance is commonly measured by the World Bank's Worldwide Governance Indicators, which reflects 'the traditions and institutions by which authority in a country is exercised' (Kaufmann et al., 2011, p. 222) and consists of six indicators: voice and accountability, political stability, government effectiveness, regulatory quality, the rule of law, and control of corruption (Kaufmann et al., 2011; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021).

In the same vein, few studies have directly examined the role of macro-social factors (i.e., governance at the company and national levels) in influencing business outcomes, such as risk disclosure practices, and even fewer have considered this relationship in the EU context. This is particularly true when considering the quality of risk disclosures compared to the volume of disclosures. Additionally, and to the best of the researcher knowledge, there is no extant research that examines how national governance might influence firm governance-risk disclosure relationship, especially in the EU countries. This study provides novel evidence on the effects of macro-social factors on risk disclosures. Specifically, this study aims to empirically examine the relationship between multi-layer governance mechanisms and the quantity and the quality of corporate risk disclosures within and across the EU. Also, this research examines the moderating effect of national governance on the relationship between firm-level governance and risk disclosure quantity and quality.

The remainder of this chapter is organised as follows. Section 1.2 outlines the motivations that led to the pursuit of the current research. Section 1.3 addresses the research objectives and questions. Section 1.4 provides a depiction of the research methodology. Section 1.5 describes the importance and contribution of the study to knowledge. Section 1.6 discusses the structure of this thesis.

1.2. Motivation and Rationale for Research

In recent years, risk disclosure has received considerable attention in the disclosure literature; however, several prior studies on risk disclosure empirically focused on a single country level to measure the determinants of the extent of risk disclosure within firms (e.g., Aggarwal & Kallapur, 2018; Amor-Esteban, García-Sánchez & Galindo-Villardón, 2018; Li, 2008; Linsley & Shrives, 2006). This strand of literature identifies the first gap in the research on risk disclosure, and this motivates the current study to provide an extensive analysis of the main

drivers of the levels of risk disclosures quantity and quality across four of the biggest EU countries (i.e., the UK, Germany, France, and Italy).

There are several reasons why this research covers these four countries. First, these countries are the biggest in the EU region in terms of GDP, where Germany has the largest economy in Europe, followed by the United Kingdom, France, and Italy. Together, these four countries account for 50% of the European economy. Second, rapid changes in the social, economic, technological, and regulatory climate in Europe require businesses to maintain solid risk management frameworks to remain competitive. Due to increased awareness of the importance of risk management, businesses are providing additional insight into their risk perceptions in their annual reports, in order to comply with International Accounting and Financial Reporting Standards (IAS/IFRS) and to adhere to the corporate governance codes imposed by national markets. As a consequence of the introduction of the Non-financial Reporting Directive (2014/95/EU) and the relevance of non-financial risks and sustainability for consumers and institutional investors, the level of disclosure of financial risks has increased. Third, Financial risks, including liquidity risk, credit risk, and fluctuations in exchange rates/interest rates, are highlighted as the most significant concerns for European organizations in their annual reports. This - along with the mandatory disclosure of financial risks mentioned above - can be considered the main reason behind the high ranking of financial risks due to the majority of companies addressing their financial stakeholders. Finally , EU Companies are also concerned about uncertainties related to the economic, political, financial, and geopolitical environments, as well as growing regulatory risks.

Moreover, most prior studies are restricted to analysing one type of risk disclosure, particularly financial risk disclosure items such as exchange rate (Marshall & Weetman, 2008), mandatory risk disclosure (Li, 2008) or aggregated risk disclosure (Linsley & Shrives, 2006), voluntary

risk disclosure (Abraham and Cox, 2007; Beretta and Bozzolan, 2004; Deumes & Knechel, 2008; Linsley and Shrives, 2000, 2006). Thus, the second research gap in the previous studies motivates the current research to examine how and to what extent firm and national governance influence the different levels of risk disclosure sub-categories (e.g., business, operational, management, and fluctuation) within or across the European annual reports.

There has been little research into the role of national governance in influencing risk disclosure practices (Dobler, 2008; Kaufmann et al., 2011; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020), and even less has examined this relationship in the EU context. This is the case especially if the quality of the disclosures is considered in comparison to the number of disclosures. Additionally, and to the best of the researcher knowledge, there is no existing research that examines how national governance might affect the relationship between firm governance and risk disclosure, especially in EU countries. Thus, the current research aims at investigating the role of firm and national governance on risk disclosure quantity and quality by controlling for some firm and country-specific characteristics such as firms' size, leverage, liquidity, profitability, sales growth, cultural aspects, legal system, GDP per capita, inflation and market capitalisation.

Theoretically, despite the growing interest in risk disclosure studies in recent years (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Ntim et al., 2013), there is no common and recommended theoretical framework for explaining the managers' motivations toward risk disclosure (Deegan, 2002; Raj & Handley Schachler, 2009; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021). Recently, extant studies have tended to rely on individual socio-political and economic theories (e.g., institutional, legitimacy and stakeholder; agency and resource-dependence, respectively) in explaining the managerial motivations toward risk disclosure (Amran et al., 2009; Linsley & Shrives, 2006;

Lopes & Rodrigues, 2007; Greco, 2012; Elzahar & Hussainey, 2012; Salem, Ayadi, and K. Hussainey, 2019; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021), whereas the ability of the individual socio-political and economic theories to thoroughly explain motivations and differences in risk disclosure have received limited attention (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Ntim et al., 2013; Oliveira et al., 2011). Consequently, Amran et al. (2009), Deegan (2002), Elshandidy (2011), Gray et al. (1995), Ntim et al. (2013), and Oliveira et al. (2011) recommend that adopting a range of individual theories for investigating different motivations for shaping risk information may provide a richer basis for explaining these motivations within and across firms. The current research endorses this vein and adopts as a complementary adopting a multi-theoretical framework to examine the effect of multi-layer governance mechanisms on risk disclosure quantity and quality.

1.3. Research Objectives and Questions

This research aims to address five main objectives. First, it aims to measure the differences in risk disclosure quantity and quality within firms across four European countries, i.e., the UK, Germany, France, and Italy, during the period 2012-2018 (this aim is achieved in Chapter Seven). Second, to measure the differences in risk disclosure, the current research aims to quantify risk disclosure through developing weighted and unweighted risk disclosure indices (this aim is achieved in Chapter Five). Third, identifying the main incentives of risk disclosure quantity and quality within and across the UK, Germany, France, and Italy (this aim is achieved in Chapter Eight and Chapter Nine). Fourth, this research also aims to investigate to what extent the differences in sub-categories of risk disclosure can be attributed to firm and country-level governance indicators within firms and across countries (this aim is achieved in Chapter Eight and Chapter Nine). Fifth, exploring the moderation effect of national governance indicators on the relationship between firm-level governance and the quantity and the quality of corporate

risk disclosures across the UK, Germany, France, and Italy (this aim is also achieved in Chapter Eight and Chapter Nine).

The main research questions are classified to consider two main perspectives: firm-level and country-level analysis.

Q1. Are there any significant differences in risk disclosure quantity and quality between firms across European countries, particularly the UK, Germany, France, and Italy?

Q2. Do business risk, operational risk, management risk, and fluctuation risk vary within and between the European firms?

Q3. To what extent do governance mechanisms at the firm level stimulate firms to provide their risk disclosure in annual reports?

Q4. Do national governance indicators influence corporate risk disclosures?

Q5. Do national governance indicators moderate the relationship between firm-level governance and corporate risk disclosures?

1.4. Research Methodology

In this study, we adopt an objective methodological position of philosophical assumptions. This research adopts an ontological position of realism. In an epistemological sense, the study adopts a positivistic viewpoint. Regarding the assumptions regarding human nature, the current study assumes determinism. Human beings are viewed as being highly conditioned by external circumstances. Therefore, the current research attempts to capture objectively measurable and observable human behaviours. As a consequence of these philosophical assumptions, the study is oriented towards an objective nomothetic methodology that uses quantitative research

methods. As such, this study attempts to describe and explore the perceived reality of risk disclosure and corporate governance quantitatively.

Therefore, the current study is undertaking a quantitative analysis, using content analysis of a sample of annual reports from EU companies to examine the quantity and quality of risk disclosure practices and their relation to governance structures. Thus, we examine the annual reports of companies listed in four European countries for the years 2012-2018 inclusive. We develop a checklist of risk disclosure items and categories and compute risk disclosure indices. In order to do this, the study distinguishes between the different categories of activity and types of risk information related to risk disclosure.

From the theoretical and practical perspectives, figure 1.1 illustrates the proposed framework for achieving the research objectives. In the adopted research framework, systematic procedures are presented as a checklist to minimise the possibility of disregarding any relevant risk issues (Muzahem, 2011: 125-127). As can be noticed, the focal point is the content of the risk disclosure section in annual reports. This section may vary from one country to another based on the jurisdiction environment of disclosure, e.g., corporate law, corporate governance regulation, the accounting standards (e.g., IAS and IFRS), the listing rules and the nature and efficiency of the security market on the one hand, and the management attitude and national governance mechanisms, such as regulatory quality, voice and accountability, on the other hand.

Therefore **Clause 1** is about the primary driver of disclosing the entire risks faced by firms, which is discussed in Chapters Two and Three. **Clause 2** explains the certainty of risk disclosure items in annual reports annually through conducting content analysis and quantifying each item with weighted scores. Chapter Four discusses the methodology adapted in building the risk disclosure indices and testing the significant relationship between a firm

and national governance mechanisms and risk disclosure. The Analytic Hierarchy Process (AHP) and the Content analysis are conducted to identify the different weights for the risk index components and measure the actual risk disclosure levels in annual reports within companies and countries (as shown in Chapter Five).

Clause 3, the study using Fixed effects Models and Second stage least square (2SLS), controlled research hypothesis of the connections between multi-layer corporate governance mechanisms, ownership structure, and risk disclosure. The findings of this study can be found in Chapters Eight and Nine. This stage aims to analyse the impact of multi-layer governance mechanisms on risk disclosure over a long time series (2012-2018) in Europe.

Clause 4 is about the opportunities for improvement and changes proposed in the risk topics and contents at the country and company's levels are required to keep up to date with the latest corporate governance regulations and improve risk disclosure practices in terms of quantity and quality.

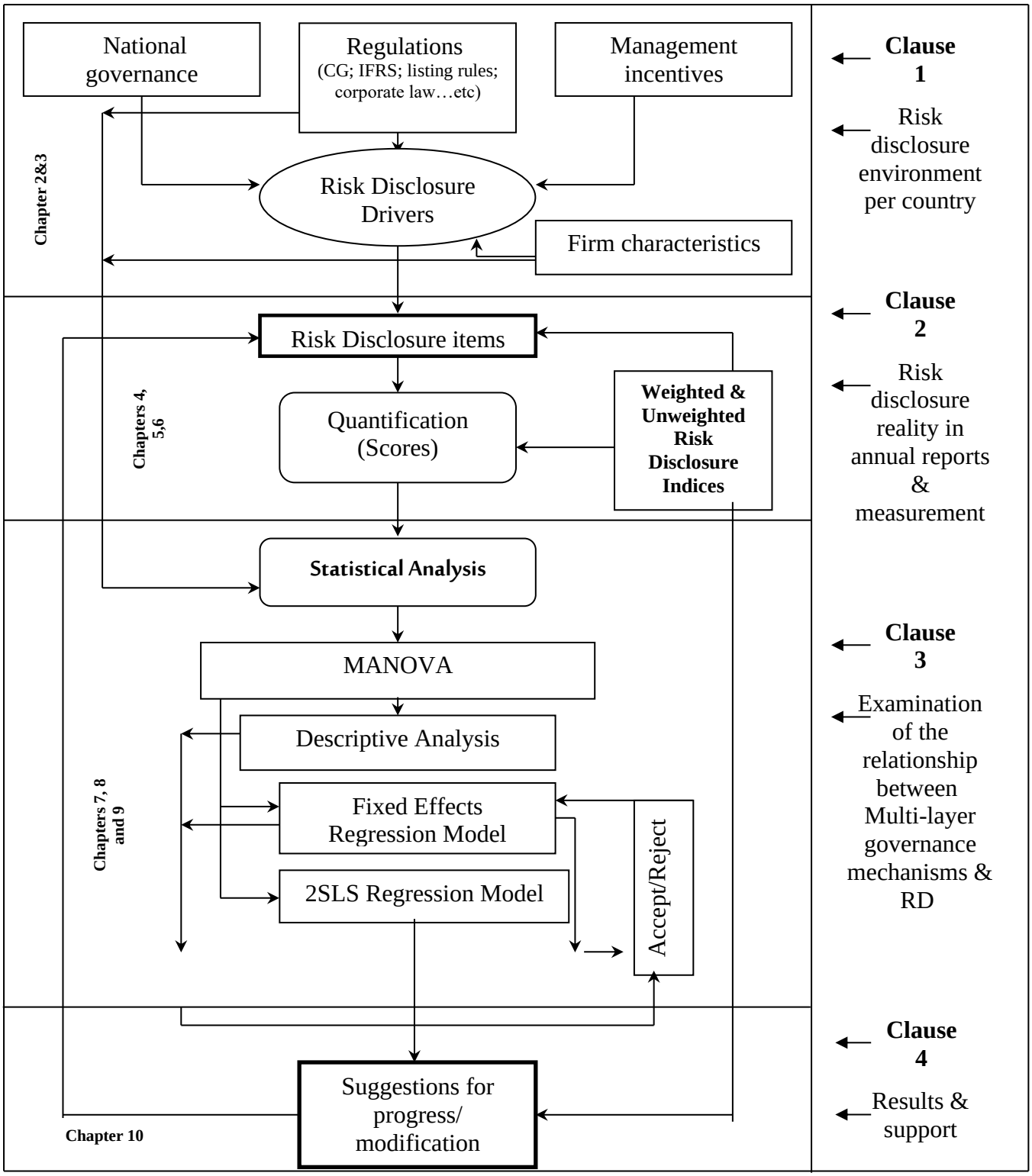

Figure 1.1: the proposed framework for the current Research

1.5. Research Contribution to Knowledge

The current research makes several contributions to the extant literature by examining the impact of multi-layer governance structures on the risk disclosures of firms from four countries

in Europe between 2012 and 2018. This study, unlike studies which have examined a single country, provides new evidence about the drivers that may explain the variations in the levels of risk disclosures conducted by firms in four of the largest EU countries (i.e., the UK, Germany, France, and Italy) (see, for example, Elshandidy & Neri, 2015; Li, 2008; Linsley & Shrives, 2006; Aggarwal & Kallapur, 2018; Amor-Esteban, García-Sánchez & Galindo-Villardón, 2018).

Second, and to the best of the researcher knowledge, this research is one of the first to develop an AHP-based weighted index for assessing the quality of risk disclosure. At the same time, the unweighted index for risk disclosure was the primary method to measure risk reporting in most of the prior studies (Beretta and Bozzolan, 2004; Lopes and Rodrigues, 2008; Dicuonzo et al., 2016; Tahat et al., 2016; Kurniawanto et al., 2017; Ibrahim & Hussainey, 2019). The current study investigates the quantity and quality of risk disclosure across Germany, the UK, France, and Italy by developing a risk disclosure index across countries over seven years (2012 to 2018).

Third, the current research extends the existing literature by examining financial and non-financial risk disclosure (e.g., business, operational, management, and fluctuation) within and across the European annual reports. The current study provides a significant contribution that sets it apart from most prior studies that have focused on financial risk disclosures (e.g., Abraham & Cox, 2007; Beretta & Bozzolan, 2004; Deumes & Knechel, 2008; Linsley & Shrives, 2006, 2000; Marshall & Weetman, 2008; Neifara & Jarboui, 2018; Elamer et al., 2019; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021).

Fourth, and to the best of the researcher knowledge, this study provides new insights into how multi-layer governance mechanisms may influence risk disclosure practices in non-financial

European firms. This evidence may, in turn, allow investors and regulators to gain a better understanding of the possible channels (e.g., a country's governance) through which macro-level factors affect risk disclosure practices within EU countries. This research highlights the importance of national governance as an additional layer of governance with the ability to monitor management decisions related to risk disclosures and to signal good governance, accountability and transparency to differentiate themselves from their rivals (Beekes & Brown, 2006; Mallin, 2002).

Fifth, this research is distinguished from prior studies by examining the role of female leadership as one of the firm-level governance mechanisms that may drive and shape risk disclosure within firms. Previous research suggests that female directors play a significant role in monitoring a firm's financial reporting quality (see, for example, Francis et al., 2015; Peni & Vahamaa, 2010). However, the role of women in senior leadership (i.e., female leadership that may lead to more risk disclosures has received less attention. In this study, we are extending this nascent research by providing evidence about the positive influence of female leadership on managerial decisions, including those relating to risk disclosures.

Finally, this study is distinguished from previous research in that it employs a multi-theoretical framework to examine how multi-layer governance mechanisms affect the quantity and quality of risk disclosures. A single theoretical framework may not provide a comprehensive understanding of how firm and national governance mechanisms may affect managerial motivations regarding risk disclosure (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Oliveira et al., 2011; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021). Therefore, this study uses a multi-theoretical framework to provide complimentary descriptions and explanations of risk disclosure practices in the particular

context of the EU (Amran et al., 2009; Elshandidy, 2011; Ntim et al., 2013; Oliveira et al., 2011).

1.6. Structure of the Thesis

The current thesis provides an account and a comprehensive understanding of the influences of the firm and country-level governance mechanisms on risk disclosure practices across four European countries from 2012 to 2018. This thesis is organised into ten chapters, as follows:

Chapter One - introduction provides the background to the thesis by identifying the research gaps and motivations, research questions and objectives, the theoretical and practical implications, the contribution to the knowledge, and the thesis's structure.

Chapter Two - the theoretical framework of risk disclosure, includes several attempts to define risk and the risk categories based on these efforts. This chapter discusses various risk disclosure managers' incentives and regulatory theories to interpret firms' levels of risk disclosure within and across countries; the risk disclosure requirements in the international accounting standards are also presented in this chapter.

Chapter Three - the main research questions and hypotheses that distinguish between firm-level and country-level are discussed in chapter four by narrating the corporate governance mechanisms and cultural and legal system influences on risk disclosure regarding the prior studies. It gives a brief description of observation and develops the aforementioned level of analysis to the country-level by testing the influence of country-level governance on the risk reporting across European countries.

Chapter Four describes the proposed methodology of the current research, which empirically checks how corporate governance, countrywide lifestyle, and legal system impact risk disclosure in the context of European security markets. It describes the speculation

improvement, highlights the method of measuring a broad risk disclosure content, develops the regression model, and discusses the descriptive evaluation.

Chapter Five focuses on developing the weighted and unweighted risk disclosure indexes and applying the AHP method to assign different weights for the main criteria of the third risk disclosure quality index. Under this chapter, we collect data on risk disclosure contents to quantify the risk disclosure practices by applying NVivo 12 plus to calculate the value of the risk disclosure quantity index. Also, this chapter explains the implication of risk disclosure quality index III and explores the differences in risk disclosure quantity and quality in one firm, for example, during 2012-2018.

Chapter Six is the pilot study of differences in risk disclosure degrees across Germany, the UK., France, and Italy; this chapter performs a pilot study to measure the variance in risk disclosure quantity and quality among European countries, which examines to what extent there are significant differences among and between firms in these four countries in terms of their risk reporting.

Chapter Seven - Descriptive analysis of the risk disclosure quantity and quality analyses the level of corporate risk disclosure quantity and quality within and among companies throughout the European nations from 2012 to 2018. The chapter measures the levels of risk disclosure within European countries and the extent to which the narrative disclosure sections vary across European firms.

Chapter Eight - The Empirical study of the determinants of risk disclosure quantity and quality and between the UK, German, French, and Italian firms. This chapter examines the degree to which company-level corporate governance, ownership structure and country-level governance can express corporate risk disclosure quantity variations among companies throughout the European nations and which determinants affect the extent of risk disclosure.

Chapter Nine - The Empirical study of the Incentives for risk disclosures within and between firms across EU countries: Cross-country Evidence and tests how robust the results are by using an alternative index of risk disclosure quality (CRD III_AHP) to confirm the determinants which may affect the quality of risk disclosure in the European region.

Chapter Ten - Research conclusions, limitations, recommendations, and ideas for future research are presented in this chapter.

Chapter Two: A Conceptual Framework for Risk Disclosure

2.1. Overview

The primary purpose of this chapter is to define a specific conceptual risk disclosure. The definitions of risk, categories of risk, risk in professional accounting standards and risk disclosure theories are discussed in this chapter. This chapter is structured as follows. The description of the risk is discussed in Section 2.2. The comparative advantages (benefits) for categories of risk and risk disclosure are specified in Section 2.3. The International Accounting Standards in Section 2.4 outlines standards for risk disclosure. Section 2.5 reviews the multi-theoretical framework, including agency theory, legitimacy theory, stakeholder theory, resource dependence theory and institutional theory, which may explain the differences in the disclosure of risk. The concluding remarks are provided in Section 2.6.

2.2. Risk Definitions

To highlight the acceptable definition of risk, three main trends are initiated in prior literature. A narrow perspective is the first trend in defining risk; some studies have defined risks as loss, damage or harm (Kaplan & Garrick, 1981; Akintoye & MacLeod, 1997; Adams, 2009; Kamaruzaman et al., 2019; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021). Risk is described as 'the possibility of a hazard, bad consequence, loss or risk' in the Oxford English Dictionary (2009). This definition also describes risk in the context of possible adverse responses, such as 'risk' or hazard. The Securities and Exchanges Commission (SEC) also shows that there are only significant losses in the risk. The researchers observed in this regard that risks are a loss while disregarding the opposite result. (Kamaruzaman et al., 2019, p. 115).

On the other hand, some academics identify risks from a broad perspective (e.g., Damodaran 2008; Linsley & Shrives, 2006; Habtoor et al., 2017; Ibrahim & Hussainey, 2019) and they

define risks as exposure to potential losses and possible benefits. The term risk was described by Watson & Head (1998, p. 192) as ‘a collection of results from an evaluation which can be associated with probabilities,’ while ‘unknowledgeable’ occurs when probabilities cannot be associated with the collection of results. Therefore, Abdullah & Hassan (2013) broadly categorise risks into negative or uncertain actions. In fact, the Accounting Standard Board (ASB, 1998) describes risk as 'uncertainty as to the number of benefits.' The term includes both benefit and loss potential. The risk disclosures are described by Linsley and Shrives (2006, p. 389) as informing the reader of any income opportunities, expectations, successes, threats or damages that had already affected the organisation or could have affected it. In fact, the International Accounting Standards Board (IASB) defines that risk includes losses and gains in several aspects of its accounting standards (e.g., IAS 32 and 39; IFRS 7).

In such an outlook, the researcher agrees with Šotić & Rajić (2015) that risk is a consequent category and cannot be tackled straightforwardly without prior exploration of objectives, perception, coverage, and parties (Šotić & Rajić, 2015, p. 24). Due to the wide range of risks faced by firms in the business environment, risk management and disclosure are the management's strategies which received great interest, mainly in integrated reports (Moumen et al., 2016, p. 179) to deal with existing and potential risks, provide protection, accountability and add value to firms and stakeholders (Spedding & Rose, 2007; Elshandidy et al., 2018, p. 73; Khalil & Maghraby, 2017, p. 746).

Beretta and Bozzolan (2004) defined ‘risk disclosure’ as a way to communicate information regarding the firm's strategies, features, activities and other external factors which have the potential to influence predictable results. In this context, risks disclosure includes all the types of information found in annual or interim reports concerning the management forecasts, judgments, uncertainty and confidence about market-based financial policies, such as

impairment (securities), derivative hedges and financial instruments internal control risks, and on economic, political and financial risks (see, for example, Elzahar & Hussainey, 2012; Hassan, 2009; Maghraby & Khalil, 2017; Miihkinen, 2013).

2.3. Risk Disclosure Definition, Comparative Advantages, and Categories

This section discusses two questions: how can firms identify their risks? And what are the differences between risk categories? These two questions are answered in the following sub-sections, based on previous academic and professional research.

2.3.1. Risk disclosure: definition, measurement and proxies

Risk disclosure is one of the most significant contents in financial reports, which may influence decision-makers, regulators, and monitoring agencies. The term risk disclosure is defined by Beretta & Bozzolan (2004) as a means of communicating information about the firm's strategies, characteristics, the company's operations, and external factors that may impact the firm in the future. Despite this, the accounting literature acknowledges the complexity and subjective nature of information disclosure (Beattie et al., 2004; Radu and Francoeur, 2017; Ben-Amar and Chelli, 2018).

Healy and Palepu (2001) pointed out that measuring the extent of corporate disclosure is one of the most important limitations of disclosure studies. It has also been suggested in the literature that to gain a deep understanding of the quality of reporting and disclosure, it is necessary to examine several factors (e.g. quantity, breadth, depth, time) that contribute to the quality of reporting and disclosure. Thus, a measure of quality is more than the amount of disclosure (the most frequent metric in the historical literature). There is evidence from some scholars that the importance of disclosure is often incorrectly equated with the amount that is disclosed (Cho et al. 2010; D'Amico et al. 2016; Unerman 2000). In order to assess disclosure quality beyond quantity, prior studies have advanced to include other dimensions, such as the

characteristics of the information disclosed, the themes or topics covered, the types of information disclosed, and the language used in the disclosure.

Hopkins (1996) further defines disclosure quality as the ease with which the information may be read and understood by present and potential investors. Furthermore, according to King (1996), the degree of self-interested bias in the disclosure determines the quality of the disclosure. This definition makes it very challenging to quantify management bias in information sharing. Furthermore, Core (2001) noted that 'the firm's continual ex-ante commitment to give information' is a key component of disclosure quality. The most widely accepted definition presented by Beattie et al. (2004) describes disclosure quality as a multifaceted, context-sensitive, nuanced, and subjective concept.

To quantify the quality of information disclosure, Braam and Beest (2013) and Chakroun and Hussainey (2014) are thought to be the first attempts through the fundamental qualitative characteristics of information (relevance and faithful representation) and enhancing qualitative characteristics (understandability, comparability and timeliness). Salem, Ayad, and Haussainey (2019) on the other hand agree that there is no widely accepted metric for gauging the quality of disclosure, and in particular, risk disclosure. They follow Botosan (2004) in defining risk disclosure quality in terms of decision usefulness for stakeholders. argued that disclosure quality could be measured by quality attributes proposed by a regulatory framework. These attributes are understandability, relevance, reliability and comparability based on the conceptual framework of IASB (2010) and the Tunisian firms' accounting system (1997).

Generally, risk disclosure quality refers to the semantic characteristics of risk information disclosed by firms, including relative quantity, depth (the potential impact of disclosed risks on future performance), coverage of every type of risk, and risk management outlook profile (Beretta & Bozzolan, 2004; Miihkinen, 2012; Elshandidy, Neri, Guo, 2018).

As a proxy for risk disclosure quantity, risk disclosure quantity can be measured by the number of sentences/words related to risk disclosure that appear in the annual report. Additionally, Risk disclosure coverage reflects the concentration of risk topics within corporate disclosures (e.g. financial risks, operational risks, and volatility risks). In addition, the depth of a risk disclosure measures the semantic properties of the information disclosed, and involves the content of the disclosed risk information, which is an indicator of any economic impact on future performance. The outlook profile represents how firms disclose their intended approach to explain the presence of risks, the future expectations of a firm and its risk management approach (Beretta & Bozzolan, 2004).

2.3.2. Comparative Advantages of Risk disclosure

Risk disclosure is one of the critical contents in financial reports for decision-makers, regulators and monitoring bodies (see Figure 2.1) because of its fatal role in narrowing the information gaps between management and stakeholders in terms of uncertainty relating to firms' procedures and activities (Maghraby & Khalil, 2017, p. 749; Moumen et al., 2015). Risk disclosure sections in annual reports can be considered as red flags on a company's future performance and reputation (Lajili & Zéghal, 2009; Singh & Saggar, 2017, p. 385) .

As shown in Figure (2.1), transparent risk disclosure has a wide range of benefits not only for stakeholders but also for the firm itself. Adequate risk disclosure can reduce the agency costs owing to the information asymmetry between stakeholders and management by achieving fairness in providing equal opportunities for all stakeholders to obtain the same amount of information about the company's operations and strategic objectives on the one hand and reducing the distinction between stakeholders' expectations and management actual performance and improving management accountability on the other hand (Solomon et al.,

2000; Deumes, 2008, p. 122; Chithambo & Tauringana, 2016, p. 111; Kamaruzaman et al., 2019; Ibrahim & Hussainey, 2019; Isiaka, 2021; Nahar & Jahan, 2021).

Furthermore, Uddin & Hassan (2011) concluded that expanded risk disclosure enables investors to diversify their portfolios effectively, thereby minimising market risk. Risk disclosure is not only crucial for outside parties, but it also supports inside parties to take into account the evaluation and monitoring of performance and other operational and investment decisions and then make decisions based on rational judgments and a truthful vision, which allows the firm to allocate its resources more efficiently (Epstein & Rejc, 2006).

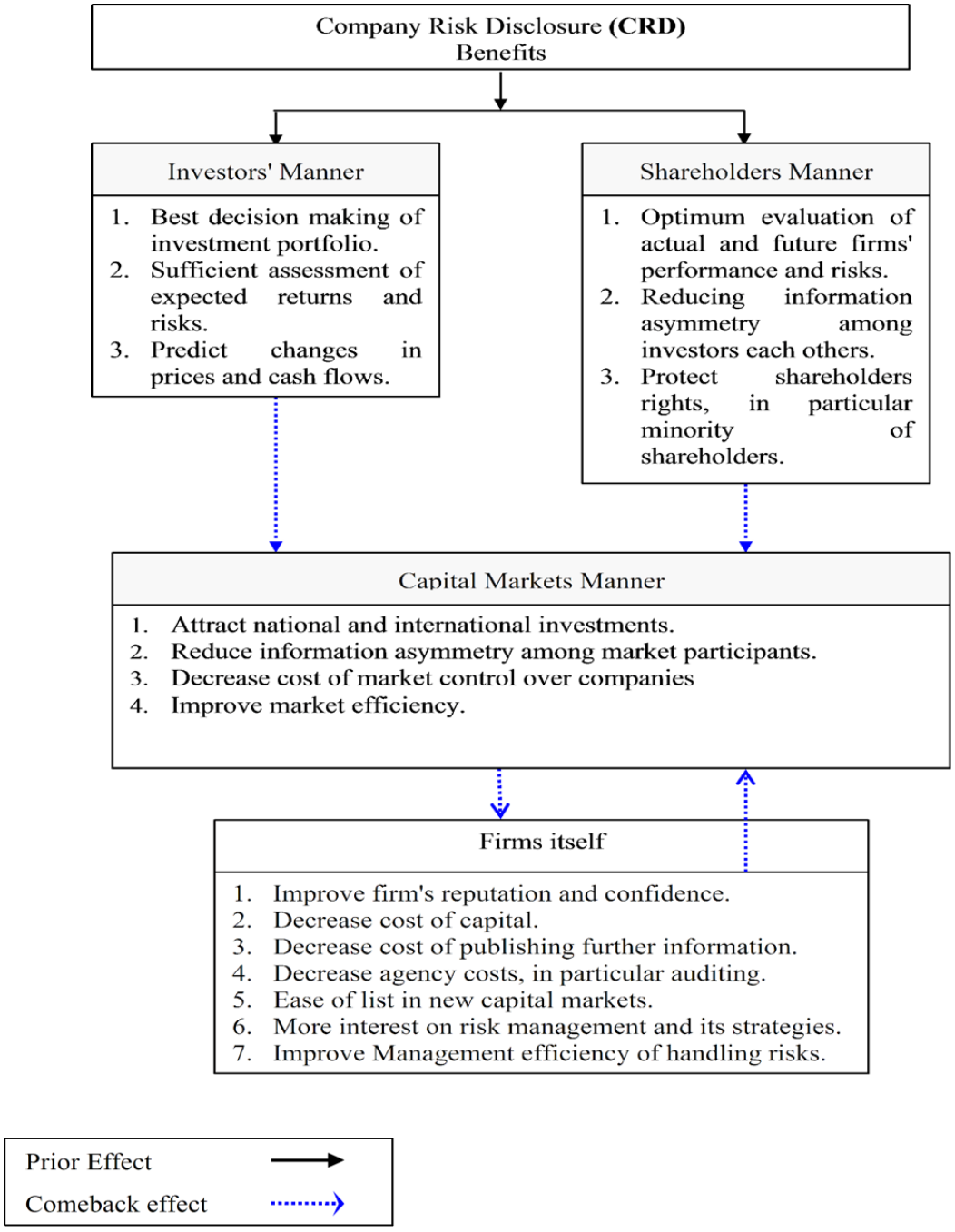

Figure (2.1) Anticipated benefits for Company Risk Disclosure

2.3.3. Risk categories

The foremost complexity in risk measurement and disclosure is rooted in researchers' disagreement regarding risk classifications. It is emphasised that the more accurate this list is, the more valuable the measurement and disclosure of these risks will be. There are various dimensions to categorise risks; for example, Lakonishok & Shapiro (1986) and Sukri &

Waemustafa (2016) noted that risks could be classified into systematic and unsystematic risks. Systematic risk is a general risk to all companies derived from events of public nature, such as economic or political conditions. It is, therefore, difficult to eliminate by diversification. It is also termed a risk that cannot be avoided by diversification or market risks. While unsystematic risks are unique risks facing a particular firm as a result of the firm's characteristics, they can be avoided depending on the diversification strategy.

In addition, Abdullah et al. (2015), Cabedo & Tirado (2004), Sukri & Waemustafa (2016), Mineiro & Serrasqueiro (2018), and Ibrahim & Hussainey (2019) argued that firms are subjected to two types of risk: financial risks and non-financial risks. Financial risk indicates risks that directly affect financial performance, incorporating credit, liquidity and market risks. Market risk usually derives from exchange rate fluctuations, interest rates, stock price shifts, and commodity price changes. The credit risk arises from the decline of the actual value of the client's portfolio over time. Operational risk arises from errors in the proceedings, whether human errors, system errors or external factors. Liquidity risk arises from inadequate cash resources to meet short-term payment obligations.

In contrast, the disclosure of non-financial risk does not directly impact the assets, liabilities, and cash flows of a firm. Non-financial risk is generally divided into two types: business risk and strategic risk. The business risk derives from the company's risks to create competitive advantages and add shareholder value. Strategic risks emerge from general political and economic conditions and changes which affect the company's performance in the external environment (Abdel-Razek, 2014; Mineiro & Serrasqueiro, 2018; Ibrahim et al., 2019).

Furthermore, other professional bodies are paying attention to risk reporting classification issues. This includes, for instance, the United Kingdom's Institute of Chartered Accountants of England and Wales in 1997. External factors are driven by external risks or environmental

risks, while internal risks or process risks are driven by internal factors. In addition, uncontrollable environments and processes promote external factors.

The researcher noticed that the focal point of risk categorisations is to identify the risk components that mostly affect stakeholders' decisions and are supposed to be incorporated in financial reports. Hence, measuring and disclosing risks mainly depend on firms' approaches to categorising their risks. Yet, international accounting standards (IFRS 9) 'Fair Value Measurement' and IFRS 7 'Financial Instruments: Disclosure' focused on financial classification in terms of listing risks related to financial assets and liabilities.

2.4. Risk Disclosure Requirements in the International Accounting Standards

The international financial reporting standards (IFRS) require firms to disclose mandatory information about risks, such as currency, liquidity, and credit risks; however, there is no separate international accounting standard (IAS) for risk disclosure. Regulating risk reporting arises from disclosure requirements in several accounting standards, such as IAS (10), IAS (21), IAS (32), IFRS (7) and IFRS (8), to name a few (IASB; https://www.ifrs.org/newsandevents/). The requirements of IAS (10) stipulate disclosing events that occurred between the balance sheet date and the date of a reporting period, whether those events are in favour of the company or not; therefore, it can be said that this standard is adopted to a wide perspective in the concept of risk due to taking into account the positive and negative results that are expected to occur and have influence in the future on the firm.

Two kinds of events can be seen in this standard: first, events show conditions which occurred at the end of the reporting period (adjusting events). Second, after the reporting period (non-adjustment events), circumstances were shown. The researcher notes that it is urgently required to identify IAS (10) requirements in order to investigate the lag in the preparation of financial

statements to prevent management judgments that may misstate financial reports and affect the ability of users to make decisions.

IAS (21) provides that firms should disclose the effects of changes in exchange rates on the financial statements if these effects have a significant influence. Fluctuations in exchange rates can cause three types of risk: transaction risk or cash flows risk, which is defined as the effect of changes in exchange rates on transaction cash flows. Second, translation risk is related to translated financial reports accounts. Third, economic risk is related to the present value of cash flows for operating activities, which reflects the influence of fluctuations in exchange rates on revenues and operating expenses (Chandrakumaramangalam & Sivarajadhanavel, 2012, p. 10). Therefore, it can be said that this standard requires the disclosure of the risks of exchange rate instability, a component of market risk, which, in turn, is a component of financial risk.

IAS (32) and IFRS (7) stipulate disclosures to enable stakeholders to evaluate the importance of financial instruments as liabilities or equity to businesses, systematise financial instruments and counteract financial resources and liabilities. The scope, the existence, and content of risks associated with financial instruments in the annual reports and how they are managed by their management are criteria for risk communication. To assess a predictable loan and liquidity loss, risk disclosure under IFRS (7) includes qualitative and quantitative disclosure concerning different classes of financial instrument risks, such as the credit risk, liquidity risk and market risk (including sensitivity analyses). The following table distinguishes between financial assets and liabilities risks:

Table 2.1. Segregation among different types of financial instruments' risks

Risk Classes			Definition
		Currency risk	Risk of adjusting the value of financial instruments as a result of foreign exchange rate fluctuations

1	Market Risks	Interest Rate risk	The risk is associated with changes in the value of financial instruments as a result of interest rate changes.
		Price risk	Risk of fluctuations in financial instrument valuation results from market price changes.
2	Credit Risk		Losses resulting from failure to alter the contractual liabilities of several parties.
3	Liquidity Risk		Disability of firms to pay their liabilities or problems in the quick and fair value of their financial assets
4	Cash Flows Risk		The risk of changes in financial instrument cash flows is expected due to interest rate changes.

According to IFRS (8), companies are required to provide information about the kind of products and services they provide and the various geographical areas where they operate so that users of their financial statements can measure risk and return more accurately. Figure (2.2) explains the significance of following the standards for risk disclosure of international accounting standards. As considering Figure (2.2), international accounting standards aim primarily at improving disclosure transparency and integrity, so integrity risks are mentioned for all accounting standards to avoid legitimacy risks and obtain social acceptance; on the other hand, standards related to financial instruments and fair value focus on all type of financial risks arising from financial assets and liabilities. Operating cash flow risks are pointed out in IFRS (8), so non-financial risks are not compulsory revealed in accounting standards. Consequently, discretionary/voluntary risk disclosure requires efficient and effective monitoring mechanisms and corporate governance mechanisms to sustain integrity, transparency and accountability principles, and stakeholders' satisfaction.

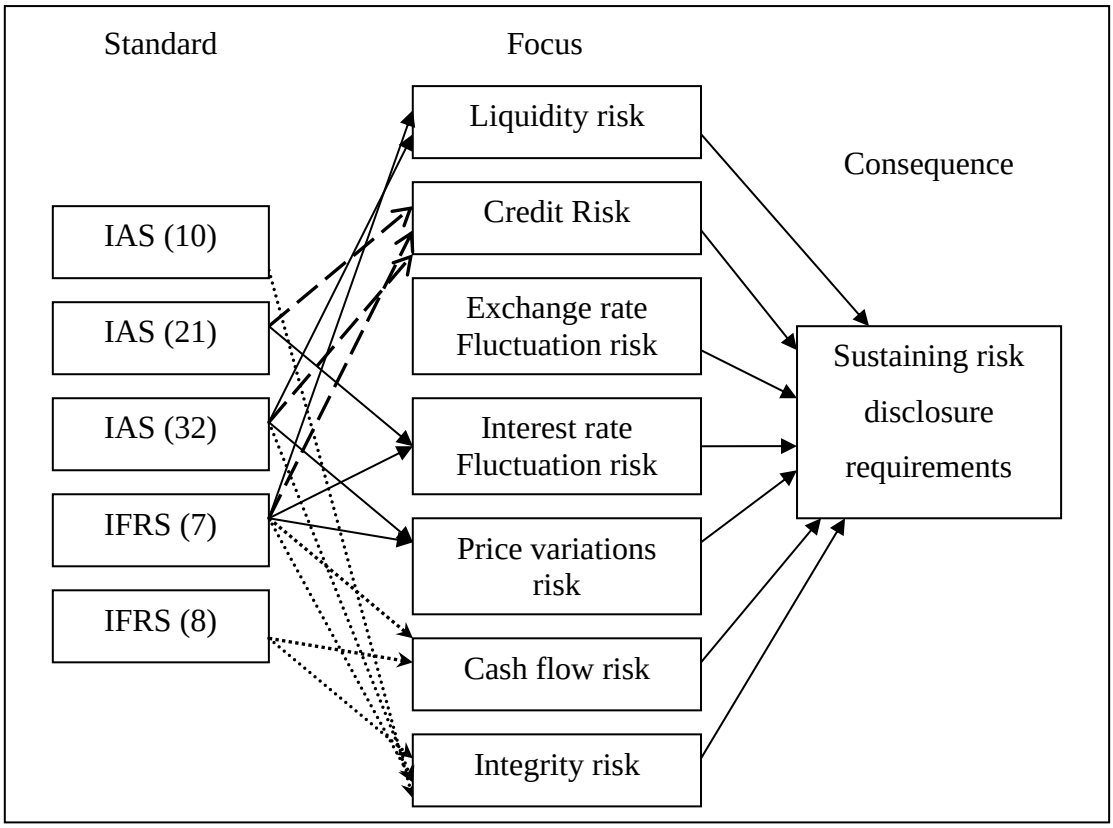

Figure 2.2. The degree of adopting risk disclosure requirements in terms of accounting standards (made by the researcher)

2.5. Theoretical Framework of Risk Disclosure

Risk disclosure has received specific attention in recent years, particularly after the 2007/2008 financial failure (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Ntim et al., 2013; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020); however, there is no generally accepted theoretical framework for investigating the motivations for risk disclosure (e.g. Deegan, 2002; Elamer et al., 2019, Elamer, Ntim, and Abdou, 2020; Ntim et al., 2013; Raj & Handley-Schachler, 2009). Even though theories cannot tell us how to act, they can tell us what we can and cannot do. Thus, when we must decide or act, these theories remove many variables from the equation (Chambers, 1996).

In previous studies, theories about socio-political and economic issues, such as institutional, legitimacy, stakeholder, agency, and resource-dependence, were used to explain managerial

decision-making related to risk disclosure (Amran et al., 2009; Linsley & Shrives, 2006; Lopes & Rodrigues, 2007; Elzahar & Hussainey, 2012; Greco, 2012; Elamer, Ntim, and Abdou, 2020). However, individual socio-political and economic theories have been limited in their ability to fully explain the various motivations which drive risk disclosure practices (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Oliveira et al., 2011; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020).

The theoretical perspectives adopted in prior disclosure studies have significantly varied (Deegan, 2002; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020) for several reasons; first, there was no single analytical framework available for analysing the required relationships (Belkaoui & Karpik, 1989). Second, there is no explicit, comprehensive disclosure theory underpinning the analysis (Roberts, 1992). Considering the wide range of theoretical perspectives, prior research has analysed corporate governance from a wide variety of theoretical perspectives and has acknowledged that corporate governance quality may motivate firms to increase their disclosure (see Ajinkya et al., 2005; Cormier et al., 2010; Dunstan, 2008; Gul and Leung, 2004). Corporate governance is thus regarded as an essential instrument for determining how much information is required from the company to satisfy stakeholder information needs (Gibbins et al., 1990; Haniffa & Cooke, 2005; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020) since the board of directors is in charge of managing the information disclosure in annual reports (Gibbins et al., 1990; Haniffa & Cooke, 2005; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020).

Since the main objective of the current study is to investigate the role of multi-layer governance mechanisms on risk disclosure quantity and quality, this study differs from previous research by exploring multiple theoretical perspectives (agency, stakeholder, resource-dependence, legitimacy and institutional theories), which provide the reasonable basis for understanding

and explaining CRD in the context of the European Union. In the following sections, the central thesis of each of these theories is discussed, leading to the formulation of hypotheses.

2.5.1. Agency theory

Agency theory suggests a complete separation between firms' owners as a principle and management as an agent, which is involved in setting up the company's daily operations (Jensen & Meckling, 1976). The agency theory has been defined by Jensen and Meckling (1976, p. 308) as '*An agreement under which one or more persons (principals) engage another person (agent) to implement a service on their behalf which involves the delegation of a decision-making authority to the agent*'.

The immediate assumption of agency theory is that managers have the opportunity to maximise the value of their income rather than to recognise the interests of the principal as rational agents, particularly under the information asymmetry between these agency parties. Moreover, investment, credit, and return decisions are primarily attributed to Information disclosure in general and risk disclosure in specific to reduce the information asymmetry among the agency parties (Cabedo & Tirado, 2004; Greco, 2012; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020). Given Jensen & Meckling (1976) and Schipper (1991), providing more disclosure is the management tool to reduce agency and monitoring costs, reducing the information asymmetry and enhancing shareholders' confidence. Furthermore, disclosing information about a firm's risks and uncertainties would enable the investors to manage risk diversification well (Schipper, 1991).

Empirically, several studies deployed the agency theory to explain the management motivations for disclosing high/low levels of risk information in the annual reports (e.g., Abraham and Cox, 2007; Woods & Reber, 2003; Vandemaele et al., 2009; Berger & Gleißner,

2010; Mbithi, Wang'ombe, and Moloi, 2020); however, other studies employed agency theory to explain the role of corporate governance mechanisms (e.g., board of directors' composition and structure, audit committee, ownership structure, and auditor quality) and other firm-specific characteristics (e.g., size, profitability, and leverage) in explaining the differences in risk disclosure levels (Abraham & Cox, 2007; Abraham et al., 2007; Amran et al., 2009; Beretta & Bozzolan, 2004; Elshandidy et al., 2013; Linsley & Shrives, 2006; Oliveira et al., 2011b; Rajab & Handley-Schachler, 2009; Elzahar & Hussainey, 2012; Mbithi, Wang'ombe, and Moloi, 2020). Since the results of these prior studies explain the motivations of the extent of risk disclosure and the role of corporate governance in view of agency theory are important, other factors should be considered to give a comprehensive outlook on risk disclosure levels.

2.5.2. Resource-dependence theory

Resource dependence theory posits that firms are open systems and are not independent due to their need to acquire and secure critical resources from their external environments (Durand & Jourdan, 2012; Pfeffer & Salancik, 1978). Firms need to manage their risks to gain access to crucial resources such as financial capital, deposits, and legitimacy on a long-term basis. External environments support and constrain organisations (Garud et al., 2010). Thus, successful firms ought to improve their operations to deal with their external environmental needs and gain the support of most resource owners (Pfeffer & Salancik, 1978; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021).

Resource-dependence theory also suggests companies with greater transparency in the form of increased risk disclosure can gain a competitive advantage by accessing critical resources, such as finance (Pfeffer & Salancik, 1978). Since it is often costly for firms to engage in risk disclosure (especially with regards to financial, legal, compliance, and regulation issues)

(Greco, 2012; Lajili & Zeghal, 2009), a firm might significantly benefit from more significant internal risk management, managerial expertise, corporate image, and reputation (Branco & Rodrigues, 2006; Linsley & Shrives, 2006), as well as cheaper capital (Botosan, 1997). In the same vein, board governance has a critical impact on firms' performance (Pfeffer & Salancik, 1978). As resources, directors serve multiple roles and are classified into three categories according to the roles they serve: 'business experts', 'support specialists', and 'community influencers' (Hillman, Cannella, & Paetzold, 2000).

Resource-dependence theory can also explain the role of risk disclosure as a signal to improve risk management and compliance with accounting regulations since disclosure impacts the perception of a firm's reputation externally. A positive reputation cannot be fostered without making related disclosures (Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020; Elamer, Ntim, and Abdou, 2020). Furthermore, boards of directors and shareholders' power may increase the quality of risk disclosure to gain access to critical resources, such as finances and business contracts (Pfeffer & Salancik, 1978; Jia et al., 2009; Ntim et al., 2013; Jizi et al., 2014; Elamer, Ntim, and Abdou, 2020). Investing in risk management and disclosure activities can enhance the efficiency of management (Rattanataipop, 2013). However, complementary competencies may allow some firms to achieve these efficiencies with fewer resources. Consequently, with sustained risk management and disclosure improvements, these firms may have a more significant competitive advantage (Barakat & Hussainey, 2013; Elamer, Ntim, and Abdou, 2020).

2.5.3. Legitimacy theory

Suchman (1995, p. 574) described legitimacy as 'A generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.' It generally sees a company as a social actor

seeking to conduct activities following society's standards, values, and boundaries (Deegan & Unerman, 2011a). Legitimacy is a dynamic technique because society's aspirations can change from time to time and from society to society simultaneously (Hoque, 2006).

Legitimacy theory is inspired by the concept of a ‘social contract’ (Patten, 1992). Businesses are placed at risk when a social contract is violated, as occurs when members of that society are dissatisfied with the performance of the business (Milne & Patten, 2002) or when the firm fails to meet society's expectations (Deegan & Rankin, 1996). A further way to empower firms to achieve better performance is to pressure them to meet legislation expectations (Buhr, 1998). Therefore, firms must communicate additional information, specifically about current and potential risks (Guthrie & Parker, 1989), for society to meet its expectations (Wilmshurst & Frost, 2000). Lindblom (1994) argued that firms could employ four legitimating strategies in response to different legitimating threats.

A few of these strategies include: first, drawing the attention of stakeholders to changes in the firm's performance, second, changing stakeholder perceptions without altering the firm's performance, and third, manipulating perception by deflecting attention from critical issues to those of greater appeal, and finally, altering external expectations of the firm's performance. Each of these four strategies relies heavily on disclosure. To alter negative perceptions, legitimising activities requires public disclosure (Cormier & Gordon, 2001; Deegan, 2000; Elamer et al., 2019). According to Deegan (2002), a firm's strategy is based on its perception of societal expectations or the terms of the social contract and how society perceives the company as acting and responding. Furthermore, firms can get legitimacy when their operations and structure value are compatible with the social system and adopt social norms in their operations (Scott, 1987; Suchman, 1995). Therefore, firms can legitimise their operations

and achieve social acceptance by disclosing information about the firms potential and actual risks (Edkins, 2009; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020).

The theoretical evidence suggests that firms need to gain social approval; they are likely to provide more corporate disclosure to reduce information asymmetry and mitigate agency costs on the one hand (Adhikari & Tondkar, 1992; Freeman, 1984; Salter, 1998; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020), and gain legitimacy through adopting the best practices in disclosure and governance as a result of the overseas aid provided by international organisations, on the other hand (Hassan, 2008; Judge et al., 2010).

The legitimacy theory has been widely used in the disclosure literature to enhance the understanding of disclosure practices. Often, firms disclose risk information to influence public policy, either directly in response to governmental or public concerns or indirectly to promote a positive image of the company (Patten, 1992). According to Guthrie & Parker (1989), disclosure practices are shaped by societal pressures (economic, social, and political), which legitimise the firm's existence. This has led to the hypothesis that information reporting is influenced by the level of political and social pressure companies are subjected to regarding their financial and non-financial performance (Cho & Patten, 2007). To combat these pressures, companies are disclosing more information to protect their image as legitimate businesses and avoid the negative consequences associated with legitimacy crises (De Villiers & Van Staden, 2006).

Therefore, legitimacy theory emphasises the importance of societal acceptance in ensuring a firm's existence and survival (Ghazali, 2007). The author argues that an underlying assumption of legitimacy theory is the belief that a firm's actions can have an impact on the surrounding environment in which it operates. In case a firm's activities are perceived to have detrimental or adverse effects on the environment, society may adversely react by boycotting the firm's

product or pressuring government intervention. In this instance, firms legitimate their activities through various means, including communication with relevant stakeholders (Ashforth and Gibbs, 1990).

2.5.4. *Stakeholder theory*

Prior accounting literature has widely recognised stakeholder theory as providing valuable insights into disclosure practices and the effectiveness of corporate governance mechanisms. Stakeholder theory aims to identify and understand how the company's actions affect its stakeholders (Ansoff, 1965). While the firm's growth and going concern will be threatened without the cooperation and support of all its stakeholders, their approval must be sought and its activities adjusted to win their approval. Gray et al. (1995) found that influential stakeholders motivate firms to adopt accountability to all their stakeholders and drive more significant efforts to work effective relationships with them. And an excellent way to manage effective relationships with stakeholders is to provide more disclosure through narrative disclosures to gain their support and approval (Gary et al., 1996).

A stakeholder theory holds that ethics and economics cannot be separated, and values are necessary for conducting business (Freeman, 1994). Instead of focusing on outcomes, stakeholder theory asks managers to identify the shared value they create and what ties stakeholders together. Additionally, it encourages managers to consider more carefully the relationships they desire to establish with stakeholders to achieve their objectives. It is essential to realise that a firm's activities are embedded within a network of stakeholder relationships (Darnall et al., 2010). According to Rowley (1997), stakeholder theory originated from two related streams: (1) defining stakeholder concepts and (2) classifying stakeholder relationships.

Stakeholder definitions have been attempted in various ways. The term 'stakeholder' is described by Freeman (1984) as any group or individual that can influence or is affected by the

achievement of the firm's mission. However, stakeholder groups are defined by Hill and Jones (1992) as individuals or firms with legitimate claims to the firm, and their legitimacy is derived through an exchange relationship. Gray et al. (1996) defined a stakeholder as anyone who can influence or influence a business firm's activities. These definitions offer a framework that helps to clarify what constitutes a stakeholder. Consequently, firms may be involved by a wide variety of stakeholders, such as shareholders, customers, suppliers, employees, creditors, competitors, public interest groups, local communities, government and private sector bodies, stock markets, trade associations, national and international societies, and general members of the public. In their analysis of stakeholder interests, Hill & Jones (1992) argued that each stakeholder provides critical resources to the firm, and as a result, everyone expects their interests to be met.

It is possible to classify stakeholders in different ways, including internal and external parties to the firm, owners or non-owners, with or without capital, individuals acting on behalf of the company, and those providing resources to a company. This distinction is because a variety of stakeholders have varying degrees of influence on the firm; some stakeholders have a stronger impact than others depending on the structure of the firm's/stakeholder relationship the existing contractual framework and the institutional support available (Friedman & Miles, 2002). There is, however, a helpful distinction between first and second-tier stakeholders (Freeman, 1984; Mitchell et al., 1997).

A firm's ability to succeed and flourish is dependent on the commitment of its primary stakeholder group. According to Donaldson & Preston (1995), the primary stakeholders are those directly benefiting from the firm's economic activities. In other words, a primary stakeholder can directly influence the firm's ability, such as shareholders, creditors, managers, employees, customers, suppliers, and stakeholders in the community. Investors contribute

capital to a public company and, in return, expect a satisfactory return on their investment and an increase in the stock market over time. The creditor expects to be reimbursed for their loans when they are repaid. The consumer plays a significant role in the revenue generation of the firm. Suppliers provide inputs to the firm while seeking fair prices and reliable buyers. In addition to human capital commitments, managers and employees contribute skills, time, and effort to the firm.

Additionally, they are expecting to be fairly compensated and to work under favourable conditions. In addition, regulatory stakeholders (e.g., local community groups, environmental groups, and other political lobbies) can exert political, legal, social, and governmental pressure on firms to act in an environmentally responsible way. A community-based firm provides locations, infrastructure, and tax breaks but is also bound by its responsibilities to improve and/or prevent environmental damage (Hill & Jones, 1992; Mitchell et al., 1997; Waddock & Graves, 1997; Henriques & Sadorsky, 2008; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020).

On the other hand, second-tier stakeholders are those who influence, affect, or are affected by the corporation but are not directly involved in transactions. Secondary stakeholders, such as the general public and the media, are not vital to a corporation's survival as they do not directly participate in its economic transactions (Mitchell et al., 1997). Still, they potentially have a negative effect on primary stakeholders. Since the public provides the firm with infrastructure through the taxation system, this assumes that corporate citizens will safeguard the environment, enhance it, or upgrade it. In addition, they will follow the rules of conduct established by the general public through legislative authorities. Firms' perceptions can be influenced by the media through mass communication. There is, therefore, the potential for public mobilisation both in favour and against firms' environmental activities (Clarkson, 1995;

Donaldson & Preston, 1995; Freeman, 1984; Hill & Jones, 1992; Mitchell et al., 1997; Waddock & Graves, 1997; Henriques & Sadorsky, 2008; Ntim et al., 2013; Mbithi, Wang'ombe, and Moloi, 2020).

Stakeholder theory provides a way for dealing with multiple stakeholders who have multiple conflicting interests. There is no way to satisfy the needs of shareholders without addressing the needs of other stakeholders (Foster & Jonker, 2005; Jamali, 2008) through two main approaches to stakeholders: first, the prescriptive approach, which concerns the ethical or normative stakeholder theory, and, second, the descriptive approach which focuses on the managerial stakeholder theory (Deegan, 2000; Gray et al., 1996).

Considering the ethical perspective, each stakeholder has certain minimum rights that must not be violated and must be fulfilled regardless of their power level. Therefore, all stakeholders have a right to be informed of how their firms affect them, regardless of whether that information may be utilised (Deegan, 2000). Gray et al. (1996) defined accountability as the duty to account (not necessarily monetary) or to reckon one's actions regarding one's choices. It implies two obligations, i.e., the obligation to take certain actions and the obligation to report on those actions. The accountability model requires firms to have a reporting system for their activities. As a consequence, additional disclosures of risk-related issues are needed to inform stakeholders about the extent to which managers' responsibilities have been met (Gray et al., 1991) in accordance with the corporate governance principle of disclosure and transparency.

The managerial perspective of stakeholder theory is different from the normative ethical perspective. This is because it argues that firms must satisfy the information needs of stakeholders who are critical to the firm's survival. Friedman and Miles (2002) argued that some stakeholders have more significant influence over the firm. The degree to which a stakeholder is perceived as powerful will determine whether or not that stakeholder receives

information (Deegan and Unerman, 2011b). A stakeholder's salience and identification depend on whether they possess one or more attributes of a relationship: power, legitimacy, and urgency (Mitchell et al., 1997).

According to Ullmann (1985), stakeholders' ability to influence firms' management relates to their control over their needed resources. Effective use of resources entails making an event occur or achieving the desired outcome. Shareholders may influence company policy and protect their investment by voting under a corporate governance code such as the UK Corporate Governance Code (2018). Similarly, political power refers to a government's capability to use its political muscle to pursue lawsuits and legal action against firms.

Observing risk disclosures from the perspective of stakeholder theory in relation to both ethical and managerial criteria reveals that stakeholder theory describes how real-world relationships are formed based on descriptive analysis (Donaldson & Preston, 1995) and considers information disclosure as a firm's method of gaining support and approval for its operation. This is accomplished by simultaneously distracting stakeholders from their opposition and disapproval. The stakeholder theory acknowledges that there are a variety of stakeholders with an interest in the firm's behaviour and its impact on the environment (Moneva & Llena, 2000). Due to firms' recognition of stakeholder rights, they tend to disclose more risk information in order to satisfy their needs (Monteiro & Aibar-Guzmán, 2010).

2.5.5. Neo-institutional theory

According to neo-institutional theory, firms tend to adopt social norms and rules into their operations and structures to gain social acceptance and legitimacy (e.g., DiMaggio & Powell, 1983; Scott, 1987). Adopting the neo-institutional theoretical perspective is a response to the academic scholars' latest calls for an alternative theoretical framework to study the management motivations toward risk disclosures (Abraham & Shrives, 2014; Christopher,

2010; Dobler et al., 2011). A neo-institutional theory may offer different intuitions for interpreting risk disclosure and provide a complete understanding of the impact of multi-layer governance mechanisms on risk disclosure within specific regulations and institutional contexts. (Elamer, Ntim, and Abdou, 2020; Haque & Ntim, 2018; Ntim et al., 2013; Zattoni & Van Ees, 2012). One reason is that a neo-institutional theory incorporates both an efficiency perspective and a legitimation view; the efficiency perspective suggests that effective governance mechanisms may lead to more transparent risk disclosures. Consequently, increased risk disclosure can mitigate agency conflicts and reduce the information asymmetry between management and shareholders (Jensen & Meckling, 1976; Abraham & Cox, 2007; Ntim et al., 2013; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020).

A legitimation view of the neo-institutional theory suggests that firms are not only competing for critical resources, such as cheaper capital, but are also seeking social acceptance and legitimacy (Elamer, Ntim, and Abdou, 2020; Zattoni & Cuomo, 2008). In this respect, Scott (2001) suggested that neo-institutional frameworks contain three analysis levels: social institutions (country-level institutions), governance arrangements, and firms as economic actors. Social institutions at the country level offer formal and informal platforms that provide standards of acceptable social conduct (Judge et al., 2008; Judge et al., 2010).

In this case, social institutions may interact to create, promote and/or limit the spread and/or enforcement of structures and actions at lower levels. Also, complying with governance, IFRS recommendations and voluntarily practices of risk disclosure can help to gain legitimacy by fairly balancing the conflict of interest among different influential stakeholders on the one hand (Freeman & Reed, 1983; Freeman, 1984) and sending a signal of trustworthiness to existing and potential investors about the quality of governance structures and strategies, which may enhance risk disclosure practices (Zattoni & Van Ees, 2012; Ntim et al., 2013; Haque & Ntim,

2017; Mbithi, Wang'ombe, and Moloi, 2020). According to neo-institutional theory, firms are not only competing for legitimacy and social approval but also critical resources ('efficiency'). In this study, risk disclosure can be considered a strategy to gain social acceptance and legitimise firms' operations. In increasing commitment to risk disclosure practices, a firm can send a credible signal to its stakeholders about the quality of its governance and thereby enhance its legitimacy, social acceptance, and efficiency when deploying its resources (Connelly et al., 2011; Elamer, Ntim, and Abdou, 2020; Ntim et al., 2013).

2.5.6. Justification for a multi-theoretical framework

Based on the previous discussion, the rationale for the development of a multi-theoretical framework is based on the fact that no comprehensive theory covers all the aspects of this research. To the best of the researcher knowledge, no single theory can be used to explain the relationships among the variables examined in this study. In all these theories, companies are assumed to operate within a society that influences their practices and possesses the resources necessary for their operation. In order to obtain these resources, companies must meet societal expectations. Thus, corporate disclosures can be used to maintain the reputation of a company and to convince the public that the company complies with societal (and other stakeholders) expectations. It has been argued that these theories are complementary rather than competitive. Therefore, the use of a multi-theoretical framework in this study allows a better understanding of the role played by governance mechanisms in explaining the behaviour of risk disclosure practices.

However, under agency theory, risk disclosure may reduce information asymmetry between groups and contribute to making good credit and investment decisions; agency theory no longer seems relevant to explaining risk disclosure motivations. According to agency theory, risk disclosure is typically directed towards opportunistic financial agents - although those agents

are not likely to be the only ones to benefit (Abraham & Cox, 2007; Gray, Kouhy, & Lavers, 1995). On the other hand, the resource dependency theory states that firms who commit to greater risk disclosure will increase their access to critical resources, such as finance (Branco & Rodrigues, 2006; Pfeffer & Salancik, 1978). Furthermore, risk disclosure is a strategic motive for corporations rather than a means to demonstrate responsibility and accountability for a broader range of corporate stakeholders (Lopes & Rodrigues, 2007; Parker, 2005).

Both legitimacy theory and institutional theory focus on the ability of firms to achieve social acceptance and legitimacy (Chen & Roberts, 2010; Deegan, 2002). Risk disclosure, therefore, enables companies to gain social acceptance and legitimise their operations. Even though both theories are beneficial for explaining the motivations for CRD (Edkins, 2009; Raj & Handley-Schachler, 2009), they do have a number of limitations. The underlying problems include ambiguity regarding the identity of corporate stakeholders, prioritizing financial stakeholders, and the inability to predict and explain managerial behaviour (Deegan, 2002; Gray et al., 1995; Parker, 2005).

According to the stakeholder theory, corporations use risk disclosure to meet the information needs of their diverse stakeholders and obtain approval, a crucial element for corporate survival (Freeman, 1984; Freeman & Reed, 1983). The stakeholder theory is concerned with identifying and referring to specific, influential stakeholders in society, and it is these stakeholders who grant legitimacy to a corporation (Gray et al., 1995; Reverte, 2009). Stakeholder theory has been criticised as focusing on the interests of the most powerful and influential stakeholders the majority of whom are financial stakeholders (Amran et al., 2009; Linsley et al., 2006; Oliveira et al., 2011).

Accordingly, each theoretical perspective has its limitations in explaining risk disclosure practices, and given the vast array of corporate motivations for risk disclosure (Beretta &

Bozzolan, 2004; Cabedo & Tirado, 2004), we adopt a multi-theoretical perspective. We consider the range of individual approaches to be complementary rather than competing theories, drawing upon prior research (Gray et al., 1995; Amran et al., 2009; Oliveira et al., 2011; Ntim et al., 2011). As the previous theories are interdependent, a combined analysis offers a more comprehensive basis for understanding and explaining the motivations for risk disclosure within the EU context.

All in all, To the best of the researcher knowledge, there is no single theory that can be utilised to explain the relationships among the main variables examined in this research. We argue that a multi-theoretical framework can be integrated through their focus on the role of governance at firm and country level explaining the behaviour of risk disclosure practices.

In all these theories, companies are assumed to operate within a society that influences their practices and possesses the resources necessary for their operation. In order to obtain these resources, companies must meet societal expectations. Thus, corporate disclosures can be used to maintain the reputation of a company and to convince the public that the company complies with societal (and other stakeholders) expectations. It has been argued that these theories are complementary rather than competitive. Therefore, the use of a multi-theoretical framework in this study allows a better understanding of the role played by governance mechanisms in explaining the behaviour of risk disclosure practices.

2.6. Concluding Remarks

This chapter discussed the underlying basis of risk reporting. It covers the definitions of risk and how to categorise different types of risk in professional academic initiatives. Risk disclosure is one of the essential contents in financial reports for decision-makers, regulators, and monitoring bodies because of its fatal role in narrowing the information gaps between management and stakeholders in terms of uncertainty relating to firms' procedures and

activities. Risk disclosure sections in the annual reports can be considered as red flags on a company's future performance and reputation. It is clear that there is no separate international accounting standard (IAS) for risk disclosure, but regulating risk reporting arises from disclosure requirements in many accounting standards, such as IAS (10), IAS (21), IAS (32), IFRS (7) and IFRS (8), to name a few.

The requirements of IAS (10) adopted a wide perspective of the concept of risk in order to take into account the positive and negative results that are expected to occur and influence the future of the firm. Moreover, there is no broad and acceptable theoretical framework for investigating the motivations regarding risk disclosure yet, and a single theoretical framework may fail to provide a complete description of how firm and national governance mechanisms may affect management motivations toward risk disclosure. Accordingly, this study adopts a number of theories for investigating the different motivations for shaping risk information. To broaden the theoretical background of risk disclosure and the main drivers of risk reporting, prior literature is analysed in the next chapter to formulate the research hypothesis.

Chapter Three: Literature review and Hypotheses Development

3.1. Overview

A detailed discussion of the proposed conceptual framework for risk disclosure has been provided in Chapter 2. A review of the relevant literature is provided in this chapter, which examines the relationship between risk disclosure and firm-level and country-level corporate governance. There has been a substantial body of academic literature on the disclosure of corporate risks in recent years. Research from a wide range of theoretical backgrounds has concluded that risk disclosure can be viewed as an effective strategy to improve stakeholders' confidence and provide support by reducing information asymmetry between managers and stakeholders (e.g., Freeman & Reed, 1983; Donaldson & Preston, 1995; Amran et al., 2009; Elzahar & Hussainey, 2012; Ntim et al., 2013; Neifara & Jarboui, 2018; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Nahar & Jahan, 2021; Hao & Dong, 2022). Also, risk disclosures are affected by a wide range of explanations. Prior research has focused primarily on the content and extent of corporate risk disclosure within annual reports, its relationship to economic performance and corporate reputation, and the impact of specific corporate characteristics on disclosure levels.

Nevertheless, few studies have examined the relationship between corporate risk disclosure and corporate governance at the firm and country levels directly, and very few studies have addressed such a relationship across countries. This is particularly true in terms of the quality of risk disclosures. Further, not all aspects of corporate governance have been explored in the literature, although prior studies have identified that good corporate governance is associated with transparency and credible disclosure (see, for example, Elamer et al., 2018; Salem et al., 2019).

This chapter is divided into four additional subsections: Section 3.2 discusses risk disclosure practices and corporate governance reforms within the European Union context. Section 3.3 outlines the literature on firm-level governance and risk disclosure. Section 3.4 discusses country-level governance and risk disclosure. Section 3.5 concludes the chapter.

3.2. Risk Disclosure Practices and Corporate Governance Reforms in the European Union

3.2.1. Risk disclosure practices in the European Union

Worldwide, there is a remarkable variation in the regulations on corporate risk disclosure, ranging from merely discretionary to rigidly mandatory. This section aims to overview the regulatory frameworks surrounding risk reporting in different countries across the EU context. Regulators require companies to report their risk factors. European listed companies must prepare their financial statements according to International Financial Reporting Standards (IFRS) which requires them to disclose risks related to financial instruments in a quantitative and qualitative manner. The IASB also recommends that companies provide a Management Commentary, which includes information about risk exposures (IASB, 2010). This commentary is in a narrative format and is meant to supplement and complement the financial statements. The risk disclosure in the management commentary should include both internal and external risks, and should mention both negative consequences and potential opportunities. However, this is only a recommendation and not a requirement. Companies in the EU are required to provide a description of the risks and uncertainties the company faces in their financial statements, or more specifically, in the management report. Directive 2013/34/EU mandates this, but it also gives managers a lot of freedom in its implementation. The level and detail of risk disclosure is left to the discretion of management, making risk disclosure in the European context often referred to as quasi-mandatory or quasi-voluntary (see for example, Dobler et al., 2011, Mazumder and Hossain, 2018).

In the UK, corporate risk reporting is mandatory for publicly traded companies under the Companies Act 2006 and the Financial Reporting Council's Corporate Governance Code. The Companies Act 2006 requires companies to include a statement in their annual report that

identifies the principal risks and uncertainties that the company faces, and to explain how it manages those risks. The Financial Reporting Council's Corporate Governance Code also requires companies to provide an explanation of the company's risk management processes and an assessment of the effectiveness of those processes. Furthermore, The Institute of Chartered Accountants in England and Wales (ICAEW) has also guided and motivated UK firms to include risk disclosures in their annual reports.

ICAEW has published several papers covering the prospects and problems of risk reporting as well as how firms in the UK communicate risk information in their annual reports (ICAEW, 1997, 1999, 2002, 2011). Their accounting issues were developed in accordance with the principle-based approach that stresses voluntary disclosure regarding risk issues in order to reduce capital costs. Furthermore, ICAEW (2011) has recently proposed a number of methods to improve the disclosure of risk in annual reports (e.g., considering investor needs continuously, using quantitative over qualitative risk information, and keeping shorter, more detailed lists). Risk reporting in the UK is characterised by two main features. The first is the preference for voluntary risk reporting that is intended to improve accounting information and reduce the cost of capital. The second is the requirement that each firm identifies its own risks rather than providing a listing of risks.

In Germany, a recent publication by the German Accounting Standards Board (GASB) focuses on risk reporting regulatory issues, making Germany the only country to have issued a comprehensive accounting standard in this area. Dobler (2005, 2008) asserted that, as a result, the German experience may have influenced worldwide efforts to codify a standard for risk reporting accounting. According to German accounting standard no. 5 (GAS, 5), the primary objective is to provide users with appropriate and reliable information that can be used to make informed decisions, providing a clearer picture of the risks that could impact the future

development of a firm (GAS 5: Paragraph 2). GAS 5 calls for all risk-related disclosures to be included separately in the narrative of the annual report, preferably under the heading ‘Risk and Opportunities’ (Elshandidy et al., 2015). Under GAS 5, the risk is narrowly defined as the potential for a negative impact on firms' financial results in the future. In contrast, the opportunity is defined as the potential for a positive impact (paragraph 9 of GAS 5).

According to this standard, firms' annual reports should include a section on Risks and Opportunities in their narrative sections, describing risk management policies and organisational structures. As part of GAS 5, firms must disclose their residual risks, such as industrial and market risks, and any other risks that significantly affect their business. The Accounting Standards Committee of Germany (ASCG) also requires that German publicly traded firms, which are formally required to adopt IFRS fully, should apply the main risk reporting requirements under GAS 5.

In France, information regarding risks is neither regulated nor has a standard structure, as in Germany. Under French commercial law, the board of directors' report is required to provide a description of significant risks and uncertainties and the objectives and policies adopted to manage those risks and uncertainties. In practice, many listed French companies include in their annual reports a section on risk factors describing selected events that could adversely affect their financial statements in the future. As well as this, they report extensively on financial risks based on the International Accounting Standards (IASB 2010). Although the process of identifying and assessing risk factors is inherently complex and cannot be verified, disclosure of risk factors is almost entirely at the discretion of management. French annual reports are prepared on mandatorly basis similarly to firms in the United States which are subject to mandatory requirements, do not provide as much disclosure as their European

counterparts (Derouiche, Manita, and Muessig, 2021; Garefalakis, Sariannidis, and Lemonakis, 2020).

Additionally, the European Union (EU) has also attempted to provide guidelines for companies whose securities are listed on a stock exchange within the EU regarding risk disclosure. According to EU directive 2004/109/EC, all listed companies have to publish a management report that describes the principal risks and uncertainties the company is exposed (EU Directive 2004/109/EC, 2004). The directive did not provide sufficient information regarding the content and structure of risk disclosures. Italian institutions had voluntarily reported risks (Beretta & Bozzolan, 2008). The Italian Civil Code 2007 amended the Transparency Directive (Directive 2004/109/EC) to require companies to address their risks and management responses in the MD&A section of their annual reports (Elshandidy & Neri, 2015).

In Italy, corporate governance and annual reporting are closely linked in the Italian code, with specific disclosure requirements included in the recommendations. The recent version whish is 2020 coroprate govrance of the corporate governance report, considerable attention is paid to the disclosure of risks, with a specific appendix dedicated to discussing the importance of risk management disclosures. This emphasis on risk disclosure stems from a document published in 2008 by the Council of Italian Chartered Accountants (IRDCEC, 2008), which was intended to assist organisations in complying with new management reporting requirements that arose after the introduction of Directive 2001/65/EC and subsequent changes in the Civil Code of Italy (Legislative Decree No. 32/2007 that amended the Civil Code's Article 2428). As a result, managers must provide details of all risks faced by their company and how they have managed those risks in their annual reports. Corporate risk reporting is mandatory for publicly traded companies under the Consolidated Law on Financial Intermediation, also known as Testo

Unico della Finanza (TUF). The TUF requires companies to provide an explanation of their risk management processes and an assessment of the effectiveness of those processes.

3.2.2. Corporate governance reforms in the European Union

Over the past few years, corporate governance has made significant progress in the Europe region. The financial crisis of 2007/2008 has forced international corporate governance reforms in Europe and beyond, as demonstrated by the recent OECD/G20 Principles of Corporate Governance and other guidelines. There is no doubt that corporate governance regulations enhance the legal system for corporate governance as they provide a guideline for organisations in improving their practices, yet they should not be viewed as an end in themselves (Crescent Enterprises, 2016, p. 8; Haque, 2019, p. 24).

The commitment approach is one of the key features of the corporate governance structure. In particular, as seen in Table 3.1, the balance between a 'comply or explain' approach and a ‘voluntary’ approach may adjust over time, given the dynamism of the business environment and culture. A ‘comply or explain’ approach has been used in corporate governance codes in the UK and France, while it is a ‘voluntary’ approach that is primarily used in corporate governance codes in Germany and Italy.

Table 3.1: CG codes for 4EU countries

State	CG codes	Year	fulfilment approach	Issuing Body
Germany	German Corporate Governance Code	2022	comply or explain’	Corporate Governance Kodex
UK	The UK’s Combined Code	2018	comply or explain’	Financial Reporting Council (FRC)
France	The French Code	2004	Voluntary	AFEP and MEDEF
Italy	Revised Code of Conduct	2006	Voluntary	Corporate Governance Committee

Source: Adapted from: IFC, 2015, P. 9; AMF, 2016, P. 15; Pletz & Upson, 2019 p. 1016; Rühmkorf et al., 2019, p.1047.

The following sub-sections demonstrate the differences across European countries in light of CG mechanisms and their role in risk disclosure from theoretical and practical views.

3.2.2.1. Board of directors' characteristics (structure, size, and composition)

There is a wide variety of board structures in Europe, which can be labelled into a dual system of unitary (one-tier), two-tier, or Nordic structures (IFC, 2015, p.37). As shown in Table 3.2, one-tier boards are common in the UK; however, the separation between CEO and chairperson positions (one-tier structure) is mandatory in the German CG. In France and Italy, it is allowed to choose either a single-tier board or a two-tier board code.

The effectiveness of the supervisory board's monitoring role may largely depend on the board size; thus, best practices of corporate governance around the world suggest that the board should have a reasonable number of directors (Domnguez & Gamez, 2014).

The recommended size of the board varies across regions and is explained by the differences in firm characteristics and industry characteristics. According to a survey of 15 European Union states, Germany has the highest average number of directors per board at 17, while the UK has the lowest average number at 12 (IFC, 2015, P.38). It is widely agreed that the composition of boards of directors is heavily influenced by the ratio of non-executive directors to their total membership (Haniffa & Cooke, 2002). But despite differences in board composition, nearly all countries have minimum criteria for independent management.

Most countries have practically determined the acceptable limits of independence and non-executive board members; the UK, French, and Italian corporate governance (CG) codes require about 33-50% independent board members. However, the German code recommends a good percentage of independent directors.

Table 3.2: Board of director characteristics (structure, duality and independence)

Country	**Board composition**		**%Independent Directors**	**CEO Duality/ Separation**
	Size	**Type**		
Germany	17	Two-tier	Adequate number	Mandatory
UK	12	One-tier	50%	Recommended/ CG codes
France	14	The choice between one-tier and two-tier board structures.	33%-50%	Voluntary
Italy	14	Choice of three different structures: the 'traditional' model or two-tier or one-tier.	33% or 1/3	Voluntary

Source: (IFC, 2015, p. 44; Meier & Meier, 2013, p. 8-9)

In terms of gender balance on boards, companies are called upon to adopt policies that will increase the number of women on boards and in senior positions. The G20/OECD CG Principles recommend that board members periodically assess their performance to determine whether they have the right combination of expertise and experience. In Table 3.3, it is shown that despite the relatively high gender diversity in the EU boards, Germany and France are the countries with the highest percentages of women on their boards. At the same time, The UK government has been pushing for women to play a greater role in corporate governance since 2011. For example, the UK government released the Hampton-Alexander review in 2015, which recommends that companies achieve 33% of women on the boards of FTSE 350 by 2020. More recently, the FTSE Women Leaders Review (2022) set a target of 40% representation of women on FTSE 350 boards to be achieved by 2025. Female directors in German and French firms represent 50% and 40%, respectively; however, females represent 33% of the Italian directors.

Table 3.3: Women's participation in the board of director composition

Country	**Women's participation**	
	%female board members	*Deadline*
Germany	50	2018
UK	40	2025
France	40	2017
Italy	33	2015

Source: (AMF, 2016, P.33)

3.2.2.2. External audit

Throughout Europe, external auditing is one of the focal attributes of governance codes. All countries are required to have their financial statements externally audited, and the selection of an external auditor is delegated by various authorities, including Board selection and the participation of shareholders. There are requirements for confirming and training external auditors in some codes; there is also a call for organisations to turn over external auditors after 6-7 years for Germany, France, and Italy, and they cannot be reappointed before three years (OECD, 2019).

3.3. Related Literature and Research Hypotheses Development

Several studies have been undertaken to investigate the determinants of risk disclosure at the firm and country levels, and to test the association between firm-level governance mechanisms, ownership structure, country-level governance indicators, and risk disclosure quantity and quality because of different theoretical frameworks. The main findings of this literature are inconsistent regarding the role of firm-level governance mechanisms on risk disclosure. Thus, there is still an essential need to explore incentives that stimulate firms to provide mass and high-quality risk information in their annual reports (Abraham and Cox, 2007; Barakat & Hussainey, 2013; Dobler, 2008; Vandemaele et al., 2009; Elshandidy, 2011; Kaufmann et al., 2011; Ntim et al., 2013; Neifara & Jarboui, 2018; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Nahar & Jahan, 2021; Hao & Dong, 2022).

Elshandidy and Neri (2015), Mokhtar, and Mellett (2013), Ntim et al. (2013), and Oliveria et al. (2011a) confirm that the independent board of directors, Big-4 auditor and the level of risk disclosure are significantly associated. However, the relation between board independence, audit committee and risk disclosure was insignificant, based on the empirical evidence provided by Elzahar & Hussainey (2012) and Al-Shammari (2014), Neifara & Jarboui (2018),

and Nahar & Jahan (2021). Also, several previous studies have indicated that concentrated ownership is positively related to the extent of disclosure, but the findings of empirical research are mixed (Adhikari & Tondkar, 1992; Archambault & Archambault, 2003; Salter, 1998; Abdallah & Eltamboly, 2022).

At the country level, there is an evident scarcity of studies on how national governance (CG) mechanisms outline the level of risk disclosure, as far as the researcher knows, and these studies concluded that country-level governance is positively associated with firms' disclosure practices (e.g., Essen et al., 2013; Shen et al., 2012; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020).

On the other hand, risk disclosure has considerable attention in the disclosure literature; however, several prior studies on risk disclosure empirically focused on a single country level to measure the determinants of the occurrence and extent of risk disclosure within firms (e.g., Aggarwal & Kallapur, 2018; Amor-Esteban, García-Sánchez, and Galindo-Villardón, 2018; Li, 2008; Linsley & Shrives, 2006). This strand of literature identifies the second gap in the research on risk disclosure, and this motivates the current study to provide an extensive analysis of the main drivers of the levels of risk disclosures quantity and quality through a cross-European country research which covers four of the biggest EU countries (i.e., the UK, Germany, France, and Italy).

Theoretically, extant studies have tended to rely on individual socio-political and economic theories (e.g., institutional, legitimacy and stakeholder; agency and resource-dependence, respectively) in explaining the managerial motivations toward risk disclosure (Amran et al., 2009; Elzahar & Hussainey, 2012; Greco, 2012; Linsley & Shrives, 2006; Lopes & Rodrigues, 2007), Whereas, the ability of the individual socio-political and economic theories to

thoroughly explain motivations and differences in risk disclosure have been limited (Beretta & Bozzolan, 2004; Cabedo & Tirado, 2004; Ntim et al., 2013; Oliveira et al., 2011).

Consequently, Amran et al. (2009), Deegan (2002), Elshandidy (2011), Gray et al. (1995), Ntim et al. (2013), and Oliveira et al. (2011) recommend adopting a range of individual theories for investigating different motivations for shaping risk information, may provide a more prosperous basis of explaining these motivations within and across firms. The current research endorses this vein and suggests that it is essential to adopt, as a complementary, a multi-theoretical framework to examine the effect of multi-layer governance mechanisms on risk disclosure quantity and quality.

Table (3.1) summarises the studies involving CG and risk disclosure and illustrates the main similarities and differences. The majority of these studies used content analysis to quantify the risk extent in annual reports; others used unweighted self-constructed risk indexes, yet these disclosures indexes are subjective because they assume the equality of the importance for risk items.

Table 3.4: A chronological review of practical corporate governance and risk disclosure studies

Study	Scope	CG Mechanisms	Research Method	Results
Abraham & Cox (2007)	The UK	Ownership structure, non-executive and independent directors	Content analysis and regression model	Significant
Dobler et al., (2011)	The UK	Institutional ownership, Independent directors	Content analysis and regression analysis	Significant
Oliveria et al., (2011a)	Portugal	Independent directors, Auditor type	Content analysis and regression analysis	Significant
Erkens (2012)	30 countries	Board independence, ownership structure	Content analysis and regression analysis	Significant
Elzahar & Hussainey (2012)	The USA, the UK, Canada, Germany	institutional ownership, role duality, board size, board composition, and audit Committee size	Content analysis and regression analysis	No significant relationship
Mokhtar & Mellett (2013)	Egypt	CEO duality, the board size, auditor type and ownership concentration	Content analysis unweighted disclosure index, multiple regression analysis	Significant
Ntim et al. (2013)	South Africa	Board of directors' characteristics (diversity, board size and independence, CEO duality)	panel data regression models	Mixed results
Al-Shammari (2014)	Kuwait,	Board independence, audit committee, the board size	manual content analysis and regression model	Mixed results
Elshandidy & Neri (2015)	The UK and Italy	Independent directors, the board size	Content analysis, regression model	Significant
Madrigal et al., (2015)	Spain	Independent Board members, ownership structure	Content analysis- risk disclosure index	Significant

Al-Hadi (2015)	Gulf Corporation Council countries	Board risk management committee	Risk disclosure index, panel regression models	Significant
Moumen et al. (2016)	nine countries in the MENA zone	Board characteristics	Manual content analysis- disclosure index, pooled OLS regression	Mixed results
Khalil & Maghraby (2017)	Egypt	Board characteristics	manual content analysis, Ordinary least-squares regression	No significant relationship
Elamer et al. (2017)	Ten countries in the MENA zone	Islamic governance quality and national governance quality	Unweighted (weighted) risk management and disclosure index.	Significant
Haque (2018)	12 MENA countries	Executive, supervisory power, ownership	GMM estimation method	Mixed results
Ibrahim et al. (2019)	Saudi Arabia	CEO duality board independence, institutional ownership, auditor type	Content analysis, Ordinary least-squares regression	Mixed results
Elamer et al.(2019)	100 banks in 14 MENA stock exchanges	Sharia supervisory board, ownership structures, and country-level governance, including the absence of violence and control of corruption (CC).	unweighted risk disclosure index	Significant
Dobija et al., (2021)	Poland	Gender diversity and board size	regression models	Significant
Nahar & Jahan (2021)	160 banks across 45 countries	Risk committee	unweighted risk disclosure index	Significant

3.3.1. Firm-level corporate governance

The current study expects that the board of directors' characteristics, i.e., the board of directors' composition, risk management committee existence and external auditor type, may have an essential role in explaining variations in risk reporting within and between firms. The Board of directors, audit quality, and risk committee will be focused on shifting toward potential risk issues and disclosure themes displayed due to the changes in governance structures across European countries. While there are far and wide distinctive models of board structures in the European region, it can be classified into a dual system of unitary (one-tier) and two-tier, or into three categories: one-tier, two-tier, and Nordic structures (IFC, 2015:37).

3.3.1.1. Board independence

Agency theory predicts that independent directors are an essential requirement of the governing board of directors, not just to deal with agent and principal agency problems (Linsley & Shrives, 2006; Oliveira et al., 2011; Adelopo, Yekini, Maina, and Wang, 2021) but also to endorse the interests of other stakeholders. Based on the agency theory perspective, independency means that there are no ties between the board of directors and executives; thus, independent directors are more likely to be independent in their opinions. They can give objective and beneficial thoughts, which are more likely to mitigate agency conflicts between principals and agents (Elshandidy & Neri, 2015).

Furthermore, signalling theory argues that independent directors have incentives to signal their lack of collaboration with executives and their ability to improve their company's market value by increasing the levels of disclosure. Also, stakeholder theory suggests that diversity on boards of directors' culture and gender can improve board independence and

managerial ability of directors (Cabedo & Tirado, 2004; Elzahar & Hussainey, 2012; Adelopo et al., 2021) on one side, and enhance the relationships with stakeholders, on the other side (Amran et al., 2009; Donaldson & Preston, 1995).

The boards are composed of non-executive board members to their total numbers (Haniffa & Cooke, 2002). Still, despite differences in board composition, nearly every country has a minimum number or ratio criteria for independent managers. In terms of addressing the agency issues between managers and stockholders, the upper limits of independence and non-executive board members have been practically determined by most countries; the UK, French, and Italian corporate governance (CG) codes require about 33-50%, independent board members. But German code recommends an adequate number of independent directors. Also, a number of European countries empower the CEO duality/one-tier board of directors and reinforces the separation of the CEO and the board chair/ two-tier boards of directors so as to upgrade the board independence (IFC, 2015; Meier & Meier, 2013; Adelopo et al., 2021).

Considering the role of corporate governance in risk disclosure, the accounting literature links the effectiveness of boards' monitoring role to their independence. Ajinkya et al. (2005) and Karamanou & Vafeas (2005), and Adelopo et al. (2021) have examined the relationship between board composition and risk disclosure. Their findings indicate that the percentage of independent directors on the board is significantly associated with the level of information disclosure. Similarly, other previous studies get further pieces of evidence that board composition is positively correlated with the level of firms' disclosure. Forker (1992) provided the initial evidence-based on 82 UK-listed firms, reporting a positive impact of the percentage of independent directors on financial disclosure.

These findings are consistent with the evidence provided by Gul & Leung (2004) and Romano & Guerrini (2012) that firms with a high percentage of independent directors are more likely to significantly correlate with voluntary and mandatory disclosure than other firms. Similarly, Donnelly & Mulcahy (2008) exhibited that board composition measured by the number of non-executive directors is correlated with the information disclosure. Based on the previous discussion, the current research argues that firms with a high percentage of independent directors on the board can oversight the disclosure practices and increase the disclosure related to risk information; thus, the first research hypothesis can be formulated as follows:

Ha1: There is a positive association between Board independence and firm' risk disclosures

3.3.1.2. Board gender diversity

Diversity of the board of directors, under agency theory, may have a positive impact on risk disclosures, where a diverse board of directors are associated with a larger multiplicity in terms of gender and experience (Bozec & Bozec, 2012; Elzahar & Hussainey, 2012; Salem, Ayadi, and Hussainey, 2019; Jia et al., 2019; Mcchlery & Hussainey, 2021; Isiaka, 2021; Abdallah & Eltamboly, 2022; Hao & Dong; 2022). Resource-dependence theory, stakeholder theory, and institutional and legitimacy theories similarly notice that gender diversity on a board of directors may provide different thoughts, knowledge, and expertise, which may facilitate acquiring resources, business contracts, and finance (Jia et al., 2009). On the other hand, the board of directors' diversities may improve the managerial ability to make better decisions (Branco & Rodrigues, 2006; Linsley et al., 2006; Jia et al., 2019; Nahar & Jahan, 2021; Abdallah & Eltamboly, 2022), enhance the stakeholder

representation on the board of directors (Freeman, 1984; Lajili & Zeghal, 2009), and boost firms' reputation and legitimacy (Raj & Handley-Schachler, 2009; Suchman, 1995).

This different theoretical explanation also indicates that board of directors diversity can improve the connection with the company's stakeholders and corporate legitimacy, where diversity in the board of directors may improve the managerial ability to monitor companies, improve companies' connection with the external environment and stakeholders in order to obtain sufficient resources, as well as reduce uncertainties (Pfeffer & Salancik, 1978; Scott, 1987; Edkins, 2009; Oliveira et al., 2011; Abdallah & Eltamboly, 2022).

As far as gender balance on boards' composition is realised, the G20/OECD CG Principles recommend that boards periodically conduct evaluations on their performance in order to determine whether they have the right combination of experience and expertise. It also recommends that companies should improve the diversity of gender on boards and senior management levels (AMF, 2016:33).

Females' representation on boards is one of the debatable issues and has been currently emphasised in a few prior studies. Dahlerup (2006) and Dobija et al. (2021) suggest that the board of directors should involve a specific minimum of women's representation to make a difference not only in the board's decisions but also in monitoring functions (Huse et al., 2009; Peni & Vahamaa, 2010; Post & Byron, 2015). Furthermore, Abdallah & Eltamboly (2022) found that females on the board of directors have different preferences and ethical values, which may provide unique experiences and improve the monitoring ability of the board of directors. Based on the previous debate, the researcher sees that

firms with a female leadership can provide oversight, control and report risks effectively, so the following hypotheses were developed:

Ha2: There is a positive association between board gender diversity and firm risk disclosures.

3.3.1.3 Female leadership

Gender diversity can play a fatal role in strengthening the practice of reporting risk in the composition of the board of directors (Hillman and Dalziel, 2003; Jia, 2019; Dobija et al., 2021; Abdallah & Eltamboly, 2022). The board will likely incorporate an adequate and gender-based diversity of directors because risk complexity and expert knowledge are critical for managing risks. However, the influences of female leadership of the governing board on risk disclosure are not tested in the European context; from the researcher point of view, even though a few studies tested the role of female leadership on financial and operational performance, it is found that firms have lower absolute discretionary accruals when the chief financial officer is women (Peni & Vahamaa, 2010; Francis et al. 2015; Dobija et al., 2021). Based on the previous debate, we see that firms with a female leadership can provide oversight, control and report risks effectively, so the following hypotheses were developed:

Ha3: There is a positive association between female leadership and firms' risk disclosures.

3.3.1.4. Audit quality

Prior theoretical explanations indicate that the need for monitoring and accountability for management actions and decisions is essential to minimise agency problems (Mokhtar & Mellett, 2013; Bozzolan & Miihkinen, 2021). External auditing is one of the focal attributes of different corporate governance structures, in which all companies are required to externally audit their financial statements and monitor the companies' management

actions. According to the agency theory, central auditors are more likely to provide the best services in auditing and insurance (Mokhtar & Mellett, 2013), which contributes to high-quality disclosure (Abdel-Fattah, 2008; Neifara & Jarboui, 2018). The selection of the external auditors depends mainly on the general assembly based on the recommendation of the Boards of directors and audit committee. Also, German, French and Italian CG regulations recommended that firms should rotate their auditors after a period of 6 to 7 years, and they cannot be reappointed before three years (OECD, 2019).

Globally, audit firms are categorised as significant auditors and non-big auditors. Prior literature addresses the type of external auditor as a governance mechanism that can affect information levels. Abd-Elsalam (1999) and Bozzolan & Miihkinen (2021), for instance, claimed that big audit firms force their clients to comply with accountability standards, require them to adhere to mandatory disclosure rules, and persuade them to voluntarily disclose additional information on audit forms, and mandatory risk disclosure is positively interlinked and adversely linked with voluntary risk disclosure.

Lopes & Rodrigues (2007), Al-Shammari (2014), Neifara & Jarboui (2018), and Bozzolan & Miihkinen (2021) empirically found a positive correlation between the auditor type and levels of risk disclosure. Nevertheless, Mokhtar & Mellett (2013) found a negative correlation between the auditor's type and risk disclosure. Based on the beyond debate, the following hypothesis was developed:

Ha4: There is a positive association between Audit quality (big 4) and firm risk disclosures

3.3.1.5 ***Risk management committee***

Different theoretical explorations indicate that monitoring mechanisms, such as risk committees, may improve risk management and disclosure (Jia et al., 2019; Nahar & Jahan,

2021). Agency theory recommends that the existence and effectiveness of a risk committee are expected to produce a higher quality of risk management and internal control of firms' risk profile by providing adequate risk disclosure to different stakeholders, which results in a reduction in information asymmetry and subsequently reduces any risks associated with investors' devaluation of the firm and agency costs (Jensen & Meckling, 1976; Subramanian et al., 2009; Ishak & Yusof, 2020; Jia et al., 2019; Nahar & Jahan, 2021).

Resource dependency theory also suggests that in firms with risk, a committee may give specialised insight in terms of risk disclosure and management, which helps stakeholders to obtain sufficient information about risk and make better risk management decisions (Karamanou & Vafeas, 2005; Pirson &Turnbull, 2011 Jia et al., 2019; Nahar & Jahan, 2021). Given that, the researcher argues that the risk management committee is one of the significant board committees due to the responsibility of managing all types of risks faced by business firms. Companies with a risk management committee are able to identify, assess and manage risks, which gives them good probabilities for growing concern and growth (Hutchinson et al., 2015; Jia, 2019). A number of prior studies indicate that a risk management committee may increase the efficiency of companies using risk-related tools and help the audit committee by ensuring the quality of financial reporting and internal control (Jia, 2019; Marsden & Prevost, 2005; Subramanian et al., 2009; Nahar & Jahan, 2021). Accordingly, the current study argues that the risk management committee is associated significantly with risk information, and this led to the following hypothesis:

Ha5: There is a positive association between the existence of a risk management committee and firm risk disclosures

3.3.2. Ownership Structure

Prior theoretical perspectives, particularly agency theory, indicate that Ownership structure is one of the significant factors that drive risk disclosure practices, which may help resolve agency problems between managers and influential shareholders (Ntim et al., 2013; Elamer et al., 2019; Isiaka, 2021; Nahar & Jahan, 2021). Thus, the need for public accountability through disclosure tends to be less in closely held firms due to low outsider interests (Khan et al., 2013). Therefore, it appears that concentrated ownership firms are less likely to engage in disclosure because the costs of disclosure (i.e., competition, litigation, and regulation) may be greater than its potential benefits (i.e., reduction in information asymmetry).

In contrast, spread ownership requires increased monitoring, which can be reduced through greater disclosure (Beretta & Bozzolan, 2004; Oliveira et al., 2011; Isiaka, 2021; Nahar & Jahan, 2021). Where firms' managements communicate their performance and internal actions to shareholders through preparing the annual reports; so, the ownership structure might overlook the managerial incentives toward the levels of risk disclosure quantity and quality (Fama & Jensen, 1983; Abraham & Cox, 2007; Elamer et al., 2019; Nahar & Jahan, 2021). And a lack of disclosure can lead to information asymmetry between managers and owners, which can negatively impact valuation.

Furthermore, based on stakeholder, institutional, and legitimacy theory, companies with high government ownership will actively seek to win government support as a powerful stakeholder (Freeman, 1984; Freeman & Reed, 1983; Gray et al., 1995; Salem, Ayadi, and K. Hussainey, 2019) by complying with the governance codes, social rules (DiMaggio &

Powell, 1983; Scott, 1987) and informative risk disclosure that may help in legitimising their operations (Branco & Rodrigues, 2006; Pfeffer & Salancik, 1978).

Since the ownership structure combines a range of proxies, such as concentrated ownership, institutional ownership, family ownership, managerial ownership and foreign ownership, empirical pieces of evidence provided from the previous studies found a blend of results in terms of the relationship between ownership structure and risk disclosure quantity and quality (Salem, Ayadi, and K. Hussainey, 2019). For instance, Branco & Rodrigues (2008) and Pfeffer & Salancik (1978) argue that majority shareholders likely force management toward disclosing more transparent risk information to save their funds and secure access to security markets. Consequently, we hypothesised that ownership structure, specifically governmental, management and institutional ownership, may affect the management motivations and rules to disclose more levels and high quality of risk information. Several prior studies empirically found that government ownership is significantly and positively correlated with risk disclosure (e.g., Eng & Mak, 2003; Ghazali, 2007; Ntim & Oseit, 2011; and Ntim et al., 2013; Salem, Ayadi, and K. Hussainey, 2019); however, Dam & Scholtens (2012) reported a negative correlation between government ownership and disclosure.

On the other hand, family ownership is associated positively with the extent of information disclosure in the view of Cascino et al. (2010), Chen et al. (2008), and Wang (2006). At the same time, Barakat & Hussainey (2013) and Konishi & Mohobbot (2007) reported that there is no significant association between ownership structure and risk disclosure. In addition, Abdallah & Eltamboly (2022) found a significant and positive relationship between ownership concentration measured by the percentage of free float and the forward-looking information disclosure. Also, Mangena & Tauringana (2007) provided

practical evidence that foreign ownership has a positive impact on information disclosures, while Konishi & Mohobbot (2007) recorded insignificant interactions between them. In the view of the agency theory perspective, Abraham & Cox (2007), Elzahar & Hussainey (2012), Ntim et al. (2013) and Salem, Ayadi, and K. Hussainey (2019) found that institutional shareholders may put additional incentives to monitor the management practices toward information disclosure. However, Abraham & Cox (2007), Ntim et al. (2013), and Elzahar & Hussainey (2012) revealed a negative correlation between institutional ownership and risk disclosure. Elshandidy et al. (2013), in contrast, reported a positive and significant association between institutional ownership and risk disclosure. Whilst Chen et al. (2008) and Haniffa & Cooke (2002) found a negative association between family ownership and the extent of information disclosure, Deumes & Knechel (2008) exposed a negative relationship between ownership concentration and managerial ownership mutually and disclosures. Therefore, we formulate the five sub-hypotheses to test the effect of ownership structure across European countries on risk disclosure quantity and quality as follows:

Hb1: There is a negative association between concentrated ownership and firm risk disclosures.

Hb2: There is a positive association between institutional ownership and firm risk disclosures.

Hb3: There is a positive association between governmental ownership and firm risk disclosures.

Hb4: There is a positive association between foreign ownership and firm risk disclosures.

Hb5: There is a negatuve association between managerial ownership and firm risk disclosures.

3.3.3. National governance

In the view of the neo-institutional, companies operating in countries with improved national governance may provide an additional monitoring level that can alleviate information asymmetries and hence cater as a motivation to engage in greater risk disclosure (Aguilera et al., 2008; Barakat & Hussainey, 2013; Ntim et al., 2013). Thus, country-level governance may place additional underlining on risk disclosure (Kaufmann et al., 2011; Barakat & Hussainey, 2013; Essen et al., 2013; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020). It may offer incentives to engage in greater risk disclosure to gain legitimacy due to societal pressures arising from companies' external environment and regulations (Aguilera et al., 2008; Barakat & Hussainey, 2013; Chandler & Hwang, 2015; Ntim et al., 2013). A number of previous studies highlighted that national governance structures could keep owners and minority shareholders safe from being expropriated by the company's managers (Aslan & Kumar, 2014; Yoshikawa et al., 2014) and tend to put executives and non-executive directors under pressure to implement their responsibilities (Yoshikawa et al., 2014; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020), and consequently increase disclosure levels and reduce information asymmetry.

Empirical evidence provided by Barakat & Hussainey (2013), Elamer et al. (2019), and Elamer, Ntim, and Abdou (2020) regarding the impact of national governance indicators on risk disclosure suggests that countries with stronger national governance indicators are associated with an increase in the level of operational risk disclosures. The current study tries to contribute to the risk reporting literature in investigating the effect of national governance indicators as a new driver of risk reporting levels. Hence, the following hypothesis was developed:

H3: There is a positive association between country governance indicators and firm risk disclosures.

3.3.4. Moderating effect of national governance hypotheses:

Different theoretical perspectives indicate that national governance might improve investor confidence, protect shareholders' rights, and enhance the quality of corporate governance structures (La Porta & colleagues, 2000; Ernstberger & Grüning, 2013). Effective country-level governance indicators, in the view of the agency theory, and stakeholder theory, are more likely to motivate management toward informative disclosure, where Ball et al. (2003), Beyer et al. (2010), Bonetti et al. (2016), La Porta et al., (2000), and Leuz et al., (2003) argued that the defence of the country-level governance might restrain the information asymmetry and increase the managerial motivations for disclosure.

Also, the institutional theory argues that national governments may bring unique insights into how risk disclosure can be viewed and explained within distinctive regulatory and institutional frameworks where firms may choose to improve their risk disclosure levels to communicate their superior performance to all stakeholders as a strategic move towards the influences of the external dependencies in response to the country-level governance that affects them (Bonetti et al., 2016; Burgstahler et al., 2006; Cumming et al., 2014; DeFond et al., 2007; Pfeffer, 1972). Correspondingly, companies within effective national governance countries are more interested in disclosing high-quality information and securing the flow of critical resources (Elamer et al., 2019). Also, good governance systems at the country level support explaining the differences in disclosure practices across countries

Consistent with La Porta and colleagues (1997, 2000), country-level governance has a moderating impact on the information asymmetry problem and other agency conflict

issues. However, different adopted methodologies to study such association, according to Barakat & Hussainey (2013) and Al-Bassam et al. (2018), may lead to unpredictable results. Different measures and time frames of risk information, for instance, can affect the research findings (Abraham & Cox, 2007; Ntim et al., 2013). Thus, the researcher assumes that firms within strongly governed countries might engage in increasing the level of risk disclosure quantity and quality, where firms' management motivates them to communicate their positive outcomes and optimistic issues relating to the future to their current and potential stakeholders. Empirically, La Porta and colleagues (2000) and Ernstberger & Grüning (2013) revealed a substitutive moderating influence of country-level governance on the relationship between corporate governance mechanisms and information disclosure. Thus, the final hypothesis was developed as follows:

H4: Country governance indicators moderate the relationship between firm-level governance and firm risk disclosures.

Figure 3.1. shows the research model, including the hypothesised relationships.

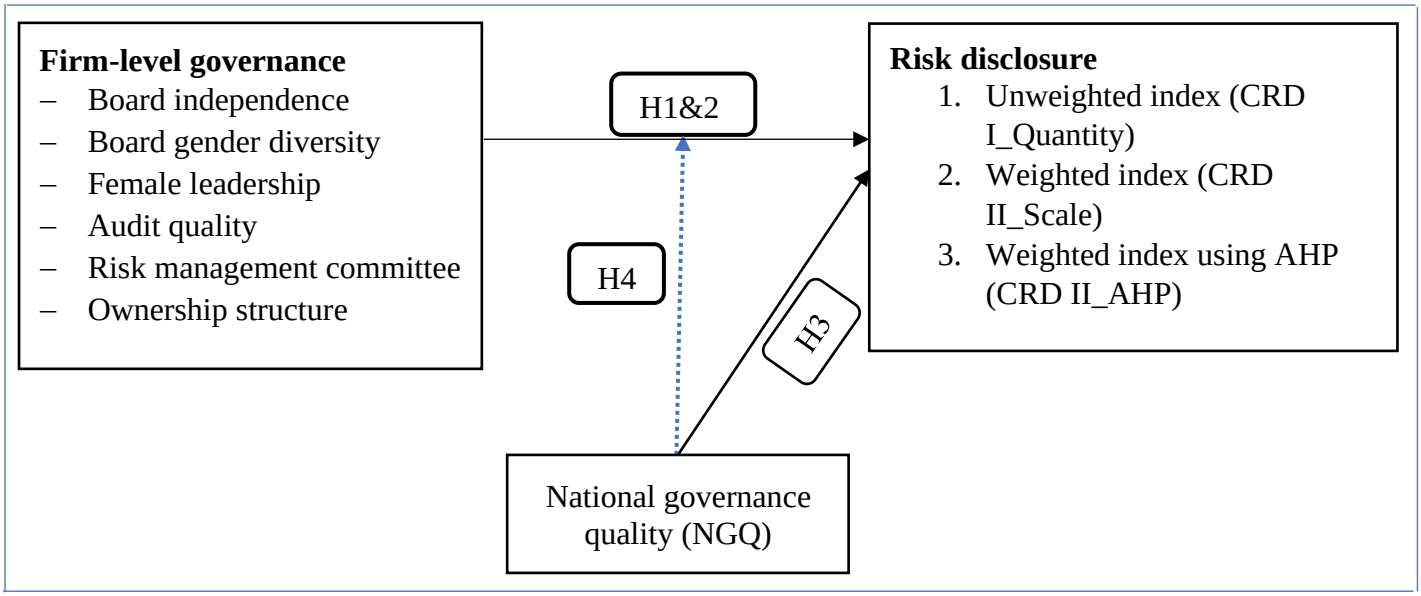

Figure 3.1: The research model

3.4. Concluding Remarks

This chapter critically reviewed the debate about the role of corporate governance mechanisms on risk disclosure by providing a detailed analysis and description of the underlying literature applied to this issue in three main sections. First, academic scholars around the world have expounded on the nature of risk items in terms of governance attributes which is crucial to comprehending the expected relationship and how to test it. Each of these studies adopted its own approach to examining such relation, and the quantitative approach is the focal technique applied through risk reporting practices quantification via content analysis or development of a risk disclosure index, on the one hand. On the other hand, a number of previous studies performed different statistical analyses, particularly panel data/time series-cross section data analysis; although their findings are different, it can be concluded that corporate governance characteristics have a significant impact on management's risk disclosure attitude in annual reports.

Second, this chapter scrutinised the debate about the influence of multi-layer governance mechanisms on the extent of risk disclosure quantity and quality by providing a detailed analysis of the firm and national governance mechanisms in the European context, the underlying literature, and the theoretical perspective in order to test such a relation, and concluded that ownership structure, board of director characteristics are the main factors that have been studied, and the results are diverse. Third, in this chapter, the researcher formulated the research hypotheses, based on the prior literature claims, into two main groups, firm-level hypotheses and country-level hypotheses.

The following chapter interprets the proposed methodology for studying the expected influence of firm and country-level governance mechanisms on the extent of risk disclosure

quantity and quality within and across European countries. It explores the research approach, research method, research sample, data collection and research model.

Chapter Four: Research Methodology

4.1. Overview

In the previous two chapters, the researcher presented a theoretical framework and reviewed pertinent literature. This provides the researcher with a better understanding of the possible methodological approaches and the best ways to design the most compelling empirical study. Using a multi-theoretical framework, this study investigates the relationship between multi-layer governance indicators at the firm and country level, as well as the quality and quantity of risk disclosure in annual reports for the four European countries. Furthermore, the study describes how to identify and assess risk disclosure quantity and quality.

Methodologically, a critical component in the research approach is that it reveals the links between the empirical analyses and the need to address issues, such as quantification and assessment of the volume and quality of risk disclosures, which have been widely diverse in previous risk disclosure studies. Owing to its unique benefits in fulfilling research purposes, research methodology is adopted to navigate scholars' efforts headed for answering the research questions and has its implications on how data is collected and analysed (Bryman, 2016; Collis & Hussy, 2013).

The research methodology describes the various procedures, including research design, research sample, research instrument, data collection procedure, as well as statistical methods. This chapter provides an elaboration on the researcher's rationalisation behind choosing the research plan and methodology considered to achieve the research objectives.

4.2. Research Philosophy

According to Bogdan and Taylor (1975), the methodology is a set of methods used to solve problems and find solutions. There are several steps in the research process that can be viewed as the layers of an onion. Research involves six layers: philosophies, approaches, strategies, choices, time horizons, techniques, and procedures (Saunders et al., 2019). Within each layer, the researcher has a variety of choices from which to choose, depending on the purposes of the study. As such, methodologies must be based on philosophical assumptions that are explicitly or implicitly stated in the research (Gill & Johnson, 1997). The first layer of a research process is the research philosophy.

According to Saunders et al. (2019), research philosophy is related to how knowledge is developed and how it is utilised. Methodological choices are highly influenced by varied philosophical assumptions, such as ontology (realism vs nominalism), epistemology (positivism vs anti-positivism), human nature (determinism vs voluntarism), and methodology (nomothetic vs idiographic) (Burrell & Morgan, 1979; Morgan & Smircich, 1980). This assumption implies that there are two polarities of methodological choices: objective and subjective (Burrell & Morgan, 1979).

Blaikien (1993) defined an ontology as a set of assumptions about the nature of social reality. Therefore, it is a theory of being (Marsh & Stoker, 2002). Burrell and Morgan (1979) identified realism and nominalism as ontological positions. Realists define the social world as composed of real, tangible structures, while nominalists define it as a social construct made up of names and labels. Nominalism claims that individuals are external to society. As a result, nominalism cannot provide an objective basis of reality, and therefore setting specific objectives for research is a vital requirement (Iskander, 2008).

Epistemology studies how knowledge is acquired (Blaikie, 1993; Marsh & Stoker, 2002). Buller & Morgan (1979) articulated two perspectives, one positive and one anti-positivistic. Through an examination of causal relationships and regularities in the social world, positive theories seek to explain and predict what happens (Burrell & Morgan, 1979). Since a theory is used to generate hypotheses that can be tested, research has the goal of testing theories and advancing them further (Bryman & Bell, 2007; Saunders et al., 2019). However, anti-positivism posits that humans are different as social actors (Burrell & Morgan, 1979). The positive theory offers generalisations, but anti-positivism argues that generalisability isn't necessary (Bryman & Bell, 2007; Saunders et al., 2019).

In Figure (3.1) below, you can see how different ontologies and epistemologies may lead to different methodological preferences among social scientists. First, the ontological assumption explains when something is regarded as real (Creswell and Creswell, 2018). According to positive theories, social reality is objective and independent of the research team, while interpretivism theories consider it to be subjective and comprehensible only in the context of human perception (Hopper & Powell, 1985).

Secondly, epistemology is focused on how knowledge is acquired and transmitted. Positivism and anti-positivism represent different epistemological approaches (Burrell & Morgan, 1979). It may be argued that positivist research can grow from observation and can eventually be influenced by that observation (the objectivist position). In contrast, interpretive anti-positivist research attributes knowledge with a more subjective nature (the subjectivist position) (Hopper & Powell, 1985). Smith (1983, p. 10) highlights the difference between the two paradigms by contending that in quantitative research, facts determine beliefs; however, in interpretive research, beliefs determine which facts are real or false. The third assumption about human nature is that behaviour is influenced by the

environment in which we live. There is a debate over whether people are entirely determined and governed by their external environment (determinism) or if they are capable of influencing that environment (voluntarism) (Burrell & Morgan, 1979). Finally, methodological assumptions pertain to the procedures researchers use to access social reality: scientific methodologies (nomothetic methodologies) or direct experience (ideographic methodologies). Researchers generally use statistical and quantitative methods when testing hypotheses and analysing data obtained from standard research instruments, such as questionnaires and surveys. The primary concern for researchers is identifying, explaining, and predicting behavioural patterns. In contrast, ideographic approaches to social sciences are qualitative and are based on the notion that the social world can only be understood by first-hand experience in the field of study. Because of the subjective nature of ideographic phenomena, researchers use a variety of research methods (Easterby-Smith et al., 2012).

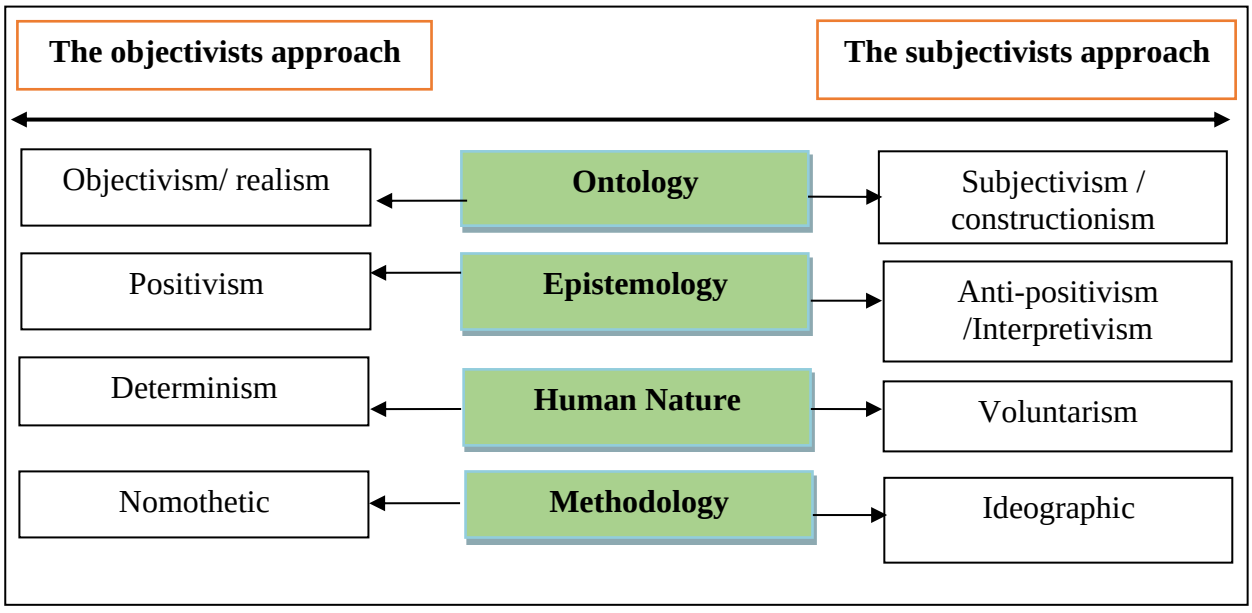

Figure 4.1 Assumptions Underlying Each of the Two Main Epistemologies

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

Essentially, methodology refers to the means by which a phenomenon's social world is studied. A research paradigm is a way to differentiate between different visions of accounting research according to two assumptions (Figure 4.2): the objective and subjective dimensions of social science and the radical change and regulation dimensions of society (Belkaoui, 2004). The paradigm is a way of looking at social phenomena that can lead to understanding and explanations (Saunders et al., 2019). There are four theoretical paradigms, as seen in Figure (4.1), that have been identified by Burrell and Morgan (1979), namely radical humanism, radical structuralism, interpretivism, and functionalism.

According to radical humanism, a firm life is viewed critically and changed. Moreover, a subjective view of social science is implied, such as nominalism, anti-positivism, voluntarism, and ideological orientation (Burrell & Morgan, 1979). While radical structuralism aims to fundamentally alter the existing system, it lends itself to the objective approaches of realism, positivism, determinism, nootropics, and nominalism.

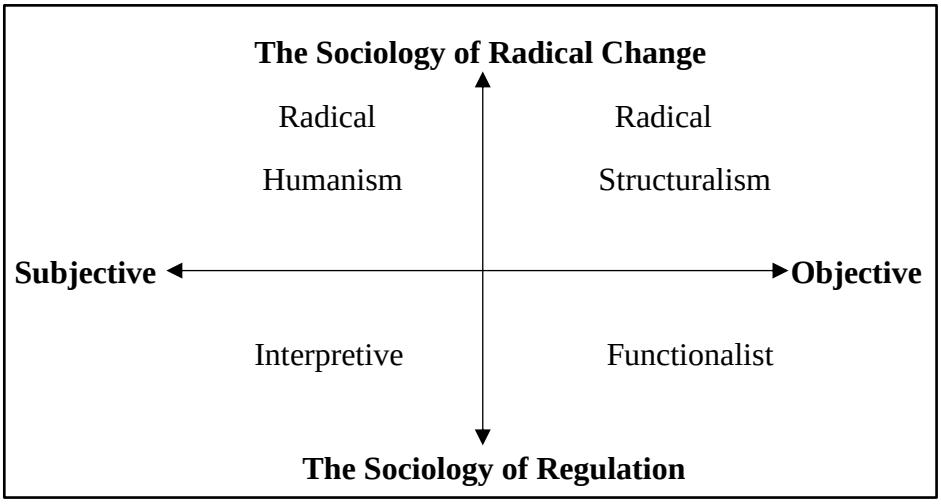

Figure 4.2 Four theoretical s paradigm analyses of social theory

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

Interpretive paradigms refer to approaches to regulating that aim to explain organisational affairs and help improve them by identifying irrational behaviour (Burrell & Morgan, 1979). In contrast to trying to alter anything, it aims to understand and explain what is occurring. Therefore, it implies a subjective approach to social science, as well as nominalism, anti-positivism, voluntarism, and ideologies (Burrell & Morgan, 1979). Functionalists assert that social science has an objective component as well. A rational explanation leads to rational solutions to rational problems, according to this paradigm (Saunders et al., 2019). As well, it presumes an objective approach to social science, such as realism, positivism, determinism, or nomothetic. In the next section, the researcher outlines the assumptions about the choice of methodology.

4.3. The Core Philosophical Foundations Underpinning the Current Study

The attitudes of a researcher toward ontology, epistemology, and human nature are related to the nature of the phenomena to be studied (Burrell & Morgan, 1979; Collis and Hussey, 2014). Thus, the key objectives of this study need to be reemphasised. This study aims to describe and understand the impact of multilayer governance practices on risk disclosure in the EU context. The ontology of this study is objectivism with positivistic epistemology. As part of the research on the subject under consideration in this study, i.e., risk disclosure practices, primary attention is paid to measuring the degree of risk disclosure quantity and quality. Further, the study intends to analyse the relationship between a number of firm and country-level characteristics and the level of risk disclosure of EU firms. Epistemologically, the researcher believes knowledge is only meaningful when it is derived from observations of external reality separate from humans.

The purpose of this study is to assess the level of risk disclosures (objective data) and determine if there is a causal relationship between risk disclosures and firm/country characteristics that can be used to explain, predict, and control social processes. For an accurate description of reality, both qualitative and quantitative knowledge is needed. Therefore, knowledge is obtained from secondary data obtained from an analysis of EU annual reports. The analysis of human nature assumes that human beings are deterministic in nature, where individuals and their experiences are products of and constrained by external environments (Burrell & Morgan, 1979).

Accordingly, a quantitative paradigm is most pertinent for the study's main objectives (describing and exploring the level of risk disclosure in the EU and identifying the factors which influence it). As well as qualitative research is necessary to analyse the quality of risk disclosure by collecting stakeholders' perceptions of its components. Qualitative research using a questionnaire and semi-structured interviews for collecting data is the most appropriate paradigm for this objective (Chapter 5). The researcher's intention is to gain insight from stakeholders, keeping in mind that although they may have some freedom of choice, environmental factors may exert some influence or control over them. The statistical methods were also used to validate the hypotheses. Quantitative research also requires that the researcher remain separate from the data to maintain objectivity.

4.4. Research Approach

The second layer of the research process is a classification of research approaches. It is referred to as deductive or inductive reasoning (Saunders et al., 2019). Sekaran (2003) states that a deduction is ‘the process of using logic to come to a deductive conclusion about a fact’, while induction is ‘the discovery of an unknown fact through inductive reasoning’. Observing certain phenomena can lead to conclusions. A deductive approach

begins with the formulation of testable hypotheses and concludes with examining their results, which either confirm or modify the theory (Robson, 2002). Therefore, quantitative and even qualitative data are required to test the developed hypotheses using a highly structured methodology to facilitate replication and interpretation (Gill & Johnson, 2002). Consequently, the deductive approach tests the theory underpinning the phenomenon. As an alternative, inductive reasoning is based on the collection and analysis of data, which leads to the development of a theory. This approach are consistent with qualitative research following ontological nominalism and epistemological anti-positivism.

To sum up, deductive approach is closely related to quantitative research models based on objectivism, ontological realism, and epistemological positivism, according to Bryman and Bell (2007). Therefore, deductive approach is more suitable for attaining the main objective of this research. Generally, accounting research combines quantitative and qualitative techniques, depending on research aims and objectives (Anderson, 2009, p. 139). The following discussion highlights the main characteristics of quantitative and qualitative approaches, including their rationale, kind of research question and hypothesis, data, analysis, and the final report.

4.4.1. Qualitative Research Approach

Qualitative research primarily aims to be thoughtful of underlying reasons, attitudes, and pressures through investigating the meaning of human skills, culture, and their outlook on issues and problems. It is used to approach and explore the participant views and the problems or aid in developing hypotheses for quantitative research. Due to the exploratory nature of qualitative research, the research questions usually start with ‘What’ or ‘How", and it typically does not have a hypothesis (Alhejaili, 2018).

In this manner, qualitative research data does not use numerical data; it is more exploratory and includes narrative descriptions. Such data is typically derived from different sources and is thoroughly different in scope; it is usually derived from a small sample size, and participants are chosen to fulfil a set quota. There are numerous data sources, such as structured, semi-structured, or unstructured interviews, newspaper articles, journals, audio-visual resources, focus groups, and open space questionnaires (e.g., asking focused questions and allowing the observer to respond using their own words) (Morgan & Smircich, 1980; Langkos, 2014).

However, a combination of several kinds of data is essential in qualitative research to attain the research motivations. The process of data collection consumes more time since the researcher himself/herself is the one collecting data, as there is no instrument for gathering qualitative data, such as a questionnaire. The analysis of qualitative data is all about creating arguments through organising all forms of data into themes. Qualitative research is not based on an existing theory; it is usually inductive and represents human views and perceptions without the preference of a theory (Tauringana & Chithambo, 2016). Therefore, the final justification of the results and report is presented in narrative forms. It is more interpretive and has instantly been quoted from applicants.

4.4.2. Quantitative Research

Quantifying issues and dilemmas into numerical data is the focus of quantitative Research. Quantitative research aims to test the association between variables (dependent, independent, and intermediate) and generalise the results from a larger population (Creswell and Creswell, 2018) by answering research questions that begin with ‘What’, ‘Why’, and ‘Does’. Quantitative research tests hypotheses by means of gathering different

kinds of data with the aim of getting a better understanding and a more holistic illustration of the research area (Muzahem, 2011; Tauringana & Chithambo, 2016)

Contrary to the qualitative approach, quantitative research usually depends on existing theories and literature reviews (see table 4.1); therefore, it is typically deductive and assists in developing hypotheses and the way of collecting and analysing data. A variety of methods are usually used to collect quantitative data, such as surveys (paper, online, mobile), interviews (face-to-face or by telephone), longitudinal studies, web interceptors, archival data, and systematic observations. Alternatively, data analysis under quantitative research entails using statistical methods to convey numbers and what they represent to answer the research questions. The final report of the quantitative research is more rigid and in the form of a statistical report (Creswell and Creswell, 2018; Elkatawneh, 2016).

Table 4.1: the gap between qualitative and quantitative approaches

Features		research approach	
		Quantitative	Qualitative
Measurability	Interpretive		▪
	Measurable	✓	
separation from the research process	Objectively separated	✓	
	Subjectively engaged		▪
Researcher views	Clearly	✓	
	Roughly		▪
Literature review	Done early	✓	
	Done afterwards		▪
Data collection methods	Researcher itself		▪
	Researcher uses tools	✓	
data	narrative		▪
	measurable	✓	
The generalisation of results	High	✓	
	Low		▪
Reliability of results	unbiased		▪
	Biased /risky	✓	
theory	Development		▪
	Test	✓	

Adapted from: Miles & Huberman (1994, p. 40).

Figure (4.2) reflects the trade-off between quantitative and qualitative approaches in some characteristics, including bias vs generalisation, interpretation vs measurability, and objectivity vs subjectivity. Through a quantitative approach, this study can provide a better and deeper understanding of the European countries' governance regulations. The data was obtained through the review of academic literature and institutional publications, on the one hand, and the use of questionnaires to obtain stakeholders' opinions about the importance of risk items for the development of a weighted risk disclosure index, on the other hand.

A quantitative approach has been approved for quantifying aspects of risk disclosure contents by developing weighted and unweighted risk disclosure indices. Also, this approach is used to investigate the extent to which firm and national governance mechanisms explain variations in the quantity and quality of risk disclosure among European firms.

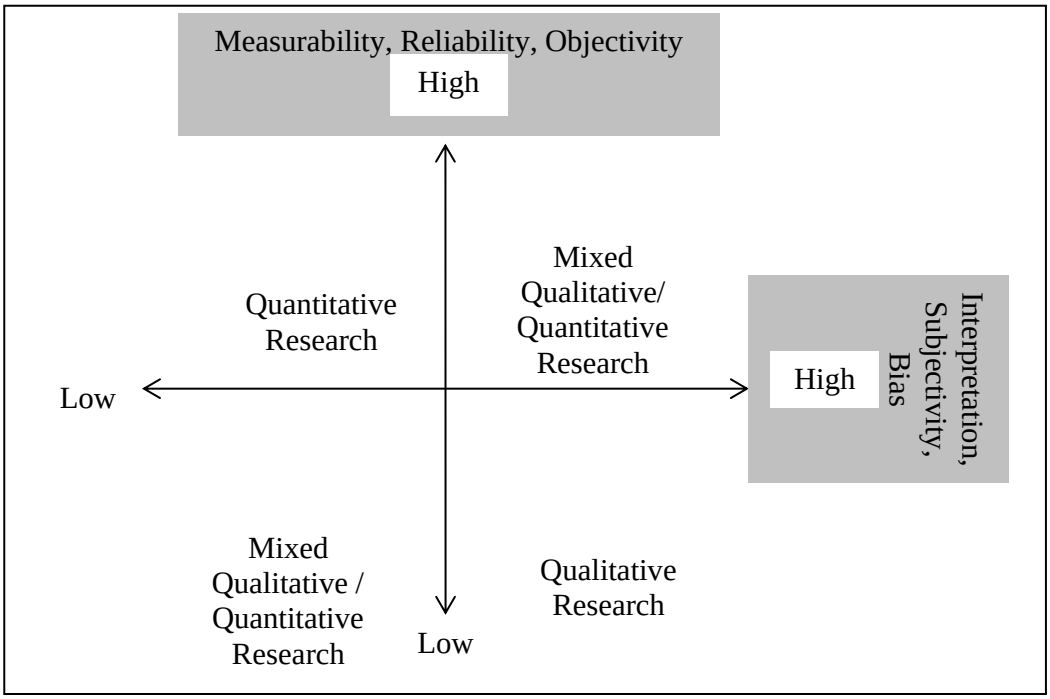

Figure 4.3: trade-off between characteristics of quantitative and qualitative approaches

From the researcher’s point of view, it is compulsory to obtain an in-depth review and analysing of the environment of risk disclosure and corporate governance in European countries to obtain a complete picture of the determinants of risk disclosure in the region. This study explores the practices of risk disclosure and corporate governance in the European region through a quantitative approach. We seek to measure the variations in risk disclosure within and across European companies during 2012-2018 and discern whether those variations may be attributed to firm and/or country-level corporate governance indicators during 2012-2018. A quantitative approach is, therefore, a targeted approach for the following reasons.

First, a quantitative approach was carried out by most of the risk disclosure and corporate governance literature to provide better (stronger) inferences and the opportunity for presenting a greater diversity of divergent views. Third, in order to perform an adequate mapping of a company's practices of risk disclosure and multi-layer governance, a broad quantitative measure must be considered, which allows them to examine this relationship simultaneously among various countries within a long time series (longitudinal/panel data). The fourth point is that qualitative research is perceived to be subjective, whereas quantitative research includes a systematic approach for gathering, analysing, testing, and interpreting data objectively, so this study focuses on the quantitative approach to avoid subjectivity and ehnace the generability of the results.

Finally, the main objectives of the current study are to measure the extent of risk disclosure quantity and quality and test the power of firm and national level governance mechanisms on risk disclosure practices in European countries. As a result, the researcher will utilise the merits of the quantitative approach to enhance the reliability and effectiveness of the results as much as possible.

4.5. Research Sample and Data Collection

The primary objective of the current study is to examine the association between risk disclosure and multi-level corporate governance mechanisms using panel data for EU non-financial firms across a period of more than seven years, from 2012 to 2018. The author illustrates the sample that has been used to address the research objectives and the kinds of observations required to discuss them in the following subsections:

4.5.1 Research sample

Derived from Figure (4.2), the sample of the current study is determined thoroughly at three primary levels: i.e., countries, periods and companies. At the country level, the research dataset covers four countries in the European zone, namely Germany, the UK, France and Italy, to explore the practices of risk disclosure and corporate governance.

These four countries are considers as the biggest in the EU region in terms of GDP, where Germany has the largest economy in Europe, followed by the United Kingdom, France, and Italy. Together, these four countries account for 50% of the European economy. Also, they are highly regulated environments; they have regime regulations, such as corporate governance codes, risk guidelines, and accounting standards. These typical features have thorough consequences on their economic features, information environment and corporate practices.

Even though these countries have very similar economic conditions, their equity market capitalisations and sources of finance are different. In particular, debt is the primary source of financing for companies in Germany, France, and Italy. In contrast, shareholdings are a significant source of financing in the UK, which has given rise to active stock (Nobes & Parker, 2010). Furthermore, these countries adopt different approaches regard disclosimg

their risk. Germany is highly oriented to compulsory risk management with specific accounting standards to deal thoroughly with risk reporting (Dobler, 2008). According to UK Companies Act 2006, s. 414A requires directors to prepare a strategic report and s.414C.2b specifies that the strategic report must contain 'a description of the principal risks and uncertainties facing the company'. 'According to EU directive 2004/109/EC, all listed companies have to publish a management report that describes the principal risks and uncertainties the company is exposed (Abraham & Cox, 2007)' –The variances of risk disclosure interpret differences in the legal system and cultural dimensions. The UK is an example of a common-law country, while Germany, France and Italy are examples of code-law countries (Dobler et al., 2011; La Porta et al., 2008).

At the company level, the research sample consists of non-financial firms listed on the Frankfurt, London stock exchange, Euronext Paris, and Borsa Italian. Financial firms are excluded from the sample to avoid dual requirements for risk disclosure across countries. These firms have specific rules, regulations, and characteristics for risk disclosure (Abraham & Cox, 2007; Elshandidy et al., 2015; Linsley & Shrives, 2006). Furthermore, companies with incomplete data about governance mechanisms or companies lacking published reports were excluded from the sample. Furthermore, companies with non-English reports (e.g. French, German, and Italian reports) were excluded in order to prevent any possible bias resulting from comparing different languages (Dobler et al., 2011; Elshandidy et al., 2015). This gives a final sample of 866 firms/country (see table 4.2) to achieve result consistency among the four countries. The research focuses on annual reports for the non-financial corporations published during a lengthy time horizon over seven years, from 2012 to 2018.

Table 4.2: the research sample by country

	Germany	UK	France	Italy	Total
All listed shares	650	616	442	397	2105
(-) Financial listed companies	(148)	(251)	(80)	(76)	(555)
Non-financial listed companies	502	365	362	321	1550
(-) Un-English language reports	(177)	-	(126)	(174)	
(-) Unavailable reports	(47)	(97)	(45)	(18)	(684)
Final research sample	278	268	191	129	866

The sample selection is based on the following criteria: first, the harmonisation of risk accounting rules and disclosure among Germany, the UK, France and Italy. Furthermore, they have produced national guidelines regarding risk disclosure (Cordazzo et al., 2017, p. 688).

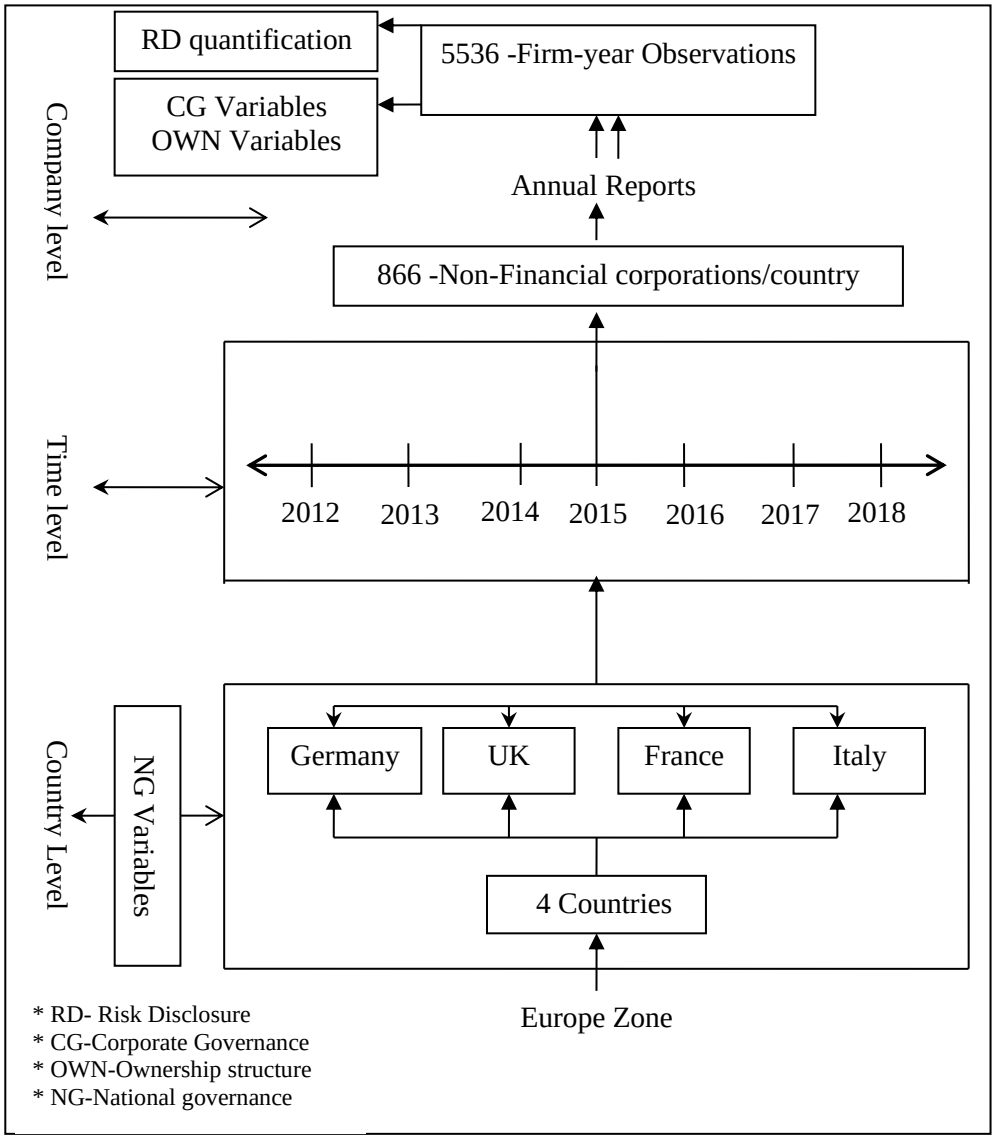

Figure 4.4: Research Sample Selection

Second, the availability and the accessibility of the firms' financial data and governance reports over the seven-year period. Third, the sampling period runs from 2012 to 2018, which will allow the researcher to determine the impact of multi-level governance measures on risk disclosure quantity and quality. Fourth, the longer time series facilitates

comprehending the variations in countries' governance regulations and risk disclosure extent. Fifth, the existence of the corporate governance regulations for the selected sample during the targeted period is rooted in the last criteria. Finally, financial companies are excluded because of the different governance regulations they are putting through, which apparently impact their governance structures in a different way than non-financial firms.

Panel 1 (Table 4.3) shows the research sample divided into four countries for seven years. The UK companies represent the highest number and percentage, with 2123 corporations (37.89%). They are followed by the German firms with 1656 firms (29.56%); meanwhile, French and Italian corporations are the smallest in number and accounted for 1013 (18.3%) and 749 firms (13.37%), respectively. On the other hand, the research sample demonstrates the distribution of the research sample based on the main sectors in panel 2. Industrial firms represent the highest number and percentage, with 103 firms (35.5%). Telecommunication firms, on the other hand, account for only five firms (1.7%).

Table 4.3. Final research sample

Panel A: Final sample by year

Country	2012	2013	2014	2015	2016	2017	2018	Total	Percent
UK	267	277	287	306	328	338	345	2148	38.8
Germany	212	229	248	258	258	271	273	1647	29.8
France	110	126	135	147	158	167	170	1013	18.3
Italy	76	86	98	109	114	121	124	728	12.1
Total	652	699	722	806	875	914	934	5536	100.0

Panel B: Final sample by industry type

Country	Industry	2012	2013	2014	2015	2016	2017	2018	Total	%
UK	Oil and gas	11	11	11	11	11	11	11	77	3.6
	Basic materials	27	27	27	27	27	28	28	191	8.9
	Industrials	74	74	77	83	84	85	86	563	26.2

	Consumer goods	23	24	26	26	26	26	26	177	8.2
	Health care	7	7	8	11	14	14	14	75	3.5
	Consumer services	64	68	70	76	81	86	88	533	24.6
	Telecommunication	6	6	6	6	9	10	10	53	2.4
	Utilities	6	6	6	7	9	10	10	54	2.5
	Technology	12	12	12	13	18	18	19	104	4.8
	Real estate	37	42	44	46	49	50	53	321	14.9
	Total	267	277	287	306	328	338	345	2148	100.0

Country	**Industry**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**	**%**
Germany	Consumer services	46	46	52	56	59	60	60	379	22.3
	Technology	51	54	58	61	62	67	67	420	24.7
	Industrials	25	26	30	32	32	34	34	213	12.5
	Health care	22	22	25	28	30	32	32	191	11.2
	Customer Goods	34	36	36	40	42	44	45	277	16.3
	Oil and Gas	2	2	2	2	2	2	2	14	0.08
	Basic materials	16	17	17	18	18	17	17	120	7
	Utilities	2	2	2	4	6	7	7	30	1.8
	Telecommunication	7	7	7	7	7	8	9	52	3
	Total	212	229	248	258	258	271	273	1647	100.0

Country	**Industry**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**	**%**
Italy	Consumer service	5	6	7	7	7	9	9	50	6.9
	Technology	10	10	12	15	15	16	17	95	13
	industrials	21	24	28	30	32	33	34	202	27.7
	Health care	1	2	3	4	4	5	5	24	3.3
	Consumer goods	20	23	24	28	30	32	33	190	26
	Oil & gas	4	5	5	5	5	5	5	34	4.7
	Basic materials	7	8	11	12	12	12	12	74	10
	utilities	4	4	4	3	4	4	4	27	3.7
	Telecommunication	4	4	4	5	5	5	5	32	4.4
	Total	76	86	98	109	114	121	124	728	100.0

Country	**Industry**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**	**%**

France	Consumer service	19	21	24	26	26	26	26	168	16.6
	Technology	23	25	27	30	33	36	36	210	20.7
	industrials	23	27	30	33	38	40	43	234	23
	Health care	5	7	8	9	11	13	13	66	6.5
	Consumer goods	28	32	32	33	34	36	36	231	22.8
	Oil & gas	3	4	4	5	5	5	5	31	3
	Basic materials	5	6	6	6	6	6	6	41	4
	Utilities	3	3	3	4	4	4	4	25	2.4
	Telecommunication	1	1	1	1	1	1	1	7	0.07
	Total	110	126	135	147	158	167	170	1013	100.0

4.5.2. Data collection methods

There are four commonly used data collection methods in business studies which include interviews, questionnaires, observations and archival data. Researchers may combine some of these methods to achieve the main objectives of the study. Archival data is the main method to collect quantitative data about the companies' risk disclosure and corporate governance practices from the annual reports, databases, and websites. Alternatively, questionnaires are the principal method by which qualitative data about risk disclosure criteria is collected in order to conduct the AHP technique in terms of quantifying risk disclosure quality.

Firstly, there are two types of archival/secondary data that are necessary to complete the research objectives. Annual reports form the core of the research data source, and they are collected from the database and websites for the security markets and selected companies. Other notable secondary data sources are formal databases, Datastream, and the World Bank website. These sources can be used to gather information about corporate governance mechanisms and national governance indicators.

Secondly, the researcher develops a questionnaire for collecting expert views about the importance of the risk disclosure index's components and a checklist for evaluating the risk terms in the annual report in order to arrive at the degree of risk disclosure for a given year. These scores will be incorporated in the statistical panel data analysis to investigate the effect of governance performance on risk volume in the annual reports.

In order to conduct the analysis for the next four chapters, the researcher collects annual reports for 5602 firms/year observations (866 non-financial corporations) based on the main criteria explained in Chapter Four for seven financial years from 2012 to 2018. The research focuses on annual reports since they remain a primary source of information for stakeholders; there has been an increase in usage, indicating the benefits that such reports provide for investors (e.g., Beattie et al., 2004). This period was chosen because of the UK Brexit decision and the mandatory application of IFRSs within the UK-listed companies in 2005.

4.6. Definition of Variables and Model Specification

The proposed model for the current research has two dimensions: (i) quantification of risk disclosure quantity and quality and (ii) examination of the association between multi-layered governance indicators and risk disclosure. The researcher used automated content analysis software to quantify the quantity of risk disclosure practices based on three indices: (1) an unweighted risk disclosure index based on the number of risk text units. (2) A weighted risk disclosure index based on the number of risk text units; and (3) a weighted risk disclosure index based on the AHP weights. Chapter Five and Six discuss the construction process of the risk disclosure indexes and pilot study.

In the following two chapters, the researcher carries out a MANOVA and descriptive analysis to examine differences in risk disclosure quantity and quality among firms and within/across EU countries. Moreover, a study of how governance mechanisms, ownership structure, and country-level governance indicators influence the quality and quantity of risk disclosure will be conducted using data collected from 2012 to 2018. Both univariate and multivariate analyses are used to test the research hypotheses. Generally, univariate analysis is based on correlations, whereas multivariate analysis is carried out using Fixed Effects or 2SLS regressions. The panel data analysis is a method of assessing cross-sectional data derived from the number of overtime observations, which provides insights into the risk disclosure and governance practices of a number of diverse cross-sectional entities, such as companies, countries, or industries (Yaffee, 2003, p. 2). Panel data has been performed based on the results of the Hausman test (p-value is low, commonly less than 0.05). Fixed effect panel data analysis was initially conducted in order to examine the determinants of risk disclosure quantity and quality and test the moderating effect of the country-level governance on risk disclosure.

Models from 1 to 5 are used to examine the impact of the multi-layer governance (e.g., board independence, gender diversity, female leadership, risk committee, audit quality, ownership structure, and national governance quality) on risk disclosure. Model (1) evaluates the effect of firm-level governance on the risk disclosure index with control of the number of firm and country-level characteristics.

$$CRD_{it} = \alpha_0 + \beta_1 Brd\_Indep_{it} + \beta_2 Brd\_Gend_{it} + \beta_3 F\_Lead_{it} + \beta_4 Risk\_COM_{it} + \beta_5 Audit\_Q_{it} + \sum_{i=1}^{n} \beta_i \, CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (1)$$

Where CRD stands for the Risk Disclosure indices (CRD I , CRD_II, and CRD_III), which are based on three aspects; first, the number of risk words disclosed in the annual reports; second, a weighted score of risk disclosure based on a (0 to 6) scale and, third, a weighted score of risk disclosure based on AHP. *Brd_Indep* stands for the percentage of independent directors in the composition of the board of directors. Brd_Gend is the percentage of females on the board of directors. *F_Lead* is a dummy variable(0, 1); it takes (1) if the chairman or CEO is a woman and 0 otherwise. *Risk_COM* is the dummy variable which measures the risk committee existence within European firms and takes 1 if firms have a risk management committee and 0 if not. Audit_Q is the audit quality measured by the dummy variables, which takes 1 if the audit firm is one of the big 4 audit firms and 0 otherwise. *CONTROLS* represents the control variables at the firm and country levels, which are firm size, liquidity, leverage, sales growth, ROE, board of directors Size, CEO duality, audit committee independence, audit committee non-executives, board of directors' meetings, industry type, the length of annual reports, at the firm level and culture, legal system, economic growth, GDP per capita, and inflation at country-level characteristics. δ_{it} refers to the firm fixed-effects and year fixed effects, ε_{it} refers to the error term. Table 4.4 shows the definition of all variables and their codes.

Model (2) tests the effect of Governance-scores on the risk disclosure index, with control of a number of firm and country-level characteristics

$$CRD_{it} = \alpha_0 + \beta_1 Gov\_Score_{it} + \sum_{i=1}^{n} \beta_i \ CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (2)$$

Where *Gov_Score* is the weighted score of governance quality of a firm, *CONTROLS* represents the control variables at the firm, and country levels are explained in Table (4.4).

Model (3) tests the effect of ownership structure on the risk disclosure index with control of a number of firm and country-level characteristics

$$CRD_{it} = \alpha_0 + \beta_1 CON\_OWN_{it} + \beta_2 MAN\_OWN_{it} + \beta_3 FOR\_OWN_{it} + \beta_4 GOV\_OWN_{it} + \beta_4 INS_{OWNit} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (3)$$

Where CON_OWN is the percentage of ordinary shares held by shareholders with at least 5% of the total company ordinary shareholdings; MAN_OWN is the percentage of shares owned by management; FOR_OWM is the percentage of shares owned by foreign investors; and GOV_OWN represents the percentage of shares owned by the government. INS_OWN represents the percentage of shares owned by institutional investors. Other control variables at the firm, and country levels are explained in Table (4.4).

Model (4) tests the effect of national governance on the risk disclosure index, with control of a number of firm and country-level characteristics

$$CRD_{it} = \alpha_0 + \beta_1 NGQ_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (4)$$

Where *NGQ* is a composite measure for overall national governance quality six dimensions, which are (a) voice and accountability (VA), (b) political stability (PS), (c) government Effectiveness (GE), (d) regulatory quality (RQ), (e) the rule of law (ROL), and (f) control of corruption (COC), these values gathered from world bank database (Kaufmann et al., 2011).[1] The NGQ scores range from (-2.5) to (+2.5), with a greater NGQ

[1] Further information and detailed definitions of the six Worldwide Governance Indicators can be found on the World Bank's website at http://info.worldbank.org/governance/wgi/.

indicating better national governance. Academics and policy-makers have examined the reliability and validity of these indicators (e.g. Daniel et al., 2012; Kaufmann et al., 2011).

In order to assess the validity of NGQ indicators, correction analysis is used (e.g., Elamer et al., 2020). According to the Pearson correlation matrix in Table 4.4 and 4.5, all correlation coefficients are positive, and almost all are statistically significant ($p < .001$), which indicates that the NGQ and its six indicators represent reliable metrics for the analysis. It is also apparent from the table that the six NGQ dimensions are highly correlated, which is in line with the findings of previous studies (Daniel et al., 2012; Elamer et al., 2020). Additionally, Cronbach's alpha is calculated to evaluate the internal consistency of the six NGQ indicators. The alpha score for the construct is 0.921, indicating a high level of internal reliability. We, therefore, applied a principle component analysis (PCA) to the six dimensions of the NGQ to reduce the dimensionality of the datasets and facilitate analysis, following prior studies (Elamer et al., 2020; Tunyi & Ntim, 2016). In Table 3, the PCA (eigenvectors) and diagnostics of the NGQ dimensions are presented. Kaiser-Meyer-Olkin (KMO) measures sampling adequacy to an overall level of 0.82, which is above the threshold PCA-based recommendation of 0.50 (for example, Elamer et al., 2020; Tunyi & Ntim, 2016).

Table 4.4 Correlation Matrix of the NGQ's Six Dimensions.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
(1) VA	1.000					
(2) PS	0.398***	1.000				
(3) GE	0.789***	0.048***	1.000			
(4) RQ	0.886***	0.255***	0.816***	1.000		
(5) RL	0.864***	0.151***	0.941***	0.886***	1.000	
(6) CC	0.917***	0.173***	0.923***	0.917***	0.973***	1.000

Note. The six dimensions of NGQ are defined as follows: voice and accountability quality (VA), political stability quality (PS), government effectiveness (GE), regulatory quality (RQ), the rule of law quality (RL), control of corruption quality (CC). All variables are fully defined in Table 4.6.

Table 4.5. PCA (Eigenvectors) and Diagnostics of the NGQ's Six Dimensions.

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Unexplained	KMO
(1) VA	0.438	0.177	-0.345	-0.723	0.251	-0.269	0	0.800
(2) PS	0.126	0.940	0.270	0.148	-0.019	0.062	0	0.357
(3) GE	0.430	-0.240	0.610	0.122	0.610	-0.001	0	0.915
(4) RQ	0.439	0.021	-0.602	0.641	0.172	-0.061	0	0.959
(5) RL	0.452	-0.130	0.271	0.077	-0.657	-0.517	0	0.825
(6) CC	0.459	-0.094	-0.007	-0.154	-0.323	0.808	0	0.768
Eigenvalue	4.625	1.030	0.178	0.102	0.049	0.016	-	-
Proportion	0.771	0.172	0.030	0.017	0.008	0.003	-	-
KMO	-	-	-	-	-	-	-	0.825

Note. The six dimensions of NGQ are defined as follows: voice and accountability quality (VA), political stability quality (PS), government effectiveness (GE), regulatory quality (RQ), the rule of law quality (RL), control of corruption quality (CC). All variables are fully defined in Table 4-6.

To test the moderating role of country governance, we examine the following model:

$$CRD_{it} = \alpha_0 + \beta_1 Gov\_score_{it} + \beta_2 NGQ_{it} + \beta_3 Gov\_score_{it} * NGQ_{it} + \sum_{i=1}^{n} \beta_i \ CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (5)$$

Where *CRD* represents the risk disclosure index measured by three different measurement ways: the number of risk words disclosed in the annual reports, the weighted score of risk disclosure based on AHP, and the weighted score of risk disclosure based on a 0 to 6 scale. Gov_Score is the weighted score of governance pillars which companies are achieved in the evaluation process for the governance mechanisms, Gov_Score*NGQ is the moderating variable of the relationship between firms' governance score and national governance, and CONTROLS variables are explained in Table (4.6).

Table 4.6. Definitions for all variables used in the study

Symbol	Variables Definition	Measure/Proxy	sign
Independent Variables-Firm level (Corporate Governance Variables)			
Brd_Indep	Board independence	Percentage of independent board members on the board structure	+
Brd_Gend	Board gender diversity	%total number of women to the total number of directors on the board	+
F-Lead	Female leadership	A dummy variable (0, 1); takes (1) if the chairman or CEO is a woman and 0 otherwise.	+
Audit_Q	External auditor type	A dummy variable (0,1); takes (1) if the auditor is one of the big 4 audit firms and 0 otherwise	+
Risk _COM	Risk management committee	A dummy variable (0, 1); 1 if the firm has a Risk Committee and 0 otherwise.	+
GOV_Score	Governance score	the weighted score of firm-level governance quality	+
CON_OWM	Concentrated ownership	The percentage of ordinary shares held by shareholders with at least 5% of the total company ordinary shareholdings.	-
MAN_OWN	Management ownership	The percentage of strategic holdings of 5% or more owned by management,	-
FOR_OWN	Foreign ownership	The percentage of strategic holdings of 5% or more owned by foreign investors	+
GOV_OWN	Government ownership	The percentage of strategic holdings of 5% or more owned by the government	+
INS_OWN	Institutional ownership	The percentage of strategic holdings of 5% or more owned by institutional investors	+
Independent Variables-Country level (National governance)			
VA	Voice and accountability	The World Bank governance indicators measure the citizens' ability to elect their government and the degree of freedom available for people to express their opinions.	+

PS	Political Stability and Absence of Violence	The likelihood of political instability and violence within a country.	+
GE	Government Effectiveness	The government quality of public and civil services and policy formulation.	+
RQ	Regulatory Quality	Measures the ability of the government to formulate and implement sound policies and regulations using WGI data	+
ROL	Rule of Law	WGI data was used to measure the quality of law and confidence in rules within the country i in period t, including contract implementation, property rights, and the courts.	+
COC	Control of Corruption	Measure the extent to which public power in country i for period t is exercised to mitigate and control the private gain and different forms of corruption.	+
NGQ	National Governance Quality	a composite measure for the overall NG six dimensions, which are (a) voice and accountability (VA), (b) political stability (PS), (c) government Effectiveness (GE), (d) regulatory quality (RQ), (e) the rule of law (ROL), and (f) control of corruption (COC), these values gathered from world bank database	+
Control Variables (Firm-level Characteristics)			
SIZE	Firm Size	Natural logarithm of total assets	+
LIQ	Liquidity	Current Ratio =%Current assets to current liabilities	+
LEV	Leverage	%Long term liabilities to total assets	+
Sal_Growth	Sales Growth	(Current year's net sales or revenue/Last year's total sales or revenue-1)*100	+
ROA	Return on Assets	Return on assets= % of net profit to total assets.	+
Brd_Size	Board Size	Natural logarithm of the total number of directors on the board.	+
DUAL	CEO Duality	A dummy variable (0,1); (1) if there is a separation between the chair of the board and CEO, (0) if not	+
AC-INDP	Audit Committee independence	Percentage of independent members to all audit committee members	+
AC_NonEX	Audit committee non-executive	Percenrage of nin-executive members to all audir committee members	+

AR_Length	The length of Annual report	Number of pages of the EU firms'annual reports	+
Control Variables (Country-level Characteristics)			
UA	Uncertainty Avoidance	The degree to which the members of a society feel uncomfortable with uncertainty and ambiguity.	+
LTO	Long–term orientation	The degree of links with past while dealing with the challenges of the present and the future.	+
MAS	Masculinity	A preference in society for achievement, heroism, assertiveness, and material rewards for success. Society at large is more competitive. Its opposite, Femininity,	+
LS	Legal System	A dummy variable (0, 1); Common law Countries =1 which means that the part of English law that is derived from custom and judicial precedent rather than statutes. Compare with case law, statute law. Code law countries= 0 (Common Laws are laws that have come about of been enacted based on court rulings. Code law is a systematic and comprehensive written statement of laws of a particular area of law when the code was enacted and codified. In simple terms, code law is basically a systematic list of laws that have been codified and are enforceable by law). (The UK is a common law country. However, German, France, and Italy are code law countries.	+
GDP per cap	Gross Domestic Products	GDP per capita, current U.S. dollars	+
Inflate	Inflation	percentage change in the Consumer Price Index	+

4.8. Concluding Remarks

This chapter presented enlightenment on the research methodology that has been followed in terms of achieving the research objectives. The purpose of this chapter was to articulate the research approach, as well as to outline the logic behind the philosophical assumptions (ontology, epistemology, and human nature assumptions) which determine and provide support for the methodological approach that will be employed. This chapter was intended to outline and briefly discuss the research methodologies used in producing this thesis as well as the use of these methodologies as they are supported by the philosophical assumptions within the empirical investigation. An extensive review of the quantitative and qualitative approaches used in the study and the empirical analysis was presented, beginning with a detailed outline of the research methodology and moving on to describe the specifics of the approach, method, sample, data sources, and model.

Additionally, the current chapter discussed the methodology for collecting data about the sample of European companies and the proposed empirical models, as well as multivariate and multilevel analyses were discussed to explore the association between corporate governance, ownership structure, national governance, and risk disclosure quantity and quality. As a means to quantitatively measure the quantity and quality of risk disclosure practices in annual reports, we focused on automated content analysis to calculate the scores of three main risk disclosure indexes: (1) an unweighted risk disclosure index based on the number of risk text units, (2) a weighted risk disclosure index based on a scale of (1-6), and (3) a weighted risk disclosure index based on AHP weighting.

The following chapter, Chapter Five, discusses in detail the construction processes of the risk disclosure indices. It also describes the implication of the AHP technique to assign different weights for risk disclosure content included in the CRD quality index. Moreover,

it discusses how to analyse the content of risk information in order to calculate the risk disclosure quantity and quality.

Chapter Five: Developing Corporate Risk Disclosure Indices

5.1. Overview

Based on the logic behind the philosophical assumptions and research approach previously carried out in Chapter Four, we have been able to identify two main views to quantify the extent of risk disclosure in terms of quantity and quality. This chapter explains how to build scoring models to measure the quantity and quality of risk disclosure in the annual reports. Consequently, this chapter discusses three contributing elements: firstly, developing the risk disclosure quantity indices. Secondly, prioritising the risk disclosure index III attributes using the AHP method. And thirdly, these scores are then validated manually and statistically to quantify the risk disclosure practices using NVivo 12 Plus software and CFIE as a tool for analysing risk contents in annual reports.

In this chapter there are four sections. Section 5.2 discusses the main approaches to measuring risk disclosure and how to construct corporate risk disclosure indices. A description of the total score of the quality and quantity of risk disclosure is provided in Section 5.3. Section 5.4 describes how to validate CRD scores automatically and statistically. Finally, Section 5.5 provides the conclusion of the chapter.

5.2 Developing the Corporate Risk Disclosure Indices

One of the primary objectives of this study is to measure the differences in the extent of risk disclosure among European firms. Thus, three main risk disclosure indices were developed to measure the quality and quantity of risk disclosure, namely (1) the unweighted risk disclosure quantity index, (2) the 1-6 scale risk disclosure index, and (3) the AHP-based risk disclosure index.

5.2.1 Measuring Corporate Risk Disclosure (CRD) quantity using an Automated Content Analysis and unweighted risk disclosure index

To measure the quantity of the risk information levels, the content analysis technique has been used. In this regard, the content analysis provides valid and reproducible inferences and provides unique insight into a particular research topic based on systematically and objectively identifying unique texts (Krippendorff, 2004). It is widely utilised in literature disclosure (Abraham & Cox, 2007; Hossain et al., 1994; Linsley & Shrives, 2006; Mangena & Tauringana, 2007; Bamber & McMeeking, 2010; Muzahem, 2011; Achmad et al., 2017; Alzead, 2017; Neifara & Jarboui, 2018; Ibrahim et al., 2019; Ibrahim & Hussainey, 2019; Salem, Ayadi, and K. Hussainey, 2019; Isiaka, 2021; Nahar & Jahan, 2021).

We noticed that the focal point of risk classes disclosed is to identify the risk components that mostly affect stakeholders' decisions and are supposed to be incorporated in financial reports. Hence, measuring and disclosing risks mainly depend on firms' approach to categorising their risks, yet IFRS (9) and IFRS (7) focus on financial classification. Interestingly, based on Beretta and Bozzolan (2008), Dicuonzo et al. (2016), and Jia et al. (2016), the proposed structure of the risk disclosure index considers three dimensions of risk definition (see table 5.1); (i) nature (financial or non-financial), (ii) time scope (historical or forward-looking or no time scope), and (iii) economic significance (positive, negative, or neutral). In addition, the proposed index is based on Linsley & Shrives (2006), Moumen et al. (2016), and Ntim et al. (2013) classifications with some modifications (see table 4.3).

Table 5.1: The content of the quantity risk disclosure index (CRD I_Quantity index)

Type of risk (Main Criterion)	Risk Reporting Item (sub-criterion)
(i) Business Risks	1. Capital adequacy/insolvency
	2. Hedging
	3. Liquidity
	4. Credit
	5. Pricing
	6. Brexit
(ii) Operational Risks	7. Information technology
	8. Health and safety
	9. Communication
	10. Sourcing/raw material
	11. Production development
	12. Marketing/customer satisfaction
	13. Social contribution/community support
	14. Internal audit and control
	15. Human resources/labour turnover
	16. Derivatives
	17. Competition/proprietary/copyright
	18. Employee fraud
	19. Business ethics/corruption
(iii) Management Risks	20. Performance/Fraud management
	21. Disclosure of risk governance
	22. Research and development
	23. Investment plans
	24. Acquisitions, alliances, joint ventures
	25. Compensations of executives
	26. Disclosure of committee existence
(V) Fluctuations Risks	27. Interest rate risk
	28. Currency exchange risk
	29. Commodity risk
	30. Cash flow risk

Sources: Linsley & Shrives (2006, p.229-230); Moumen et al. (2016, p.14); Ntim et al. (2013, p.34); - with the researcher modifications.

Content analysis can either be done through a conceptual or relational content analysis, which mainly differs in purpose and scope. Recognising the existence and frequency of certain concepts, financial and non-financial risks, for instance, within texts or sets of texts – financial reports – is the primary focus of conceptual content analysis (Figure 5.1).

However, the focus of the Relational Content Analysis (Beattie et al., 2004; Krippendorff, 1980) was on defining connections between such concepts in the text. Conversely, a manual method (Beretta & Bozzolan, 2006; Linsley & Shrives, 2006; Moumen et al., 2016) or an automated process may use the content analysis process (Abrahamson & Amir, 1996; Breton & Ta, 2006).

Content analysis' focal point is on making inferences from the number of risk disclosures and the automated content analysis utilised to measure risk disclosure. Figure (5.1) indicates that content analysis is carried out on four different levels. First ‘texts’ level, which are annual reports of companies in Europe. Second, on coding units, which may include words, pages, phrases, or subject matter. And finally, on ‘coding schemes’, which categorise coding units into risk categories.

The coding mode can be computerised or manually coded. The researcher uses automated coding modes since the advantages of the automated approach outweigh the time and cost burdens associated with manual content analysis (Beattie et al., 2004; Krippendorff, 2004; Abraham & Stevenson, 2007; Deumes, 2008; Neifara & Jarboui, 2018; Ibrahim & Hussainy, 2019; Salem, Ayadi, and K. Hussainey, 2019). However, humans can read and better judge the denotation of risk words (Milne & Adler, 1999; Linsley & Shrives, 2006; Ibrahim et al., 2019; Muzahem, 2011, Ibrahim & Hussainy, 2019).

The quantitative vulnerability disclosure index is calculated based on a total of risk words (see Table 5.1) disclosed in the annual reports of the European countries and examined using automated content analysis with the NVivo 12 pro software.

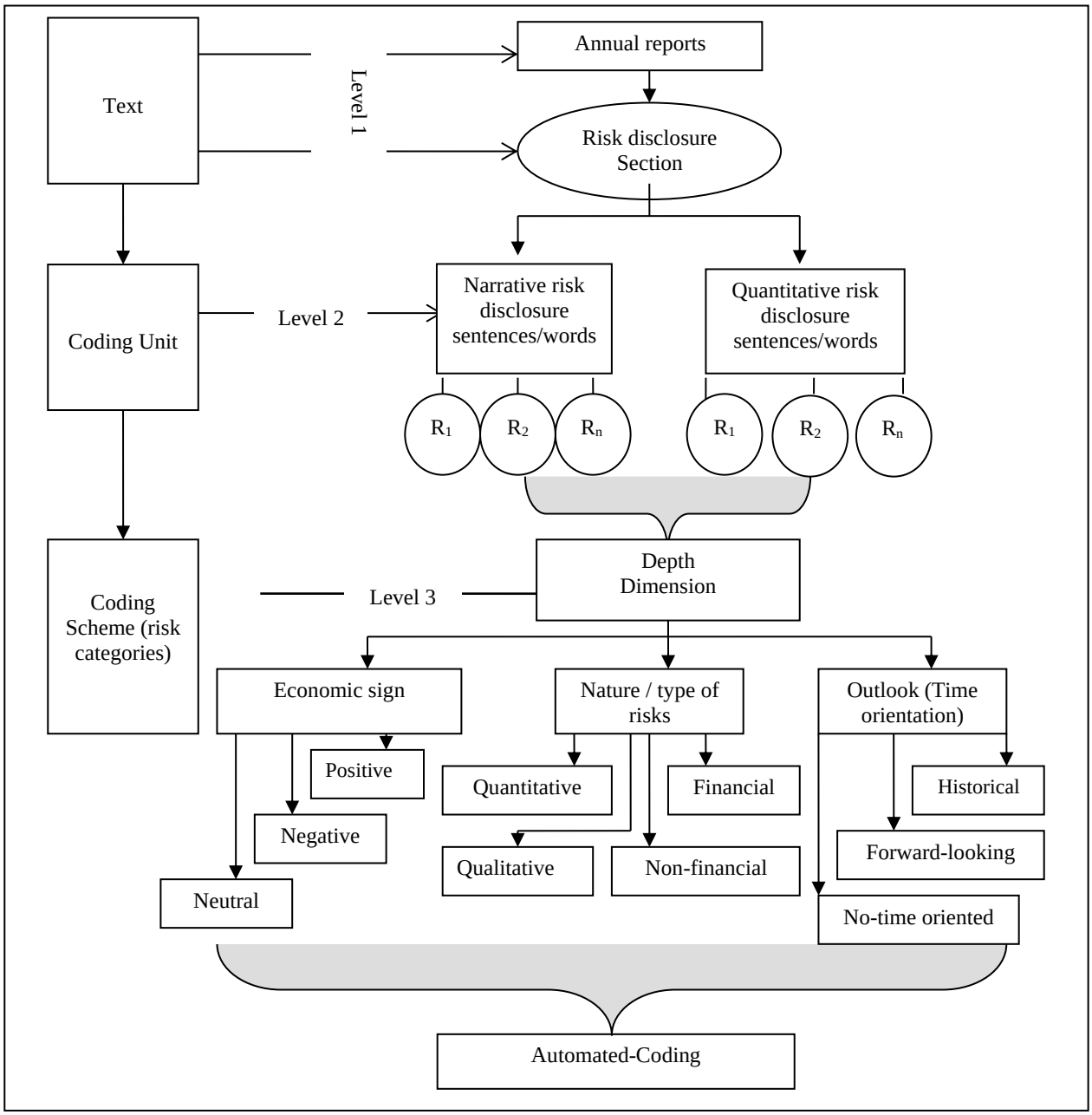

Figure 5.1: Sequences of the Content Analysis

Adapted from: Beretta & Bozzolan (2008, p. 342); Mokhtar & Mellett (2013, p. 849); Muzahem (2011, p. 126).

5.2.2. Measuring Risk Disclosure quality: a (1-6) scale-based risk disclosure index

Risk disclosure is not just a binary state of ‘disclosing’ or ‘not disclosing’ because of the mandatory requirements of risk disclosure among countries. Therefore, risk disclosure contents have varied in importance levels (Abdullah, 2021). To quantify components of risk disclosure quality, we have developed a weighted risk disclosure index based on a scale from 1 to 6 (Table 5.2). Cerf (1961) first used these types of indices as a research tool to compute the amount of information reported in the annual without different weights being assigned to each component. Disclosure indexes may include mandatory or voluntary disclosures (e.g. Raffournier, 1995; Wallace et al., 1994; Akhtaruddin, 2005; Chau & Gray, 2010; Eng & Mak, 2003; Wang et al., 2008; Neifara & Jarboui, 2018; Bozzolan & Miihkinen, 2021) or both (e.g., Hassan et al., 2009; Mcchlery & Hussainey; 2021).

Furthermore, the disclosure index was not immune to criticism because it uses small samples due to labour-intensive data collection processes and does not recognise the additional information content of each new index (Hassan & Marston, 2010). Prior studies built unweighted risk disclosure indices to avoid subjectivity in assigning different weights for different components. However, the equal weights approach affects the objectivity and the reliability of the index results, and it might underestimate the firm's value of risk disclosure (Abdallah, 2021; Nahar & Jahan, 2021).

Table 5.2: A point scale analysis of the risk disclosure index (CRD II_Scale index)

Type of risk (Main Criterion)	Weights	Risk Reporting Item (sub-criterion)	Scores	Maximum score
(i) Business Risks	1-6 Scale	1. Capital adequacy/insolvency	0-6	**36**
		2. Hedging	0-6	
		3. Liquidity	0-6	
		4. Credit	0-6	
		5. Pricing	0-6	
		6. Brexit	0-6	
(ii) Operational Risks	1-6 Scale	7. Information technology	0-6	**78**
		8. Health and safety	0-6	
		9. Communication	0-6	
		10. Sourcing/raw material	0-6	
		11. Production development	0-6	
		12. Marketing/customer satisfaction	0-6	
		13. Social contribution/community support	0-6	
		14. Internal audit and control	0-6	
		15. Human resources/labour turnover	0-6	
		16. Derivatives	0-6	
		17. Competition/proprietary/copyright	0-6	
		18. Employee fraud	0-6	
		19. Business ethics/corruption	0-6	
(iii) Management Risks	1-6 Scale	20. Performance/Fraud management	0-6	**42**
		21. Disclosure of risk governance	0-6	
		22. Research and development	0-6	
		23. Investment plans	0-6	
		24. Acquisitions, alliances, joint ventures	0-6	
		25. Compensations of executives	0-6	
		26. Disclosure of committee existence	0-6	
(V) Fluctuations Risks	1-6 Scale	27. Interest rate risk	0-6	**24**
		28. Currency exchange risk	0-6	
		29. Commodity risk	0-6	
		30. Cash flow risk	0-6	
Sum	**100%**	**30 risk items (sub-criterion)**	0-6	**180**

Additional analysis using a scale from 0 to 6 for sub-criterion; scheming process as follows:

0	If there is no risk information
1	If Risk disclosure is historical, Neutral and not time-oriented
2	If Risk disclosure is historical and forward-looking
3	If Risk disclosure is historical, forward-looking, and negative
4	If Risk disclosure is historical, forward-looking, negative, and positive
5	If Risk disclosure is historical, forward-looking, negative, positive, and qualitative (narrative)
6	If Risk disclosure is historical, forward-looking, negative, positive, qualitative (narrative) and quantitative (monetary)

5.2.3. Additional analysis for measuring risk disclosure quality: AHP-based risk disclosure index

The AHP is a multi-criteria decision-making technique developed in 1970 by Thomas Saaty for addressing selections and prioritisation decisions (Saaty, 1994, p. 337). Basically, it is based on three basics. First, identity and decomposition, which implies that the decision problem (weighting of risk disclosure index) can be broken down into smaller pieces and can be arranged hierarchically, from the more general (main criterion) to the more specific (measures and sub-measures).

Second, the discrimination and the comparison judgments in a pair matrix comparison. The priority of each criterion and sub-measure is determined based on data collected from an expert panel via questionnaires. AHP relies principally on pair-wise comparisons. Finally, a convergence stage which integrates the expert judgments into a single category to determine overall priorities. Concerning the hierarchy structure of the risk disclosure index, there are disagreements among researchers regarding risk classifications, and the complexity of risk measurement is directly related to the accuracy of the risk structure.

The second method of weighting each risk disclosure item is by using a scale from (0) to (6) to code the risk words (Table 4.4). A score of (0) is assigned if no risk information is disclosed in the annual reports, and a score of (6) is assigned if the annual reports contain a comprehensive risk disclosure that incorporates all risk disclosure dimensions. As a result, the total score for the CRD criterion, multiplied by the relative weight for each dimension, is calculated as a percentage ranging from 0% to 100%.

As part of the AHP technique, questionnaires are used to collect data from respondents, who should have in-depth knowledge of risk disclosure issues and will show varying

responses to risk content priorities. Regarding the implementation of the AHP, a sample of 15 academics has been used to investigate their opinions and experiences on risk disclosure issues to strengthen the prioritisation of corporate risk disclosure components in the CRD III_AHP index. Eight respondents out of fifteen have responded to the questionnaire. Consequently, an AHP questionnaire (appendix 1) includes six pairwise comparisons were constructed based on the following equation:

$$N = 2(n-1) = 2(4-1) = 6$$

Where: N is the number of comparisons, and n is the number of attributes.

Meanwhile, the semi-structured interview is more effective in collecting the participants' arguments toward the importance of the risk disclosure attributes. COVID 19 Pandemic hindered the conduction of semi-structured interviews with the AHP participants. Consequently, the AHP comparison questionnaires were sent via email to these participants. In this questionnaire, the respondents are asked to provide their opinion regarding the importance of the four main attributes of risk disclosure by comparing them based on a judgment scale. As shown in panel A, an expert would determine the importance of the indicators in the range of 1-9 or their reciprocals, i.e., 1/2 to 1-9, were used. On the basis of Panel B, the participants may choose a value from the left scale when the variable in the first column is deemed more important.

Correspondingly, the value of the last column is considered less critical. However, if the respondent selects from the right scale, the variable of the last column is considered more important. Finally, they may choose the value 1 when both variables are equally important (Nerantzidis, 2016, p. 328; Saaty, 1990).

Table 5.3. The scale of relative preferences for pairwise comprises:

Panel A: Scale Judgement

1	**Equal importance (Attribute A is of equal importance as B)**
3	Moderate importance (Attribute A is moderately more important than B)
5	Essential or strong importance (Attribute A is strongly more important than B)
7	Extreme importance (Attribute A is very strongly more than B)
9	Extreme importance (Attribute A is hugely more important than B)
2,4,6,8	Values for inverse comparison

Source: Saaty and Peniwati (2012, p. 26)

Panel B: pairwise comparisons

Attribute	Attributes scale judgment																Attribute
	more important than								equal	less importance than							
C1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C2
C1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	C3
C1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C4
C2	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	C3
C2	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C4
C3	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C4

C1…Business. C2…Operational. C3...Management. C4...Fluctuation risks

Based on Table 5.4, the pairwise comparison values are extracted by averaging the pairwise for each attribute for all respondents and computing the mean value for each attribute. After aggregating the judgments into a collective matrix, the researcher calculates the priorities to investigate the responses' inconsistency. We asked to re-state the argument if this ratio was above 10% for any participant. All this procedure lasted from August to September 2020.

Table 5.4. Consistency results for AHP responses

Risk disclosure attributes	Pairwise comparisons	mean
C1/C2	(7+5+5+6+7+8+9+8)/8	7
C1/C3	(6+7+8+5+5+1+7+1)/8	5
C1/C4	(3+2+4+3+5+1+1+6)/8	3
C2/C3	(7+7+5+9+1+3+2+7)/8	5
C2/C4	(3+2+5+3+4+1+5+1)/8	3
C3/C4	(1+4+2+1+2+3+3+2)/8	2

Based on the data collected in the previous section, AHP is conducted to prioritise risk disclosure factors through four main steps. First, develop a pairwise comparison matrix for each criterion (**Reciprocal matrix)**. Second, normalising the resulting matrix **(Eigenvector)**. Third, averaging the values in each row to get the corresponding rating and calculating and checking the consistency ratio (Saaty, 1990; Vargas, 2010).

First: Reciprocal matrix: the first step is to construct a set of pairwise comparison matrices. Each element in an upper level is used to compare the elements in the level immediately below concerning it. Pairwise comparisons were carried out for all factors to be considered. Usually, not more than seven and the matrix was completed in terms of the primary questionnaire designed to collect the experts' views toward risk attributes in Panel A. The effective criteria and pairwise comparison are constructed to form the Reciprocal matrix (Panel B) by dividing the comparison matrix into two sections, i.e., the upper triangular matrix and the lower triangular matrix.

Table 5.5. Formation of Reciprocal matrix

Panel A: Risk attributes weighting scores based on the AHP questionnaire

Attribute	Attributes weighting score																Attribute
	← more important than								equal	less importance than →							
C1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	C2
C2	9	8	7	6	**5**	4	3	2	1	2	3	4	5	6	7	8	9	C3
C3	9	8	7	6	5	4	3	2	1	**2**	3	4	5	6	7	8	9	C4
C1	9	8	7	6	5	4	3	2	1	**2**	3	4	5	6	7	8	9	C3
C1	9	8	7	6	5	4	3	2	1	2	**3**	4	5	6	7	8	9	C4
C2	9	8	7	6	5	4	**3**	2	1	2	3	4	5	6	7	8	9	C4

Panel B: Pairwise comparison matrix, which holds the preference values

Attributes	$C1$	$C2$	$C3$	$C4$
$C1$	1	**1/7**	**1/2**	**1/3**
$C2$	7	1	**5**	**3**
$C3$	2	1/5	1	**1/2**
$C4$	3	1/3	2	1

To fill up the upper triangular matrix, we followed the following rules. First, if the judgement value is on the left side of 1, we put the actual judgement value. Second, if the judgement value is on the right side of 1, we put the common value. But to fill the lower triangular matrix, we use the reciprocal values of the upper diagonal. If x_{ij} is the element x of row i column j of the matrix, then the lower diagonal is filled using this formula $=1/x_{ij}$ (Saaty and Peniwati, 2012).

Second: Normalisation of the matrix: This step is to normalise the matrix by summing the numbers in each column; each value in the column is then divided by the column sum to yield its normalised score. The sum of each column is 1.

I. Sum the values in each column in the pairwise matrix:

$$\begin{bmatrix} \boldsymbol{Attributes} & C1 & C2 & C3 & C4 \\ C1 & 1 & .14 & .5 & .33 \\ C2 & 7 & 1 & 5 & 3 \\ C3 & 2 & .2 & 1 & .5 \\ C4 & 3 & .33 & 2 & 1 \\ - & - & - & - & - \\ Total & 13 & 1.676 & 8.5 & 4.833 \end{bmatrix}$$

II. Divide each factor in the matrix by its column total:

$$\begin{bmatrix} \boldsymbol{Attributes} & C1 & C2 & C3 & C4 \\ C1 & .077 & .085 & .059 & .069 \\ C2 & .538 & .597 & .588 & .621 \\ C3 & .153 & .119 & .118 & .103 \\ C4 & .231 & .199 & .235 & .207 \\ Total & 1 & 1 & 1 & 1 \end{bmatrix}$$

III. Sum each row to generate the normalised matrix:

$$\begin{bmatrix} \boldsymbol{Attributes} & C1 & C2 & C3 & C4 & Normalized/Total \\ C1 & .077 & .085 & .059 & .069 & .29 \\ C2 & .538 & .597 & .588 & .621 & 2.344 \\ C3 & .153 & .119 & .118 & .103 & .494 \\ C4 & .231 & .199 & .235 & .207 & .872 \end{bmatrix}$$

IV. Then the step of priority vector: the calculation of the relative weights for each attribute. These priorities are calculated by dividing the sum of the normalised column of the matrix by the number of attributes/criteria used (n) to produce priorities/weighted matrix

$$\begin{bmatrix} \boldsymbol{Atributes} & Normalized\ values \\ C1 & .29 \\ C2 & 2.344 \\ C3 & .494 \\ C4 & .872 \end{bmatrix} \div 4 = \begin{bmatrix} Weights \\ .0725 \\ .586 \\ .1235 \\ .218 \end{bmatrix}$$

Based on the last matrix, the researcher concluded that the operational risk attribute is the highest priority at 58.6% compared to the business risk attribute, which represents the lowest priority at 7.25%. Yet, consistency analysis of these results is necessary to verify the original preference ratings that are consistent in order to accept the calculated weights; and if unacceptable, we can revise pairwise comparisons.

Third, Consistency analysis: the final step is to calculate the consistency ratio for this set of judgments using the consistency ratio (CR) for the corresponding value by following three main steps.

1) Calculate the consistency vector (CV) by multiplying each column of the pairwise comparison matrix by the weight vector. Then divide the weighted sum vector of each row by the weight of each attribute.

$$\text{CV} = \begin{bmatrix} \boldsymbol{Attributes} & C1 & C2 & C3 & C4 \\ C1 & 1 & \mathbf{1/7} & \mathbf{1/2} & \mathbf{1/3} \\ C2 & 7 & 1 & \mathbf{5} & \mathbf{3} \\ C3 & 2 & 1/5 & 1 & \mathbf{1/2} \\ C4 & 3 & 1/3 & 2 & 1 \end{bmatrix} \times \begin{bmatrix} .0725 \\ .586 \\ .1235 \\ .218 \end{bmatrix} =$$

$$= .0725 \begin{bmatrix} 1 \\ 7 \\ 2 \\ 3 \end{bmatrix} + .586 \begin{bmatrix} 1/7 \\ 1 \\ 1/5 \\ 1/3 \end{bmatrix} + .1235 \begin{bmatrix} 1/2 \\ 5 \\ 1 \\ 2 \end{bmatrix} + .218 \begin{bmatrix} 1/3 \\ 3 \\ 1/2 \\ 1 \end{bmatrix} =$$

$$= \begin{bmatrix} .2907\ /.725 \\ 2.365\ /.586 \\ .4947/.1235 \\ .8778/218 \end{bmatrix} = \begin{bmatrix} CV1 & 4.0099 \\ CV2 & 4.358 \\ CV3 & 4.0057 \\ CV4 & 4.0266 \end{bmatrix}$$

2) Calculate the consistency index (CI): to calculate the CI, λ max is required. λ_{max} is the average of the CV values, then compute the approximate consistency index:

$$\lambda_{max} = \sum_0^0 \frac{CV}{N} = \frac{[4.009+4.0358+4.0057+4.0266\,]}{4} = 4.027$$

$$CI = \frac{\lambda max - n}{n-1} = \frac{4.027-4}{4-1} = 0.009$$

3) Calculate the consistency ratio (CR): CR is calculated from the deviation of CI with RI where RI is a random index, and it is given according to Saaty's (1990) calculation (Table 5.6), CR should be less than 0.1, and if the CR is much in excess of 0.1, the

judgments are untrustworthy and need re-assessment because they are too close for comfort and to randomness and the exercise is valueless or must be repeated.

Table 5.6. Random consistency indices for n=10

N	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
RI	0.00	0.00	0.58	0.9	1.12	1.24	1.32	1.41	1.46	1.49
Source: Saaty (1990)										

$$\text{CR} = \frac{CI}{RI} = \frac{0.009}{0.9} = 0.01$$

Hence, according to the consistency ratio, the CR resulted in less than 0.1, and the judgement for overall risk disclosure attributes is consistent. Table 5.7 shows the importance order for four risk disclosure criteria. As for the aggregated weights, we can notice that the operational risk and the fluctuations risk attributes are the most important criteria, while the business risk attribute is the least important one.

Table 5.7. Importance rank for risk disclosure attributes

Risk types	**Risk attributes**	$\boldsymbol{Weights}$ %
Business risk	$W1$	$7.25 \simeq 7$
Operational risks	$W2$	$58.6 \simeq 59$
Management risks	$W3$	$12.35 \simeq 12$
Fluctuation risks	$W4$	$21.8 \simeq 22$
	Total	100 %

5.3. Total Score of Risk Disclosure Quantity and Quality

In light of the previous indices, the total score of risk disclosure quantity and quality assigned to each firm calculating based on the following formulas:

First, the volume/quantity of the risk disclosure for firm i in period t is calculated by summing up the frequencies of risk keywords that are disclosed in the narrative section of the annual reports of the European firms, as shown by the following formula:

$$CRD\ I\_Quantity_{jt} = \sum_{I=1}^{m} BR + \sum_{I=1}^{m} OR + \sum_{I=1}^{m} MR + \sum_{I=1}^{m} FR \quad (1)$$

Where *CRD I_Quantity$_{it}$* is the volume of risk keywords disclosed in the annual reports for firm j in period t. BR is the business risk keywords disclosed in the annual reports for firm jin period t. OR is the operational risk keywords disclosed in the annual reports for firm j in period t. MR is the management risk keywords disclosed in the annual reports for firm j in period t. FR is the fluctuation risk keywords disclosed in the annual reports for firm j in period t.

Second, formula (2) uses to quantify the risk disclosure behaviour/tone as a measure of risk disclosure quality by using a scale from 1 to 6, as follows:

$$CRD\ II\_Scale_{jt} = \sum_{i=1}^{m} \left(\frac{x_{ij}}{M}\right) * 100 \quad (2)$$

Where *RD II_Scale$_{it}$* is the value of the risk disclosure quality for firm i in period t, ranging from 0 to 100%. X_{ij} is the aggregate risk disclosure score of the risk disclosures' elements (j) for the firm (j) based on the (1-6) scale for risk disclosure behaviour/tone **(**e.g., historical/Forward-looking, quantitative/qualitative positive/negative), and M is the upper limit possible score of each risk category.

Third, to robust the results of risk disclosure quality, the researcher developed a weighted risk disclosure index based on Analytic Hierarchy Process (AHP). The total value of the risk disclosure index III is calculated based on the following formula:

$$CRD\ III\_AHP_{Jt} = \sum_{j=1}^{m} \left(\frac{x_{ij}}{M} * W_j\right) * 100 \quad (3)$$

Where *CRD III_AHP$_{it}$* is the value of risk disclosure index III for a firm i in period t, ranging from 0 to 100%. X_{ij} is the aggregate risk disclosure score for the main components of risk information (j) for the firm (J) based on a scale ranging from 0 1o 6 based on the risk disclosure tone, where 0 is assigned if there is no risk information, and a value of 1 is assigned if firms disclosed risk information historically, neutral and not time-oriented. A value of 2 is assigned if the risk disclosure tone is historical and forward-looking, where historical, forward-looking, and negative tone is assigned a scale of 3. On the other hand, negative vs positive, historical vs forward-looking risk information takes a value of 4. However, a score of 5 is assigned if risk information is disclosed in a historical, forward-looking, negative, positive and narrative tone. Finally, historical, forward-looking, negative, positive, qualitative (narrative) and quantitative (monetary) risk disclosures are assigned the highest value (6). Wj is the assigned weight for the risk disclosure main components (j) derived from AHP, and M is the upper limit possible score of each risk category.

5.4. Calculation of Risk Disclosure Using NVVivo 12 Plus Software

5.4.1. Qualitative data analysis for calculating risk disclosure quantity Index (CRD I_Quantity index):

Analysing qualitative data is the process of reducing data in terms of exploratory perspective allowing for the outline of the interpretation. This involves reading and re-reading whole data sources in order to abbreviate the whole data to central themes. This requires coding the data via word or a short phrase that descriptively captures the essence of such data and is the first step in data reduction and interpretation.

Automated content analysis is a process for reducing the volume of datasets in a systematic manner; it is suitable for large, geographically diverse datasets and is useful for data of varying formats. Among the large software programs are NVivo 12 Plus, Lancsbox, Nudist and CFIE, which are most valuable in assessing narrative disclosures and organising risk criteria among separate sources of data to sustain more systematic tactics of data coding. However, the validity of each program's usage varies according to the intended results, ease of use and speed. NVivo 12 Plus, because of its variety of capabilities and queries, is applicable for measuring the quantity of risk disclosure based on the initial implications of some of these programs.

NVivo 12 Plus is a qualitative data analysis software which enables some types of distant reading even if within the text data processing limits of the desktop machine (Hai-Jew, 2017; IS, 2017). Some distant reading capabilities available at NVivo 12 Plus (see Figure 5.2.) broaden the capabilities of researchers and may serve as a bridge to even more complex distant reading methods.

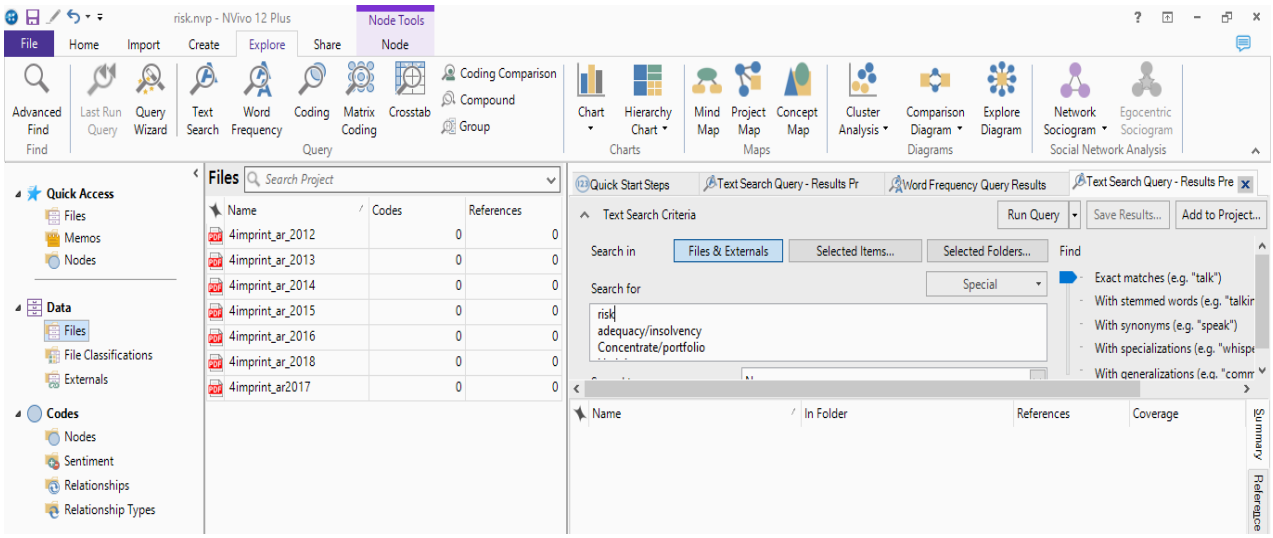

Figure 5.2. NVivo interface and commands

A range of features is provided by this software, including word frequencies (visualised as word clouds, tree maps, cluster analysis graphs), text search queries, coding queries (matrix coding, coding group, compound coding, coding comparison), and social network analysis (Network Sociogram). As part of the practical study, word frequency, coding, and word tree are the most important queries of the risk disclosure content analysis.

5.4.1.1. Word or text frequency of Risk disclosure

For the purpose of measuring the levels and quantities of risk disclosure reporting by firms in the UK, Germany, France, and Italy, we determined the final risk word list and used the word frequency command of the NVivo 12 Plus software to calculate the volume of risk words included in the annual reports. Table 5.8 summarises the results of the text frequency query using NVivo 12 Plus for one of the research samples, which indicates that the quantity of risk disclosures has increased over time:

Table 5.8. Example for the content of CRD I_Quantity Index for AA Company

Type of risk (Main Criterion)	Risk Reporting Item (sub-criterion)	AA Co.						
		2012	2013	2014	2015	2016	2017	2018
(i) Business Risks	Capital adequacy/insolvency	24	47	83	75	81	83	90
	Hedging	0	9	0	13	14	14	20
	Liquidity	44	94	43	25	34	36	40
	Credit	0	11	4	12	16	17	14
	Pricing	4	19	7	29	31	27	43
	Brexit	0	0	0	0	2	2	4
	Sum	72	180	137	154	178	179	211
(ii) Operational Risks	Information technology	13	13	24	58	94	107	127
	Health and safety	7	2	7	41	66	60	86
	communication	0	0	1	2	6	9	12
	Sourcing/raw material	5	4	13	29	38	36	53
	Production development	3	4	11	32	40	48	55
	Marketing/customer satisfaction	8	8	24	73	98	91	91
	Social contribution/community support	8	6	22	53	46	66	82
	Internal audit and control	16	8	28	179	206	245	295
	Human resources/labour turnover	22	3	7	16	16	23	32
	Derivatives	0	2	6	9	7	8	8
	Competition/proprietary/copyright	1	1	2	7	10	12	11
	Employee fraud	4	1	8	29	34	41	78
	Business ethics/corruption	44	43	93	252	337	358	397
	Sum	131	95	246	780	998	1104	1327
(iii)	Performance/Fraud management	30	37	63	301	428	442	572
	Disclosure of risk governance	10	6	48	229	390	427	506
	Research and development	3	4	10	32	42	50	57

Management Risks	Investment plans	12	10	28	79	81	105	148
	Acquisitions, alliances, joint ventures	14	5	19	47	60	70	62
	Compensations of executives	0	0	0	6	7	5	7
	Disclosure of committee existence	1	4	2	311	295	304	382
	Sum	70	66	170	1005	1303	1403	1734
(iv) Fluctuations Risks	Interest rate risk	67	62	229	415	498	523	584
	Currency exchange risk	29	13	93	261	284	312	383
	Commodity risk	9	2	46	207	236	264	334
	Cash flow risk	72	106	217	382	489	569	662
	Sum	177	183	585	1265	1507	1668	1963
	Total	**450**	**524**	**1138**	**3204**	**3986**	**4354**	**5235**

By applying this query to all companies, we can obtain total risk scores for the four countries to assess the managements' attitudes toward risk disclosure contents and measure the quantity of risk disclosed. Appendix 2 provides some examples of risk statements that were captured by NVivo 12 Plus, which are essential to identify risk disclosure tones: positive, negative, forward-looking or historical in order to quantify the risk disclosure practices by applying the CRD index II.

5.4.1.2. Coding of Risk disclosure practices

As indicated in the previous sections, the CRD II_Scale and CRD III_AHP indices of corporate risk disclosure quality are developed using an inductive thematic approach, which does not look at the quantity of information related to risks, but rather at the quality of information. Themes are likely to add new codes to the word list, which suggests a turn towards coding in NVivo 12 Plus. A risk disclosure based on the CRD index II is characterised by quantitative, qualitative, looking forward, historical, positive, and negative aspects that should be coded in the software (QSR International, 2016; IS, 2017).

There are four queries to explore the theme's coding via NVivo 12 Plus. First, coding query, through gathering all the coding at any combination of nodes. For example, gather and explore all content coded at business and fluctuation risks. Second, Matrix Coding Query by creating a matrix of nodes based on search criteria. Third, a compound query combines text and coding queries through searching for specific text in or near coded content.

Figure 5.3 explores the steps of coding some contents of the risk index. Use matrix coding queries to compare disclosure attitudes based on risk attributes. Attitudes about risk disclosure as a primary theme are different from positive to negative, past to looking forward and narrative to quantitative. List the theme nodes that code a selection of data making the most of queries, and start running queries early on in the coding process. Create a query to gather all material coded at business risk.

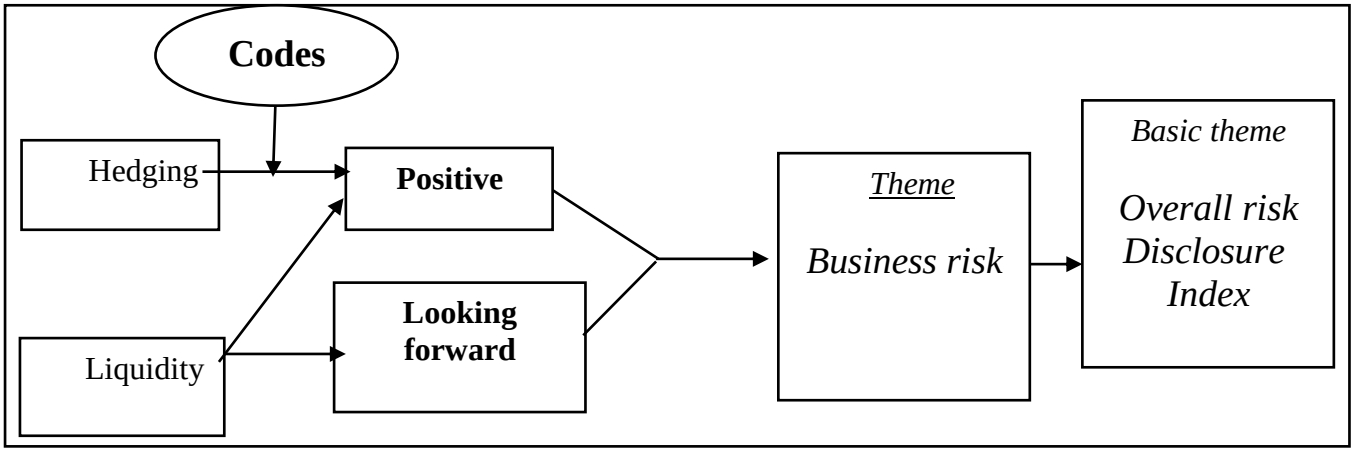

Figure 5.3. Example of risk disclosure coding

5.4.1.3. Word tree query

A word tree query is a tool used to search for a word or phrase in annual report texts and view all the matches in a preview tree. This is just one way of interrogating text-based data. The word tree may help to see unexpected associations in transcripts, for instance. The word risk in general and its interrelations for one of the research samples in the UK are presented in the following chart.

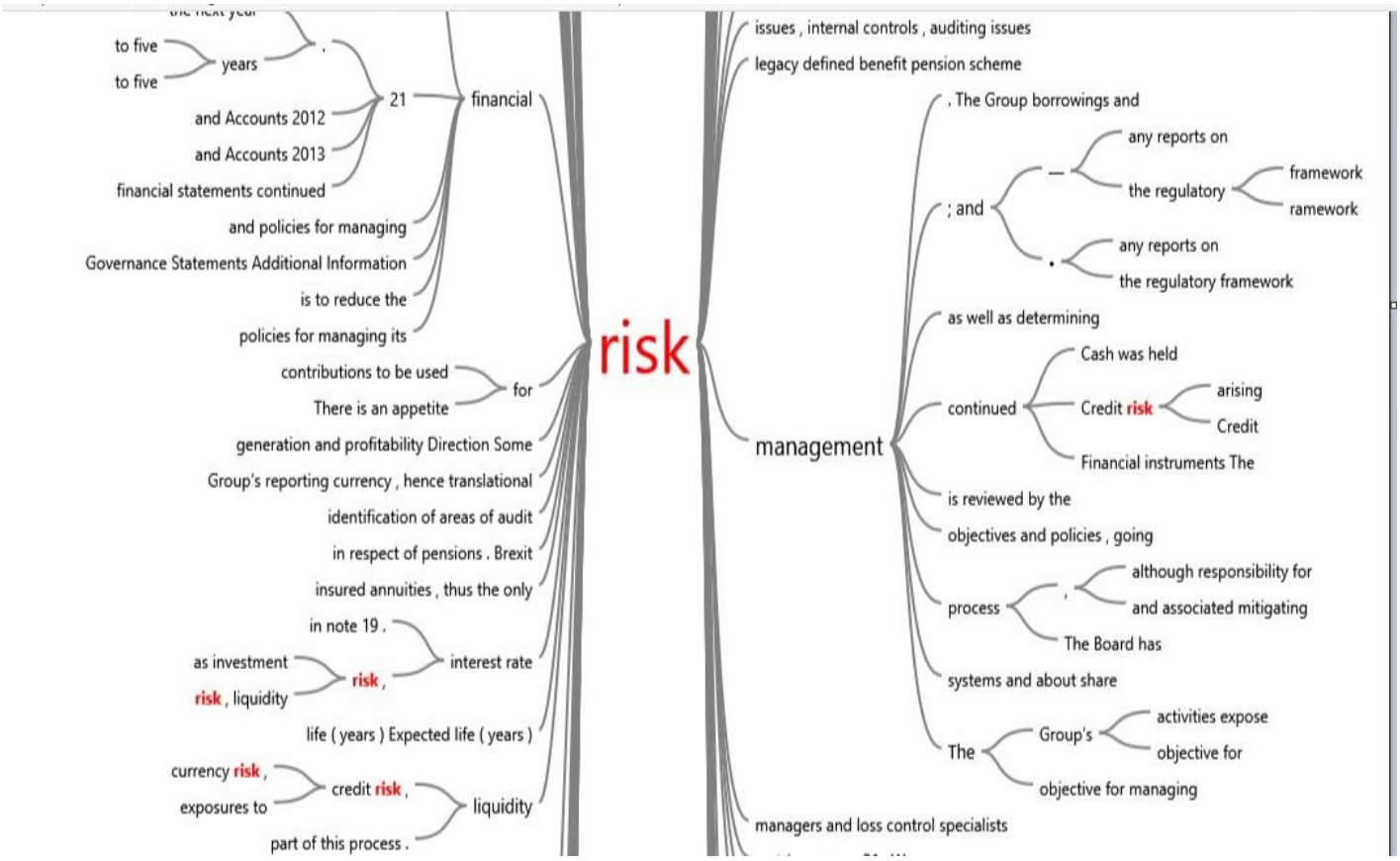

Figure 5.4. Example of a risk word tree extracted from NVivo 12 plus.

5.4.2. Application of risk disclosure quality index (III) on an example firm

Risk factors are viewed as having different relative importance in the risk disclosure process. Therefore, the AHP method has been used to prioritise the risk disclosure factors (see section 5.2.3). This section illustrates the results of applying a CRD III to one company in order to describe the quality of risk disclosure. Table 5.9 indicates that, based on the risk disclosure quality index (III), European companies differ in their attitude toward disclosing risk information; however, those dealing with business risk have the most significant interest in disclosing risk information. Risk disclosure of UK, French, and German companies focus primarily on business, operational, management, and fluctuations risks, whereas risk disclosure of French companies concentrates primarily on Business risk items.

Table 5.9. Example for the CRD III_AHP index for AA company

Score	Risk disclosure type	2012	2013	2014	2015	2016	2017	2018	Overall %
The UK-CRD index III									
1	Business risk	12.42	12.42	12.43	12.43	12.43	12.44	12.41	12.44
2	Operational risk	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
3	Management risk	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.98
4	Fluctuations risk	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
Germany- CRD index III									
1	Business risk	11.35	11.31	11.34	11.34	11.33	11.32	11.31	11.33
2	Operational risk	4.37	4.37	4.36	4.36	4.36	4.37	4.37	4.36
3	Management risk	3.07	3.06	3.06	3.06	3.06	3.06	3.06	3.06
4	Fluctuations risk	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
France- CRD index III									
1	Business risk	14.24	14.2	14.24	14.23	14.23	14.22	14.2	14.33
2	Operational risk	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.66
3	Management risk	3.45	3.44	3.45	3.45	3.45	3.45	3.44	3.48
4	Fluctuations risk	3.64	3.63	3.64	3.64	3.64	3.64	3.63	3.66
Italy- CRD index III									
1	Business risk	6.19	6.19	6.19	6.19	6.19	6.19	6.19	6.19
2	Operational risk	1.34	1.35	1.34	1.34	1.34	1.35	1.35	1.35
3	Management risk	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
4	Fluctuations risk	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.30

As indicated in Table 5.9, disclosures about different risk types are enhanced across European countries; likewise, looking forward and negative risk disclosure gained the highest interest among the tested samples.

5.5. Concluding Remarks

This chapter discussed the main methods of collecting qualitative data on risk disclosure, and AHP required data to prioritise the main attributes of risk disclosure indices. It covered the steps of applying AHP and how to prioritise these attributes based on academic initiatives. Furthermore, automated content analysis via NVivo 12 Plus and how to reduce data to quantify the risk disclosure practices are introduced in the third section, which is

used to explain variations in risk reporting between firms and across countries in the following chapter, Chapter Six.

In the next chapter, the pilot study on a number of companies across the UK, Germany, France and Italy is introduced so as to report the degree to which there are significant differences in either firms' risk disclosure contents or the progress of risk disclosure within and across the countries.

Chapter Six: Pilot Study of the Differences in Corporate Risk Disclosures

6.1. Overview

Based on the analysis introduced in Chapter Five, the current chapter aims to determine whether there are significant differences in firms' risk disclosure levels across the UK, German, French, and Italian firms. To this end, computerised content analysis and multilevel analysis are applied to 10 non-financial firms in each country. The results of multivariate analysis of variance (MANOVA) reveal significant differences between firms' risk disclosure levels across the UK, Germany, France, and Italy during the period 2012-2018. Therefore, the pilot study presented in this chapter seeks to validate the self-constructed risk disclosure indices (e.g. $CRD\ I\_Quantity$, $CRD\ II\_Scale$, and $CRD\ III\_AHP$) at an earlier stage, and investigate whether there are significant differences between risk disclosure levels within and across EU companies. This chapter is structured as follows. Section 6.2 discusses the method of the pilot study, Section 6.3 reveals the empirical results, and Section 6.4 makes concluding remarks.

6.2. The Pilot Study's Method and Statistical Analysis

The primary objective of this chapter is to identify the main gaps in risk disclosure levels both within firms and across countries. In order to avoid bias in the analysis, 40 non-financial companies were randomly selected in 2012 and 2018 by random sampling. Annual reports are the central basis of research data; these reports were obtained from databases and websites for security markets. In addition to this, DataStream is used to obtain market data of the listed companies as well as market data of selected firms

Automated content analysis (e.g., NVivo 12 Plus and CFIE) tools were used to capture risk disclosure items and address the tone and behaviour of risk disclosure within the annual reports.

Detailed descriptions of the quantity and quality variables of risk disclosures were described in Chapter Five. It was determined whether words with the $CRD\ I\_Quantity$, $CRD\ II\_Scale$, and $CRD\ III\_AHP$, as shown in Table 5.1 and Table 5.2, are in use. An intensive text search is conducted using NVivo 12 Plus and CFIE for 40 annual reports collected randomly from the selected countries.

As a part of this chapter, descriptive analysis, reliability and validity analysis, as well as a one-way multivariate analysis of variance (MANOVA), have been conducted in order to determine whether there are significant differences in risk disclosure quantity and quality across selected EU countries.

The pilot study consists of four independent samples across four countries (the UK, Germany, France, and Italy) over a period of seven years. The selected years were used to measure differences in risk disclosure levels within and across EU countries. Moreover, the underlying assumptions of MANOVA were also tested as follows.

First is the assumption of normality, which is related to the risk disclosure extent values being normally distributed. This assumption might be statistically examined by using either Kolmogorov-Smirnov or Shapiro-Wilks. In both tests, the null hypothesis should be accepted if the p-value is above one of the three common acceptable significance levels of 10%, 5% or 1%.

Second, the assumption of homogeneity, the null hypothesis of this assumption, which assumes that each group of the four countries has the same variance on risk reporting

levels. This hypothesis may be statistically examined using Levene's test, which allows acceptance or rejection of the null hypothesis based on the deviation from the average, median, or adjusted median for each dependent variable. If the results of Levene's test are significant (p-values are less than the significance level of .05), the variances are significantly different in different groups; the null hypothesis should therefore be rejected. Obviously, the MANOVA results might either suggest significant or non-significant differences in risk disclosure quantity and/or quality within and between firms in such countries.

If the results suggest significant differences in risk disclosure variables, the Bonferroni and Tamhane tests can be utilised to investigate which pair of countries these differences occur (the UK and Germany; the UK and France; the UK and Italy; Germany and France; Germany and Italy; France and Italy). The first test supposes that the variances of risk disclosure variables in each group are equal; however, the second test gives the same result if the variances are not equal.

As one of the post hoc actions after calculating the final risk disclosure scores, we will perform three activities. First, we conduct the reliability scale analysis in order to test the reliability of the risk disclosure quantity and quality scores. Second, we investigate the validity of risk disclosure quantity and quality indices and their components through conducting correlation analysis. Third, the Multivariate analysis is carried out to investigate whether there are significant differences in risk disclosure quantity and quality among the European countries over the years from 2012 to 2018.

6.2.1. Descriptive analysis of the differences in risk disclosure levels

Table 6.1 demonstrates the significant differences in the quantity of risk disclosure based on *CRD I_Quantity* index over 80 firm-years observation for the four countries. As mentioned in column 4, risk disclosure volume increased across the four countries, and there are big variances among them in terms of risk disclosure levels. UK companies varied in risk disclosure levels during 2012 and 2018, whose mean risk disclosure quantity in the UK is 202.46 compared with 305.30 respectively; this is due to the UK Brexit decision and its impact on economic and business conditions in Europe. Generally, French firms and German firms have decided to disclose more risk information over the years. For example, the level of risk disclosure of French firms during 2012-2018 was 299.17, compared with 168.67 for German firms. Meanwhile, Italian firms have been motivated to disclose more information about risk (76.79).

Table 6.1. Descriptive statistics for risk disclosure quantity based on *CRD I_Quantity* index

Country		2012	2018	2012-2018
UK	Mean	202.46	305.30	254.64
	Median	53.50	111.00	83.36
	Variance	163.578	236.93	197.17
	Min.	0	0	0
	Max.	419	668	547.86
Germany	Mean	162.86	183.12	168.97
	Median	45.00	63.00	52.43
	variance	155.357	144.31	144.25
	Min.	0	0	0
	Max.	169	218	229.43
France	Mean	254.05	342.07	299.17
	Median	64.00	114.00	95.36
	variance	245.418	365.97	295.68
	Min.	0	0	0
	Max.	508	696	623.29
Italy	Mean	71.73	80.94	76.79
	Median	.00	4.00	2.57
	variance	116.414	119.47	118.71
	Min.	0	0	0
	Max.	197	386	285.14
Obs.		40	40	280

Moreover, Table 6.2 reveals that the extent of risk disclosure is notably different among the 40 EU firms. It can be concluded that the annual reports of the 10 UK firms are likely to disclose more risk information with a mean value of 839.196 (35.6%). This volume ranges from a minimum of 0 to a maximum of 1834 words (37.6%) with a standard deviation of 481.09 (30.37%) text words. In addition, a significant volume of risk information appears in German and French annual reports, with the mean values of 773.67 (32.8%) and 660.65 (28.03%), and the maximum values of 1539 (31.5%) and 1288 (26.4%), respectively.

Italian firms disclose less risk information than UK, German, and French firms, with a mean value of 83.33 (3.5%), a maximum value of 218 (4.5%), and a standard deviation of 45.8 (2.9%). On the other hand, and concerning the risk disclosure topics, Table 6.2 reported that the EU annual reports for the tested firms are more likely to disclose information related to operational, management and fluctuation risks. Operational risk disclosure varied among the UK, German, French, and Italian annual reports with average values of 1015.3 (36.7%) and 849.63 (30.72%), 792.829 (28.67%), and 107.699 (3.9%), respectively. In addition, there are differences among the four EU countries regarding management risk disclosure, with mean values of 957.66 (35.58%), 820.131(30.47%), 781.829 (29.049%), and 131.796 (4.89%), respectively. However, fluctuation risks are varied with mean values of 1017.97 (36.2%), 1038.964 (36.9%), 736.711 (26.2%), 18 (0.64%), respectively. The information related to the business risks was the lowest disclosure item in the EU annual reports for 40 firms with average values of 365.86 (31.57%), 385.95 (33.30%), 331.21 (28.58%), and 75.831 (6.54%).

These results coincide with the results of the prior literature (Achmad et al., 2017; Amran et al., 2009; Deegan, 2002; Elamer et al., 2019; Elzahar & Hussainey, 2012; Greco, 2012; Ibrahim & Hussainey, 2019; Ntim et al., 2013; Oliveira et al., 2011). As a result, risk

disclosure sections in the annual reports often focus on operational and management risks and provide strategic information to all stakeholder groups about how they manage risk. Also, these findings are consistent with the arguments of the adopted multi-theoretical framework. The extent of risk disclosure in the annual reports also indicates how firms manage their risks to gain critical resources (resource-dependence theory), stakeholders' confidence (stakeholder theory), social acceptance (institutional theory), and legitimacy (legitimacy theory).

Table 6.2. Descriptive statistics for risk disclosure sub-items quantity based on *CRD I_Quantity* index

		Obs.	Min.	Max.	Mean	Std. Deviation
UK		80	.00	1833.75	839.196	481.09
Germany		80	.00	1539	773.667	378.2
France		80	.00	1287.75	660.645	678.93
Italy		80	.00	218.50	83.331	45.81
UK	BR	80	.00	842	365.86	213.234
	OR	80	.00	2568	1015.30	626.618
	MR	80	.00	2146	957.66	571.762
	FR	80	.00	2182	1017.97	566.038
Germany	BR	80	.00	799	385.95	193.633
	OR	80	.00	1650	849.63	439.84
	MR	80	.00	1759.	820.131	441.289
	FR	80	.00	2088	1038.964	512.665
France	BR	80	.00	863	331.21	318.903
	OR	80	.00	1578	792.829	318.903
	MR	80	.00	1855	781.829	840.571
	FR	80	.00	1373	736.711	690.55
Italy	BR	80	.00	184	75.831	37.683
	OR	80	.00	335	107.699	87.003
	MR	80	.00	459	131.796	90.700
	FR	80	.00	103	18.00	22.619

On the other hand, management for European firms uses different tones to communicate information about their risks. Table 6.3 reports the main differences among 40 EU firms based on the point scale risk disclosure index (CRD II_Scale) applied using the CFIE software from 2012 to 2018. The CFIE software was primarily developed for the UK

companies to measure the negative, positive and looking-forward tone in the risk information as a whole. Using this software, the risk words were coded on a scale of '0' to '6'. A score of '0' refers to there being no risk disclosure in the annual reports; however, a score of '6' is assigned to the complete risk information, containing all dimensions of risk disclosure (e.g., historical/ Forward-looking, quantitative/ qualitative/ positive/ negative).

From 2012 to 2018, the UK entered the stage of Brexit from the European Union, and this decision may affect the tone of risk disclosure in the EU annual reports. As indicated in Table 6.3, risk disclosure quality increased across the years, and there are big variances among EU countries in terms of risk disclosure quality. The UK and German firms used different tones of risk disclosure in their annual reports in 2012 and 2018, with a mean value of 0.32 and 0.31, respectively. Also, French firms are varied in the tone of risk information over the years, with a mean value of 0.24. Meanwhile, Italian firms are the lowest among the EU countries in using different tones of risk disclosure over the years, with a mean value of 0.08.

Table 6.3. Descriptive statistics for risk disclosure quality based on *CRD II_Scale* index

Country		2012	2018	2012-2018
UK	Mean	0.26	0.36	0.32
	Median	0.26	0.37	0.34
	Variance	0.02	0.02	0.02
	Min.	0.006	0.007	.01
	Max.	0.47	0.51	.52
Germany	Mean	0.3	0.36	0.31
	Median	0.32	0.37	0.34
	Variance	0	0	0.01
	Min.	0.19	0.28	0.19
	Max.	0.39	0.43	0.43
France	Mean	0.17	0.32	0.24
	Median	0.11	0.4	0.27
	variance	0.03	0.03	0.04
	Min.	0	0	0
	Max.	0.48	0.48	0.48
Italy	Mean	0.07	0.09	0.08
	Median	0.07	0.11	0.07
	variance	0	0	0
	Min.	0.056	0	0
	Max.	0.1	0.12	0.12
Obs.		40	40	280

Table 6.4 reports the descriptive statistics of the risk disclosure behaviour for 40 EU firms based on the point scale risk disclosure index (CRD II_Scale). As mentioned in Table 6.4, it can be concluded that risk disclosure largely concentrated on historical, qualitative, looking forward, and positive oriented risk words: 32.25%, 66%, 52.75%, and 62% of risk disclosure words for the UK, German, French, Italian pilot firms respectively. Historical risk information compared to forward-looking information represent 20.75%, 11.25%, 16.5%, and 11.5%, respectively, and 25.25%, .5%, 13% and 4.75%. Most of this information is narrative or qualitative information with mean values of 50.75%, 14.75%, 21%, and 19%, respectively.

These findings are in line with the prior risk disclosure studies and support the arguments of the stakeholder and legitimacy theories. Managers could communicate higher levels of

positive and forward-looking information to legitimise their performance by discussing risk management and current and future performance in order to build stakeholders' trust and gain social acceptance and legitimacy (Amran et al., 2009; Elamer et al., 2019; Lajili & Zeghal, 2009; Linsley & Shrives, 2006; Ntim et al., 2013; Oliveira et al., 2011).

Table 6.4. Descriptive Statistics for risk disclosure behaviour based on *CRD II_Scale* index

Country	Risk disclosure tone	Obs.	Min.	Max.	Mean	Std. Deviation
UK	Quantitative	80	6	26	18.5	9.574
	Qualitative	80	28	52	50.75	11.843
	Negative	80	15	33	25.5	7.7244
	Positive	80	14	38	25.25	13.048
	Forward	80	6	35	20.75	13.524
	Historical	80	14	44	32.25	12.868
Germany	Quantitative	80	0	1	0.75	0.5
	Qualitative	80	0	25	14.75	10.813
	Negative	80	0	1	0.5	0.577
	Positive	80	0	1	0.5	0.5773
	Forward	80	0	24	11.25	12.526
	Historical	80	0	67	66	0.8165
France	Quantitative	80	2	5	2.75	1.5
	Qualitative	80	5	29	21	10.832
	Negative	80	3	15	8.5	5.508
	Positive	80	3	21	13	7.832
	Forward	80	12	23	16.5	4.655
	Historical	80	44	60	52.75	6.898
Italy	Quantitative	80	0	3	0.75	1.5
	Qualitative	80	8	25	19	7.788
	Negative	80	1	10	6.75	4.031
	Positive	80	0	14	4.75	6.396
	Forward	80	8	18	11.5	4.509
	Historical	80	56	67	62	4.966

Furthermore, Table 6.5 describes the main differences among European firms in terms of risk disclosure quality measured by the weighted risk disclosure index (*CRD III_AHP*) (see the formula (3) in Section 5.4.). As clear from column 5, EU annual reports are varied in

the degrees of risk disclosure quality. Both the UK and German firms disclosed high-level quality risk disclosure in their annual reports in 2012 and 2018, with a mean value of 28.2 and 23.94, respectively. Also, French and Italian firms are varied in the level of risk information quality over the years, with a mean value of 19.54 and 11.46. The degree of risk disclosure quality relatively increased from 2012 to 2018 for the four EU countries, with mean values of 23.13, 22.5, 13.74, and 9.24 compared with 29.92, 28.35, 25.84, 11.01, respectively.

Table 6.5. Descriptive statistics for risk disclosure quality based on *CRD III_AHP* index

Country		2012	2018	2012-2018
UK	Mean	23.28	29.92	28.2
	Median	23.61	32.28	30.37
	Variance	119.71	113.37	91.03
	Min.	1.6389	1.6389	1.64
	Max.	35.81	41.87	42.15
Germany	Mean	22.51	28.35	23.94
	Median	23.87	29.19	26.12
	variance	80.3	21.3	55.93
	Min.	0	18.87	0
	Max.	31.25	35.4	34.55
France	Mean	13.74	25.84	19.54
	Median	5.66	30.68	13.25
	variance	253.48	326.86	326.54
	Min.	0	0	0
	Max.	44.97	44.97	44.97
Italy	Mean	9.24	12.01	11.46
	Median	11.24	11.7	11.27
	variance	25.86	52.97	17.51
	Min.	0	0	0
	Max.	14.37	22.33	22.33
Obs.		40	40	280

Table 6.6 reports the descriptive statistics of risk disclosure quality under the AHP-based index for 40 EU firms. As indicated in Table 6.6, the maximum rates of the quality in risk items are 43.61, 50.001, 45.398, and 39.278 in the UK, Germany, France and Italy, respectively, compared with 23.728, 21.232, 23.875 and 8.852 during 2012 and 2018.

Likewise, business risks are largely focused on in the annual reports by 13.397, 12.1277, 10.979, and 6.0093 in Germany, the UK, France and Italy, respectively. By comparison, operational risks were CRD index II scored by 4.522, 4.253, 3.478, and 1.241. The mean values of the management risks, on the other hand, are 4.017, 3.197, 3.533, and 1.30059523 for the UK, Germany, France and Italy, respectively, whereas fluctuation risks are 3.072, 2.802, and 3.466, 0.302, respectively.

In terms of the considerable risk types among countries, the researcher found that all four risk disclosure types are included in the annual reports to different degrees. Firms in the UK cover all types of risk by a maximum of 26.222, 11.846, 8.357, and 5.833, respectively, compared with 22.944, 18.333, 10.833, and 5.833, respectively. In Italy, the maximum scores for business, operational, management and fluctuation risks are 16.3889, 14.949, 2.571, and 1.1667.

Overall, we conclude that the narrative disclosure sections in the UK and France tend to focus on risk disclosure in different forms. They are followed by the German companies, whereas the Italian firms tend to focus less on risk disclosure within their annual reports. These findings are consistent with previous research (e.g., Achmad et al., 2017; Elzahar and Hussainey, 2012; Greco, 2012; Ibrahim et al., 2019; Ibrahim & Hussainey, 2019; Ntim et al., 2013; Oliveira et al., 2011). In addition, risk disclosure sections in annual reports primarily focus on non-financial risk disclosures, particularly disclosure concerning operational and management risks during periods.

These results also align with theories of legitimacy, which argue that managers tend to communicate with all stakeholders about the ability to manage risks to gain legitimacy (Amran et al., 2009; Deegan, 2002; Elshandidy, 2011; Ntim et al., 2013; Oliveira et al.,

2011), to improve firms' reputation and image (institutional theory) to enhance stakeholders' confidence (stakeholder theory), and to help them gain critical resources including finance and contracts (resource dependency theory).

Table 6.6. Descriptive statistics for risk disclosure sub_categories by country based on CRD III_AHP Index

		Obs.	Max.	Mean	Std. Deviation
The UK	BR	70	22.944	12.127	2.825
	OR	70	18.333	4.522	1.783
	MR	70	10.833	4.017	1.647
	FR	70	5.833	3.0721	1.308
Germany	BR	70	21.31	10.979	4.783
	OR	70	11.28	4.253	1.814
	MR	70	7.429	3.197	1.479
	FR	70	5.833	2.802	1.476
France	BR	70	29.50	13.397	10.314
	OR	70	5.076	3.479	2.064
	MR	70	5.571	3.534	2.326
	FR	70	5.250	3.466	2.158
Italy	BR	70	16.39	6.009	2.881
	OR	70	14.95	1.241	2.352
	MR	70	2.571	1.301	.5629
	FR	70	1.166	.3015	.2798

6.2.2. The reliability and validity of risk disclosure scores

This section aims to evaluate the validity and reliability of the practical model. This step confirms the quality of the empirical results of the practical model and increases the ability to generalise the results. Thus, this section emphasises testing the reliability and validity of the data used to construct the three leading risk disclosure indices.

6.2.2.1 The reliability of risk disclosure scores

Field (2009) and Sekaran (2003) defined reliability as the ability of a developed and/or functional instrument to interpret the concept consistently across situations and different researchers. Cronbach's Alpha measures the internal consistency of the risk disclosure index and its components, with values ranging from 0 to 1. There is no consensus on an acceptable level of Cronbach's alpha to indicate reliable internal consistency and validity of an instrument among researchers in social science (Bryman, 2004; Smith et al., 2008).

However, Morgan et al. (2005) suggested that 0.70 or above is a generally accepted minimum value of Cronbach's alpha as a reliable indicator.

Panel A. of Table 6.7 shows that Cronbach's Alpha based on Standardised risk disclosure items is 93.8%. The results signify that inter-consistency between business, operational, management and fluctuation risk disclosure scores is higher than the generally accepted α (e.g., 70% of social science) (Bryman, 2004). Moreover, Panel B of Table 6.5 concludes that Cronbach's coefficient Alpha for OR, MR, FR, and BR categories are 0.908, 0.882, 0.891, and 0.966, respectively. Accordingly, there is no Cronbach alpha value if the item deleted is greater than aggregated α on the one hand, and the sub-items used to measure the extent of risk disclosure are internally consistent at the acceptable level on the other side. Therefore, the results seem to strongly support the idea that risk disclosure items are reliable.

Table 6.7. Reliability statistics of risk disclosure scores

Panel A: Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.938	.972	4

Panel B: Item-Total Statistics			
	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BR	.903	.850	.966
OR	.921	.888	.908
MR	.961	.940	.882
FR	.935	.926	.891

6.2.2.2. The validity of risk disclosure scores

Validity as a measure of the quality of the risk disclosure scores means that the content and the construct of the developed instrument (CRD I_Quantity as an example) measures what exactly it sets out to measure (Field, 2009). In this section, we highlight the construct

validity of the risk disclosure index. Through correlation analysis, we can verify whether the risk disclosure scores are consistent with theoretical expectations and practical evidence. A number of prior studies (e.g., Omran et al., 2008; Sekaran, 2003) applied the correlation analysis in order to test the validity of the developed indices. Following these studies, and to ensure that the three self-constructed risk disclosure indices (e.g., *CRD I_Quantity, CRD II_Scale, and CRD III_AHP*) are consistent with the theoretical expectations, the Pearson correlation is used to measure the correlation coefficient across the UK, Germany, France and Italy. Using the *CRD I_Quantity, CRD II_Scale, and CRD III_AHP* indices, Table 6.8 shows that business, operational, management, and fluctuation risks are significantly associated with total risk disclosure quantity and quality.

These findings are consistent with Abraham & Cox (2007), Elshandidy (2011), Hassan (2008), and Linsley & Shrives (2006). Almost all the components of all risk disclosure indices are statistically significant ($p<.001$). Moreover, confirming that *CRD I_Quantity, CRD II_Scale, CRD III_AHP* and its components are valid measures for this study. The results also reveal that the indices of the different corporate governance categories are correlated to each other.

Table 6.8. Correlation matrix for *CRD I_Quantity, CRD II_Scale,* and *CRD III_AHP indices*

Panel A. Correlation matrix for CRD I_Quantity

Correlation coefficient	CRDI_Quantity	BR_Quantity	OR_Quantity	MR_Quantity	FR_Quantity
CRDI_Quantity	1				
BR_Quantity	0.94**	1			
OR_Quantity	0.95**	0.84**	1		
MR_Quantity	0.98**	0.92**	0.9**	1	
FR_Quantity	0.96**	0.92**	0.85**	0.92**	1

Panel B. Correlation matrix for CRD II_Scale

Correlation coefficient	CRD II_Scale	BR_Scale	OR_Scale	MR_Scale	FR_Scale
CRD II_Scale	1				
BR_Scale	0.45**	1			
OR_Scale	0.93**	0.59**	1		
MR_Scale	0.81**	-0.1	0.66**	1	
FR_Scale	0.93**	0.14**	0.81**	0.89**	1

Panel C. Correlation matrix for CRD III_AHP indices

Correlation coefficient	CRD III_AHP	BR_AHP	OR_AHP	MR_AHP	FR_AHP
CRD III_AHP	1				
BR_AHP	0.97**	1			
OR_AHP	0.7**	0.56**	1		
MR_AHP	0.93**	0.86**	0.65**	1	
FR_AHP	0.87**	0.8**	0.5**	0.91**	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure index and its components, where, *CRD I_Quantity: corporate risk disclosure Index for measuring the risk disclosure quantity; CRD II_Scale: corporate risk disclosure Index for measuring the quality of risk disclosure using (0-6) point scale; CRD III_AHP: weighted corporate risk disclosure Index for measuring the quality of risk disclosure using different weights assigned using AHP technique; BR_Quantity: business risk information quantity; BR_Scale: business risk information quality based on CRD II_Scale index; BR_AHP: business risk information quality based on CRD II_AHP index* OR_Quantity, *OR_Scale, and OR_AHP: are the operational risks based on CRD I_Quantity, CRD II_Scale, and CRD III_AHP indices; MR_Quantity, MR_Scale, and MR_AHP: are management risks based on CRD I_Quantity, CRD II_Scale, and CRD III_AHP; FR_Quantity indices, FR_Scale, and FR_AHP: are the fluctuation risks based on CRD I_Quantity, CRD II_Scale, and CRD III_AHP indices.*
*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

6.3. Results of Multivariate Analysis (MANOVA) of the Pilot Sample

6.3.1. Assumptions of MANOVA test

Based on the linearity and homogeneity assumptions test, the results indicate that risk disclosure quantity (CRD I_Quantity) across EU countries are normally distributed (See Panel A and Panel B of Table 6.9), which confirms the assumption of linearity. In terms of equality of variance, on the other hand, the results of Levene's test are significant across the European countries in terms of risk disclosure quality, specifically for CRD I_ Scale at a p-value 0.061, and for CRD I_ AHP, at p-value 0.070 (Panel C of Table 6.7). This means that the differences in risk disclosure levels are significantly different in Europe, and Bonferroni test should be performed to identify which of those variances are significant. Likewise, the variances of risk disclosure quantity variables are significant in these countries, excluding business, management, and fluctuation risk. The assumption of homogeneity is confirmed for all variables except those that violate it. Therefore, the null hypothesis of equal variance would be rejected for business risk at a p-value 0.028 in 2012. There was an operational risk at a p-value 0.005 during 2018, a management risk at a p-value 0.080, and finally, and fluctuation risk at a p-value 0.000 in 2018.

Table 6.9. Results of normality and homogeneity assumptions of MANOVA

Panel A. Normality assumption's test results of risk disclosure levels

Risk type		Kolmogorov-Smirnov[a]		Shapiro-Wilk	
	Group	2012	2018	2012	2018
CRD I_Quantity	France	.200*	.131*	.248	.050
	Germany	.026	.200*	.077	.421
	Italy	.200*	.200*	.609	.701
	UK	.028	.028	.033	.033
CRD I_ Scale	France	.200*	.200*	.052	.227
	Germany	.200*	.200*	.524	.645
	Italy	.146*	.200*	.051	.911
	UK	.200*	.199*	.110	.050
CRD I_ AHP	France	.002	.017	.000	.058
	Germany	.035	.200*	.008	.386
	Italy	.001	.000	.001	.000
	UK	.028	.017	.014	.005

Panel B. Normality assumption's test results of Risk disclosure quantity

Risk type		Kolmogorov-Smirnov[a]		Shapiro-Wilk	
	Group	2012	2018	2012	2018
BR	France	.027	.195*	.020	.027
	Germany	.200*	.024	.317	.001
	Italy	.026	.200*	.020	.434
	UK	.200*	.062	.436	.015
OR	France	.075**	.111*	.040	.046
	Germany	.200*	.200*	.848	.592
	Italy	.023	.200*	.069	.530
	UK	.200*	.200*	.332	.650
MR	France	.061**	.111*	.033	.068
	Germany	.200*	.200*	.859	.390
	Italy	.200*	.200*	.604	.545
	UK	.200*	.200*	.137	.939
FR	France	.006	.041	.002	.005
	Germany	.200*	.001	.854	.001
	Italy	.064**	.200*	.123	.222
	UK	.200*	.200*	.459	.094

* This is a lower bound of the true significance.

Panel C: Homogeneity assumption's results - Levene's Test of Equality of Error Variances

	Sig	2012	2018
CRD I_Quantity	Gov_Score	.499	.344
	Beta	.808	.061*
	Current Ratio	.530	.070*
CRD I_ Scale	Business Risks	.028**	.271
	Operational Risks	.088*	.005**

	Management Risks	.240	.080**
	Fluctuations Risks	.156	.000***
CRD I_ AHP	Business Risks	.101	.000***
	Operational Risks	.200	.015**
	Management Risks	.669	.258
	Fluctuations Risks	.014**	.067*

Panel C indicates that there are significant differences between firms' fluctuation risk across these four countries in 2012 at a p-value 0.014 that was between business, operational and fluctuation risk across countries in 2018 at a p-value 0.000, 0.015 and 0.067, respectively. These variables support the assumption of homogeneity and suggest the use of the Bonferroni test if the results of multivariate analysis are significant. Nevertheless, there are no significant variances between the four European countries in terms of business, operational and fluctuation risk during 2012 and management risk during 2018. These variables troubled the assumption of homogeneity, and the null hypothesis should be rejected.

6.3.2. Differences in firms' risk disclosure quantity levels within and across the UK, Germany, France, and Italy

Panel A. of Table 6.8 illustrates the differences among European firms in risk disclosure in 2012 and 2018. There are significant differences in CRD index components between the UK, German, French and Italian firms, mainly in the operational, management and fluctuation risks. These significant differences are followed by either Tamhane or Bonferroni tests to identify specifically in which two pairs of countries the differences exist and are significant, as shown in Panel B of Table 6.10.

As shown in Panel B of Table 6.10, the Tamhane test reveals significant differences in management risk between the UK and German firms in the first period and between the

UK and French firms in the same period. Furthermore, the Tamhane test reveals significant differences in fluctuations risks between the UK, France, Germany, and Italy in 2012. The results also indicate that there are no significant differences in disclosing management risks neither during 2012 nor 2018 between French and German firms and between French and Italian firms. These results suggest that both French and German firms disclosed similar levels of management risks; also, fluctuation risks between Italian and French firms and between Italian and German firms during 2012 are similar. The Bonferroni test, as shown in Panel B of Table 6.10, reports that there are significant differences in business and operational risks across these four countries; these differences particularly exist between the UK and German firms and between the UK and French firms.

The identical test indicates that there are no significant differences in business risks between UK and German, French and Italian firms in 2018. It can be concluded that firms across these four countries disclose similar levels of business risk, and there are no significant differences between the risk disclosure levels of UK, German, French and Italian firms.

Table 6.10. Results of differences in risk disclosure quantity during 2012-2018

Panel A. MANOVA- Tests of between-subject effects

Source		Sig.	
		2012	2018
Group	BR	.000***	.110
	OR	.001***	.000***
	MR	.011**	.013**
	FR	.001***	.000***

Panel B. Post Hoc Tests-Multiple comparisons

Dependent Variable	(I) Group	(J) Group	2012		2018	
			Difference (I-J)	Sig.	Difference (I-J)	Sig
BR – Bonferroni test	UK	France	-373.00***	.000		
		Germany	-365.20***	.000		
		Italy	-136.20	.486		
	Germany	France	-7.80	1.000		
		Italy	229.00**	.028		
		UK	365.20***	.000		
	France	Germany	7.80	1.000		
		Italy	236.80**	.021		
		UK	373.00***	.000		
	Italy	France	-236.80**	.021		
		Germany	-229.00**	.028		
		UK	136.20	.486		
OR – Bonferroni test	France	Germany	595.70	.113	68.40	1.000
		Italy	571.80	.142	-357.50***	.001
		UK	1101.50***	.000	21.00	1.000
	Germany	France	-595.70	.113	-68.40	1.000
		Italy	-23.90	1.000	-425.90***	.000
		UK	505.80	.263	-47.40	1.000
	Italy	France	-571.80	.142	357.50***	.001
		Germany	23.90	1.000	425.90***	.000
		UK	529.70*	.211	378.50***	.001
	UK	France	-1101.50***	.000	-21.00	1.000
		Germany	-505.80**	.263	47.40	1.000
		Italy	-529.70	.211	-378.50***	.001

MR–Tamhane test	France	Germany	255.30	.871	166.90	.796
		Italy	383.50	.724	-128.60	1.000
		UK	810.00***	.036	-181.50	.618
	Germany	France	-255.30	.871	-166.90	.796
		Italy	128.20	.991	-295.50	.059
		UK	554.70*	.025	-348.40***	.017
	Italy	France	-383.50	.724	128.60	1.000
		Germany	-128.20	.991	295.50	.059
		UK	426.50	.414	-52.90	1.000
	UK	France	-810.00**	.036	181.50	.618
		Germany	-554.70**	.025	348.40***	.017
		Italy	-426.50	.414	52.90	1.000
FR– Tamhane test	France	Germany	-38.50	1.000	4.10	.376
		Italy	200.60	.967	-454.90**	.033
		UK	779.80**	.011	-1.30	.996
	Germany	France	38.50	1.000	-4.10	.376
		Italy	239.10	.805	-459.00*	.031
		UK	818.30***	.000	-5.40**	.018
	Italy	France	-200.60	.967	454.90**	.033
		Germany	-239.10	.805	459.00**	.031
		UK	579.20**	.068	453.60**	.033
	UK	France	-779.80**	.011	1.30	.996
		Germany	-818.30***	.000	5.40**	.018
		Italy	-579.20**	.068	-453.60**	.033

This table explains the differences in companies' risk disclosure levels across the UK, Germany, France and Italy from 2012 to 2018. *, **, *** indicate significance at 0.1, 0.05 and 0.01, respectively.

6.3.3. Differences in risk disclosure quality across the research sample

Table 6.11 indicates that there are significant differences between a firm's risk disclosure quality across the UK, Germany, France and Italy in 2012 and 2018 for operational risk, at a p-value of 0.053 and 0.004, respectively. This variable across the UK, Germany, France and Italy confirms the assumption of homogeneity and encourages the use of the Bonferroni test to identify in which pair of countries these significant differences exist (e.g., the UK with Germany; UK with France and UK with Italy). Nevertheless, there are no significant differences between the other variables, particularly in firms' business, management and fluctuation risks across the UK, Germany, France and Italy.

Table 6.11. Results of differences in risk disclosure quality

Panel A: MANOVA- Tests of between-subject effects				
			Sig.	
Source			2012	2018
Group	BR		.179	.152
	OR		.053*	.004**
	MR		.649	.800
	FR		.150	.427
Panel B: Post Hoc Tests-Multiple comparisons				
			2018 Mean Difference (I-J)	
Dependent Variable	(I) Group	(J) Group	Bonferroni	Sig.
OR	France	Germany	1.40	.205
		Italy	-.80	1.000
		UK	1.20	.404
	Germany	France	-1.40	.205
		Italy	-2.20**	.008
		UK	-.20	1.000
	Italy	France	.80	1.000
		Germany	2.20**	.008
		UK	2.00**	.020
	UK	France	-1.20	.404
		Germany	.20	1.000
		Italy	-2.00**	.020

The question arises of whether the differences in firms' risk disclosure levels are associated with the differences across the UK, Germany, France and Italy regarding disclosure regulations, corporate governance and/or countries' governance mechanisms. It has been argued that the levels of risk disclosure should be interpreted in light of monitoring mechanisms at the firm and country levels. As a result, the following chapters investigate the role of the corporate governance mechanisms, national governance mechanisms and other firm and country-specific characteristics.

6.4. Concluding Remarks

The main conclusion of the pilot study is that there are significant differences between the UK, German, French and Italian firms' risk disclosure degrees. There has also been an argument that differences between European countries are due to differences in firms' risk disclosure components and motivations. GOV_Score is negatively related to operational and management risks in particular, but operational risks are likely to be correlated significantly and positively related to Beta. This result is consistent with the theoretical and empirical analysis of Abraham & Cox (2007), Elshandidy (2011), and Hassan (2008); Neifara & Jarboui (2018), Salem, Ayadi, and K. Hussainey (2019), Elamer, Ntim, and Abdou (2020), Mcchlery & Hussainey (2021), and Nahar & Jahan (2021). In this regard, high levels of risks motivate companies to disclose more/less about their risks and their strategy to manage risks. On the other hand, business and fluctuation risks are insignificant to motivate firms' managers to provide high levels of narrative risk disclosure items.

The findings of the pilot study contribute to the risk disclosure literature by providing clear empirical evidence that the quantity and quality of risk disclosure at the firm level are influenced by its components; however, it has been argued that the levels of risk disclosure should be interpreted in light of governance mechanisms, and national governance among

those countries. As a result, the following chapter examines the relationship between risk disclosure scores and firm and national governance mechanisms using a cross-country study. The longitudinal analysis is utilised to investigate the association between risk disclosure practices and multi-layer governance mechanisms across EU countries between 2012 and 2018.

Chapter Seven: A Descriptive Analysis of Quantity and Quality of Risk Disclosure

7.1. Overview

Based on the results of the pilot study discussed in the previous chapter, there are significant differences in the degree of risk disclosure among companies from the UK, Germany, France and Italy. However, it has been argued that differences between European countries could be attributed to the differences in firms' risk disclosure components and motivations related to risk disclosure. Therefore, the current chapter examines the degree of risk disclosure in terms of quantity and quality within European firms from 2012 to 2018. An automated content analysis of annual reports from 2012 to 2018 was used for the entire research sample. Based on observations of 4851 non-financial firms from the UK, France, Germany, and Italy between 2012 and 2018.

This chapter contributes to the existing literature in three distinct respects. Firstly, this chapter deploys a computer-based content analysis to examine the main attitude toward risk disclosure within and between four countries. Secondly, this chapter addresses the differences in risk disclosure within and across countries in view of the improving levels of risk disclosure by the reforms of government regulations across countries. Finally, this chapter concerns the extent of risk disclosure in the annual reports during years and across countries.

7.2. Descriptive Analysis of Risk Disclosure Quantity across the European Countries during 2012-2018

This section focuses on the main statistics of risk disclosure content by examining differences between four of the largest European countries. CRD index I indicates the trend in risk disclosure volume and quantity over time. Table 7.1 presents a summary of the

descriptive statistics for the risk disclosure quantity. The risk disclosure index I contains data for all tested firms as well as for each of the investigated tested years (2012-2018). The most important conclusions that emerge from the descriptive statistics in panel A of Table 7.1 are that risk disclosures and their quantity vary considerably across European countries over the past seven years. The volume of the overall risk information ranges from a minimum of 72.84 (3%) to a maximum of 860.95 (36%), with a median value of 727.55 (30%) text words. Moreover, the amount of risk disclosures has slightly increased over the seven years. At the same time, European companies have disclosed a mean value of 653.03, 551.56, 605.35, 601.07, 499.85, 597.14, and 530.88 risk words from 2012 to 2018, with a minimum level of 110.62, 98.19, 91.38, 89.53, 90.16, 82.23, and 72.84 risk words respectively over 2012-2018. The maximum volumes of risk words are 860.95, 794.47, 852.57, 859.66, 708.18, 829.12, 835.5 risk words, respectively. This appears to support that the results are consistent with the prior studies of risk disclosure quantity (e.g., Greco, 2012; Ntim et al., 2013; Raj & Handley-Schachler, 2009; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Mcchlery & Hussainey, 2021; Isiaka, 2021; Nahar & Jahan, 2021).

Panel B. of Table 7.1 summarises descriptive statistics of the risk disclosure quantity among firms within each country. The main findings suggested that the annual reports of the UK firms are likely to disclose more risk information, with an average of 841.32. This volume ranges from a minimum of 804.32 to a maximum of 880.89 text words. Although this change is only a small portion of the total quantity of risk disclosure over the seven years. The average volume of risk information disclosed during 2012, 2013, 2014, 2015, 2016, 2017, and 2018 is 860.95, 880,89, 852.57, 859.66, 831,49 829.12, 804.32 words, respectively.

With respect to the risk disclosure items, we reported that annual reports are more likely to focus on the management, fluctuation, and operation risk items, with an average value of 1059.12, 1019, and 942.82 words. These results range from a minimum quantity of 948.05, 967.46, and 921.41 words, respectively, to a maximum quantity of 1050.04, 1039.43, and 992.09 words, respectively. The average quantity of the business risks was the bottom interesting risk item in the UK annual reports, with an average value of 360.35 words, a minimum value of 355.36 and a maximum value of 374.

German firms, as well, disclose a high volume of risk information with an average value of 829.88 words. This volume ranges from a minimum of 378.48 to a maximum of 1052 text words. Above and beyond the steady increase in risk disclosure quantity over the seven years. The average volume of risk disclosure was 829.88, 794.47, 708.02, 726.17, 701.22, 653.46, and 410.84 risk words, respectively. Concisely, the annual reports of the German firms are more likely to emphasise the fluctuation, operational and management risk items with an average value of 1052.14, 993.49, and 973.83 text words, respectively. These results range from a minimum quantity of 936.4, 839.3, and 794.79 risk words, respectively, although the maximum quantities are 1052.14, 1017.97, and 973.83 risk words, respectively. Also, the average quantity of the business risks was less disclosed in the German annual reports, with an average value of 357.43 risk words.

Furthermore, the French firms disclosed risk information with an average of 836.64; this volume ranges from a minimum of 397.26 to a maximum of 1007.22 risk words. Yet the quantity of risk disclosure ravenously increased over time where the average values of the risk information disclosed from 2012 to 2018 are 926.89, 899.23, 855.14, 850.42, 798.96, 778.5, and 747.38 risk words, respectively. Within France, non-financial firms are motivated to disclose more information about operational risks. The average quantity was

1007.22; these results range from a minimum quantity of 849.61 and a maximum quantity of 1045.39 text words. In this interim, the average quantity of the management risks was 958.86, and the average quantity of fluctuation risks was 983.23. At the same time, the business risks were the lowest involved risk items in the French annual reports, with an average value of 397.26 text words.

Italian firms, finally, lightly emphasise risk information with an average value of 90.71; this volume ranges from a minimum of 35.07 to a maximum of 117.19 text words. However, the quantity of risk disclosure fluctuated over the years, where the average values of the risk information disclosed from 2012 to 2018 were 110.62, 98.19, 91.38, 89.53, 90.16, 82.23, and 72.84 words, respectively.

Management and fluctuation risks are the core items of the narrative risk disclosure sections for Italian firms, with an average value of 117.19 and 111.98 text words, respectively. These results range from a minimum quantity of 98.75 and 74.55, respectively, and a maximum quantity of 132.84 and 123.9, respectively. However, business and operational risks were less focused in the Italian annual reports, with an average value of 35.07 and 92.49 risk words, respectively.

All in all, the European annual reports have focused on different types of risk disclosure; particularly, the UK and German firms are likely to disclose more risk information. However, the percentage of French and Italian firms is the lowest in incorporating the risk information in their annual reports. Also, the extent of risk disclosure is likely to improve gradually over time. In line with the risk components, management, operational, and fluctuation risks are the most serious concern among the European firms, whilst business risk items constitute the smallest percentage of risk disclosure.

Table 7.1. Summary of overall risk disclosure quantity

Panel A. The overall risk disclosure quantity is based on word count distributed by country over seven years

	Overall-mean								
Country	CRD volume	CRDI %	2012	2013	2014	2015	2016	2017	2018
UK	841.32	35%	860.95	880,89	852.57	859.66	831,49	829.12	804.32
Germany	689.15	29%	829.88	794.47	708.02	726.17	701.22	653.46	410.84
France	776.92	32%	926.885	899.2275	855.14	850.4175	798.96	778.5	747.375
Italy	90.71	3.8%	110.62	98.19	91.38	89.53	90.16	82.23	72.84
Total CRD quantity	2398	100%	653.025	551.56	605.3525	601.0725	499.8533	597.1375	530.875
Mean	580.93	25	653.03	551.56	605.35	601.07	499.85	597.14	530.88
Median	727.55	30	820.265	762.02	738.73	727.55	701.22	738.6	607.58
Min	72.84	3	110.62	98.19	91.38	89.53	90.16	82.23	72.84
Max	860.95	36	860.95	794.47	852.57	859.66	708.18	829.12	835.5
STD	316.29	13.18	362.2	392.97	347.73	346.67	354.82	352.83	361.37

Panel B. The risk disclosure quantity distributed by main risk categories

		Overall							
Country	Risk Reporting Item	CRD volume	2012	2013	2014	2015	2016	2017	2018
UK	Business risks	360.35	374.09	371.87	356.75	360.97	347.31	355.36	356.12
	Operational risks	942.82	980.25	992.09	936.87	946.70	921.411	921.74	900.64
	Management risks	1059.12	1050.04	1106.29	1083.82	1094.72	1055.51	1039.38	984.05
	Fluctuations risks	1019.21	1039.43	1050.08	1032.82	1033.93	1001.75	999.99	976.46
	Total CRD quantity	841.32	860.95	880,89	852.57	859.66	831,49	829.12	804.32
Country	Risk Reporting Item	Overall	2012	2013	2014	2015	2016	2017	2018
		CRD volume							
	Business risk index	357.43	378.48	369.53	358.87	362.99	350.41	351.23	330.53
	Operational risks	888.30	973.83	965.44	876.82	894.49	862.27	850.48	794.79
	Management risks	950.53	993.49	1017.97	965.36	979.23	944.79	913.54	839.3

Germany	Fluctuations risks	980.31	1052.14	1039.27	992.21	1002.24	972.1	936.4	867.81
	Total CRD index I	689.15	829.88	794.47	708.02	726.17	701.22	653.46	410.84

	Risk Reporting Item	Overall	2012	2013	2014	2015	2016	2017	2018
		CRD volume	430.07	413.98	406.48	407.93	383.12	371.78	367.46
	Business risk index	397.26	1138.96	1101.57	1023.91	1007.63	945.01	930.75	902.75
France	Operational risks	1007.226	1045.39	1031.76	983.67	982.37	921.29	897.92	849.61
	Management risks	958.8586	1093.12	1049.6	1006.5	1003.74	946.42	913.55	869.68
	Fluctuations risks	983.23	430.07	413.98	406.48	407.93	383.12	371.78	367.46
	Total CRD index I	836.64	926.89	899.23	855.14	850.42	798.96	778.5	747.38

	Risk Reporting Item	Overall	2012	2013	2014	2015	2016	2017	2018
		CRD volume							
	Business risk index	35.07	38.93	36.02	35.02	36.89	33.32	32.36	32.97
	Operational risks	92.49	112.21	105.65	98.02	87.16	85.89	80.33	78.19
Italy	Management risks	117.19	131.57	132.84	120.94	109.05	122.01	98.75	105.18
	Fluctuations risks	111.98	123.9	109.64	112.96	125.72	119.7	117.42	74.55
	Total CRD index I	90.71	110.62	98.19	91.38	89.53	90.16	82.23	72.84

7.3. Descriptive Analysis of Risk Disclosure Quality (CRD Quality index-scale from 0 to 6)

Since the results of the CRD index I, discussed in Table 8.1, only indicate the quantity of risk disclosure rather than the quality of disclosure through a focus on the tone/behaviour of risk disclosure, this section covers the tone of risk disclosure among the UK, German, French and Italian firms from 2012-2018 using the CFIE software. As previously mentioned in Chapter Six, the CFIE software was primarily developed for the UK companies to measure the negative, positive and forward-looking tone in the risk information as a whole. Also, this software can measure the quantity of uncertainty in the annual reports. For the purpose of measuring risk quality, the risk words were coded on a scale from 0 to 6. A score of 0 indicates that no risk information is disclosed in the annual reports, while a score of 6 indicates the entire disclosure of all risks.

Table 7.2 provides the descriptive statistics of risk disclosure quality with respect to behaviour/tone. Risk words have been categorised into historical versus forward-looking, negative versus positive, and qualitative versus quantitative categories, and expressing all categories as a proportion of all CRD words. As obviously mentioned in Table 7.2, it can be concluded that EU firms largely disclosed qualitative, positive, and historical risk information. Generally, about 36.31%, 27.58%, and 25.25% of risk information are disclosed on qualitative, positive, and historical themes, respectively, compared with 14.54%, 13.73%, and 7.84% for negative forward-looking and quantitative themes. These findings are in line with the prior risk disclosure studies (Lajili & Zeghal, 2009; Linsley & Shrives, 2006; Oliveira et al., 2011; Ntim et al., 2013; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mcchlery & Hussainey, 2021; Nahar & Jahan, 2021).

On the other hand, the changes in the risk disclosure tone over the years (2012-2018) are mixed, and there is no clear change trend in terms of the UK Brexit. As indicated in Panel A. of Table 7.2, we suggest that the looking forward disclosure initiated 12.8%, 13.71%, 10.97%, 11.25%, 15.01%, 10.73%, and 11.31%. The historical risk information, however, constitutes 17.08%, 15.39%, 15.68%, 16.87%, 19.13%, 29.91%, and 25% in 2012, 2013, 2014, 2015, 2016, 2017, and 2018, respectively. These results suggest predictable inconsistent changes in disclosure tone, which indicates that the risk tone has not necessarily changed because of the UK's Brexit.

Furthermore, the results of Panel B. show the differences in disclosure behaviour toward risk information within the UK, Germany, France and Italy. These results indicate that managers tend to disclose qualitative oriented risk information with an average of 32.78%, 32.39%, 32.64% and 20.75%, respectively. Although positive oriented risk information with an average value of 25.12%, 21.93%, 24.55%, and 18. 57%, respectively. Also, the UK, German, French, and Italian firms are motivated to disclose historical oriented risk information with an average value of 15.49%, 14.15%, 13.81%, and 16.06%, respectively. These findings are consistent with the legitimacy theory perspective, which suggests that the European firms adapted the historical, positive and qualitative oriented risk information aiming to endorse corporate legitimacy and reputation. However, quantitative, forward-looking and negative-oriented risk information is important for stakeholders' investing and finance decisions (Abraham & Cox, 2007; Amran et al., 2009; Oliveira et al., 2011; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Mcchlery & Hussainey, 2021; Isiaka, 2021; Nahar & Jahan, 2021)

Table 7.2. Summary of descriptive statistics of the disclosure tone of all Risk disclosure

Panel A. Summary descriptive statistics of all risk disclosures quality as a percentage

Risk types and themes	Overall	2012	2013	2014	2015	2016	2017	2018
Historical	25.25	17.08	15.39	15.68	16.87	19.13	29.91	25
Forward	13.73	12.8	13.71	10.97	11.25	15.01	10.73	11.31
Positive	27.58	24.85	28.62	29.52	30.47	27.52	18.52	19.51
Negative	14.54	13.58	12.97	14.1	13.48	14.88	10.68	11.8
Qualitative	36.31	40.84	37.58	38.53	38.42	35.03	24.15	25.42
Quantitative	7.84	7.93	7.12	6.89	6.38	7.56	6.01	6.96
Total	100	100	100	100	100	100	100	100

Panel B. Summary descriptive statistics of risk disclosures quality counts by country

Risk types and themes	Overall	2012	2013	2014	2015	2016	2017	2018
Total corporate risk disclosures for the UK firms								
Quantitative	5.26	6.12	5.92	6.39	5.12	5.03	4.76	4.82
Qualitative	32.78	32.15	32.79	32.88	32.69	32.9	32.84	32.87
Negative	12.31	11.4	12.28	12.88	12.05	12.44	12.26	12.46
Positive	25.12	26.35	24.74	24.28	25.73	24.9	25.22	24.99
Forward	9.04	9.61	9.78	9.22	8.69	9	8.88	8.84
Historical	15.49	14.37	14.49	14.34	15.73	15.72	16.06	16.04
Total	100	100	100	100	100	100	100	100

Total corporate risk disclosures for the German firms								
Quantitative	10.4	5.45	5.725	5.673	5.824	7.21	6.723	27.407
Qualitative	32.39	33.93	34.8	34.902	37.891	33.64	32.479	23.589
Negative	12.98	13.74	13.524	14.059	13.007	13.69	13.587	10.525
Positive	21.93	23.34	22.595	22.418	21.394	22.33	23.121	19.585
Forward	8.15	8.65	8.243	8.333	7.74	8.1	9.364	7.094
Historical	14.15	14.9	15.114	14.614	14.145	15.03	14.725	11.801
Total	100	100	100	100	100	100	100	100
Total corporate risk disclosures for the French firms								
Quantitative	6.49	7.38	6.319	5.483	5.288	7.01	7.464	6.619
Qualitative	32.64	38.37	31.884	33.65	32.45	31.06	31.769	32.372
Negative	11.32	11.64	10.176	11.8	11.38	11.56	10.725	11.682
Positive	24.55	14.53	24.316	26.376	26.367	25.01	25.075	24.741
Forward	11.18	11.23	13.874	8.797	9.642	11.24	12.015	12.065
Historical	13.81	16.85	13.431	13.894	14.874	14.11	12.952	12.522
Total	100	100	100	100	100	100	100	100
Total corporate risk disclosures for the Italian firms								
Quantitative	10.51	8.96	6.86	7.5	6.99	7.8	2.48	11.39
Qualitative	20.75	30.95	32.03	31	31.02	6.08	1.77	16.33
Negative	19.14	8.59	9.63	9.74	9.29	15.64	3.73	34.79
Positive	18.57	28.66	28.97	28.52	29.91	8.83	1.13	12.53
Forward	14.98	8.45	7.61	8.76	8.7	29.99	2.62	11.71
Historical	16.06	14.38	14.9	14.47	14.08	31.65	1.16	13.25
Total	100	100	100	100	100	100	100	100

7.4. Descriptive Analysis of Weighted Risk Disclosure Quality Based on CRD III_AHP Index

Table 7.3 presents summary descriptive statistics of the quality of the risk disclosure based on the weighted risk disclosure index-AHP. Based on the CRD III, the risk disclosure can be observed with respect to four thematic risk disclosure categories (e.g., business risks (BR), operational risks (OR), management risks (MR), and fluctuation risks (FR)). A number of interesting findings emerge from the descriptive statistics. First, they suggest that there is a considerable degree of variation in the disclosures. For instance, (BR) ranges from 6.76% to 27.44%, with an average value of 16.66% risk disclosure index score. Second, and consistent with previous CRD studies (Greco, 2012; Ntim et al., 2011), there has been a steady increase in corporate risk disclosures over time, where the average value of the risk disclosure index score is the same for the OR, MR, and FR by 16.67%. Whilst the OR disclosure scores range from 12.66% to 22.74%. Also, MR disclosure scores range from 5.16% to 25.40%, and FR disclosure scores range from 4.63% to 25.64%.

These findings provide practical evidence supporting previous studies (e.g., Abraham and Cox, 2007; Beretta & Bozzolan, 2004; Ntim et al., 2013; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Mcchlery & Hussainey, 2021; Isiaka, 2021; Nahar & Jahan, 2021) that managers will disclose more information about their operational and management risks than business and fluctuation risks based on historical, forward-looking, negative, positive, and qualitative oriented risk information.

On a comparative basis, risk disclosure levels across the UK, German, French, and Italian firms are highest in the case of MR and FR and least with respect to BR and OR. This is not surprising since, unlike the BR, MR, and FR, which contain 6, 7, and 4 disclosure items, respectively, the OR scope is broader, covering 13 disclosure items related to firms' operations, performance and business ethics. Finally, Panel C. of Table 7.3 suggests a generally steady increase in the

risk disclosure over time. This indicates that risk disclosure behaviour during 2012-2018 was not uniquely different.

The four risk information categories vary across the UK, Germany, France, and Italy. Meanwhile, business risks scored an average 23.47% (1323 words), 24.71% (1393 words), 23.15% (1305 words), and 30.33% (1616 words). Also, the average score of operational risk varied in limit ranges; it scored 20.4%, 33.46%, 22.83%, and 23.31, respectively. Third, the management risk category across the four countries scored 19.11%, 31.25%, 21.88%, and 27.76%. Finally, fluctuation risk scored 18.68%, 32.36%, 23.78%, and 25.19% respectively.

Table 7.3. Summary of the descriptive of the risk disclosure quality based on index III during 2012-2018

Panel A. Statistics for overall risk disclosure quality index—%

	Risk disclosure behaviour/tone	BR	OR	MR	FR
1	Risk disclosure focusing on Historical, Neutral and not time-oriented	25.056	20.099	23.166	26.643
2	Risk disclosure focusing on Historical and forward-looking	21.128	13.646	21.484	20.928
3	Risk disclosure focusing on Historical, forward-looking and negative	10.495	15.104	14.71	13.399
4	Risk disclosure focusing on Historical, forward-looking, negative and Positive	6.757	12.664	10.079	7.8
5	Risk disclosure focusing on Historical, forward-looking, negative, Positive and qualitative	27.444	22.74	25.404	26.597
6	Risk disclosure focusing on Historical, forward-looking, negative, Positive, qualitative and quantitative	9.119	15.748	5.158	4.634

Panel B. Statistics for risk disclosure quality —% distributed by country

Risk disclosure items	Overall CRD III							
	BR	%	OR	%	MR	%	FR	%
The UK number of firms/risk disclosure								
1 Historical, Neutral and no time oriented	214	14.27	538	19.35	780	22.53	1014	26.38
2 Historical and forward-looking	58	3.87	354	12.73	586	16.93	680	17.69
3 Historical, forward-looking and negative	210	14	536	19.28	718	20.74	694	18.05
4 Historical, forward-looking, negative and positive	202	13.47	446	16.04	468	13.52	180	4.68
5 Historical, forward-looking, negative, positive and qualitative	462	30.8	746	26.83	896	25.88	1182	30.75
6 Historical, forward-looking, negative, Positive, Qualitative and quantitative	354	23.6	160	5.76	14	0.4	94	2.45
Total	**1500**	**100%**	**2780**	**100%**	**3462**	**100%**	**3844**	**100%**
Germany-number of firms/risk disclosure								
1 Historical, Neutral and no time oriented	564	15.44	296	15.32	434	11.57	418	12.24
2 Historical and forward-looking	914	25.03	223	11.54	737	19.64	701	20.52

3	Historical, forward-looking, and negative	637	17.44	229	11.85	693	18.47	607	17.77
4	Historical, forward-looking, negative and positive	345	9.45	334	17.29	642	17.11	529	15.49
5	Historical, forward-looking, negative, positive, and qualitative	625	17.11	441	22.83	749	19.96	683	19.99
6	Historical, forward-looking, negative, positive, Qualitative and quantitative	567	15.53	409	21.17	497	13.25	478	13.99
	Total	**3652**	**100%**	**1932**	**100%**	**3752**	**100%**	**3416**	**100%**
France-number of firms/risk disclosure									
1	Historical, Neutral and no time oriented	936	31.01	447	22.35	726	26.59	832	28.62
2	Historical and forward-looking	426	14.12	211	10.55	464	17	531	18.27
3	Historical, forward-looking and negative	318	10.54	255	12.75	434	15.9	434	14.93
4	Historical, forward-looking, negative and positive	230	7.62	205	10.25	250	9.16	301	10.35
5	Historical, forward-looking, negative, positive, and qualitative	977	32.37	318	15.9	671	24.58	781	26.87
6	Historical, forward-looking, negative, Positive, Qualitative and quantitative	131	4.34	564	28.2	185	6.78	28	0.96
	Total	**3018**	**100%**	**2000**	**100%**	**2730**	**100%**	**2907**	**100%**
Italy-number of firms/risk disclosure									
1	Historical, Neutral and no time oriented	1182	34.89	622	22.57	1186	33.41	1186	42.63
2	Historical and forward-looking	1044	30.81	504	18.29	1112	31.32	798	28.68
3	Historical, forward-looking and negative	48	1.42	410	14.88	140	3.94	0	0
4	Historical, forward-looking, negative and positive	4	0.12	214	7.765	0	0	0	0
5	Historical, forward-looking, negative, positive, and qualitative	1108	32.7	648	23.51	1112	31.32	798	28.68
6	Historical, forward-looking, negative, positive, Qualitative and quantitative	2	0.059	358	12.99	0	0	0	0
	Total	**3388**	**100%**	**2756**	**100%**	**3550**	**100%**	**2782**	**100%**

Panel C. Statistics for risk disclosure quality —% distributed by year

Country	**2012-2018**							
	BR	**%**	**OR**	**%**	**MR**	**%**	**FR**	**%**
UK	1323	23.47	1323	20.4	1512	19.1	1512	18.68
Germany	1393	24.71	2170	33.46	2472	31.3	2620	32.36
France	1305	23.15	1481	22.83	1731	21.9	1925	23.78
Italy	1616	28.67	1512	23.31	2196	27.8	2039	25.19
Total	5637	100%	6486	100%	7911	100%	8096	100%

7.6. Discussion and Summary

This section provides a summary of the descriptive analysis of the risk disclosure quantity and quality from different angles: First, the UK and German annual reports are more likely to disclose more risk information. However, the percentage of French and Italian firms is the lowest in incorporating the risk information in their annual reports. Also, the extent of risk disclosure is likely to improve gradually over time. In line with the risk components, management, operational, and fluctuation risks are the most serious risk categories have been, whilst business risk items constitute the smallest percentage of risk disclosure.

Second, risk disclosure in the EU annual reports is largely qualitative, positive, and historical information rather than negative, forward-looking and quantitative themes. Within and across the EU countries, the results reveal that Italian firms largely disclose historical-oriented risk information more than other EU countries. However, looking forward, risk disclosure is relatively low across countries. Also, the results of CRD III-AHP are consistent with the results of the CRD II-Scale, which indicates that EU annual reports are largely focused on qualitative, positive, and historical risk behaviour. However, 28% 0f UK firms are focused on historical/forward-looking, negative/positive, and qualitative tones. However, 26% and 20% of French and German firms are focused on historical/forward-looking, negative/positive, and qualitative risk information behaviour.

These results confirm the previous evidence, which suggests that managers tend to disclose historical, positive, and qualitative-based risk information due to promote firm legitimacy and reputation (Abraham & Cox, 2007; Amran et al., 2009; Oliveira et al.,2011; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Mcchlery & Hussainey, 2021; Isiaka, 2021; Nahar & Jahan, 2021). These findings are consistent with the legitimacy theory perspective, which suggests that historical, positive and qualitative oriented risk disclosure endorses legitimacy and reputation. However, quantitative, forward-looking and negative-oriented risk information is essential for stakeholders' investing and finance decisions (Abraham & Cox, 2007; Amran et al., 2009; Isiaka, 2021; Mcchlery & Hussainey, 2021; Nahar & Jahan, 2021; Oliveira et al., 2011).

Finally, a major policy implication that can be drawn from the analysis of the descriptive statistics is that regulatory authorities and policymakers need to pay greater attention to both the nature and format of risk disclosure. Specifically, regulatory authorities can improve risk reporting by encouraging managers to disclose more forward-looking, quantitative and monetary-oriented risk information that is likely to be more accurate, reliable, and relevant to stakeholders in their decision-making.

Consequently, regulators and policymakers should pay more attention to both the nature and disclosure behaviour of risk information to support stakeholders' confidence and make better decisions. So motivating managers to disclose more forward-looking and quantitative risk information that is likely to be more relevant to stakeholders is the appropriate way to improve the risk disclosure extent and behaviour.

7.6. Concluding Remarks

This chapter reviewed the descriptive analysis of the risk disclosure scores measured by three main indices (e.g., CRD quantity index, CRD quality index-scale 0-6, and CRD weighted quality index). The main findings emerging from the descriptive statistics show that there is a considerable variation in the content of the risk disclosures and the quantity across European countries over the period 2012-2018. With respect to the risk disclosure items, the researcher reported that annual reports are more likely to focus on the management and fluctuation of risk /items. European firms are more interested in risk disclosure; particularly, the UK and Germany are likely to disclose more risk information. However, the percentage of French and Italian firms is the lowest in incorporating the risk information in their annual reports. Also, the extent of risk disclosure will likely improve gradually over time.

Also, management, operational, and fluctuation risks constitute the deepest concern among the European firms, whilst business risk items constitute the lowest percentage of risk disclosure. Also, in terms of risk disclosure quality, the researcher recommends that risk disclosure primarily concentrates on qualitative, positive, and historical information. In contrast, changes in risk disclosure quality over time (2012-2018) are mixed, and no clear trend of change can be attributed to Brexit in the UK. The next chapter focuses on determining and analysing the impact of firm-specific characteristics and country-level factors that may influence risk disclosure volume, behaviour, and quality.

Chapter Eight: Empirical Results on The Determinants of Risk Disclosure Quantity and Quality Within EU countries

8.1. Overview

The previous chapter addressed the descriptive analysis of the quantity and quality of risk disclosure under different schemes (such as the CRD quantity index, CRD quality index 0-6, and the CRD weighted quality index). As described in the previous chapter, there is a significant variation in the content and quality of risk disclosures across European countries over the period 2012-2018. Therefore, the current chapter aims to identify the main determinants that contribute to the differences in risk disclosure quantity and quality within and between firms in four countries. In this chapter, we address two major questions. The first pertains to how firm governance explains the quality and quantity of risk disclosures between firms across the four countries. The second deals with how specific mechanisms of governance influence the quality and quantity of risk disclosures in each country. This chapter is structured as follows. Section 8.2 discusses the descriptive statistics and multicollinearity test, Section 8.3 reveals the results of the multivariate regression analysis for risk disclosure quantity, Section 8.4 discusses the results of the multivariate analysis of the moderation effect of country-level governance, and, finally, Section 8.5 makes concluding remarks.

8.2. Descriptive Statistics, Correlation Matrix and Multicollinearity Test

8.2.1. Descriptive Statistics for UK, Germany, France, And Italy

This section explores the descriptive statistics for all variables included in the multivariate analysis. Table 8.1 reports that there are considerable differences in risk disclosure quantity among EU countries, with mean values of 360.36, 352.57, 498.13, and 87.97, respectively (risk disclosure quantity). Also, the degrees of risk disclosure quality are different among EU countries, with mean values of 0.309, 0.267, 0.305, and 0.081, respectively (risk disclosure quality II) and 24.52, 21.70, 25.14, and 9.19, respectively (risk disclosure quality III).

Panel A. presents the statistics of the independent variables of the UK firms, and It can be seen that the average percentage of independent directors (*Brd_Indep)* is almost 52% for UK firms, ranging from a minimum of 0 to a maximum of 100%. This coincides with the recommendations of the European corporate governance codes regarding the need for greater diversity in the board of directors' composition. However, the percentage of female directors *(Brd_Gend)* is relatively small, almost 21.28%. Additionally, there are almost 3.8% of female leadership in top management (F-Lead). This result does not support the corporate governance recommendations of gender diversity and women empowerment in top management. Risk committee *(Risk_COM)* existence within the UK firms is relatively small, where almost 0.9% of UK firms have a risk committee, whereas the percentage of independent and non-executive audit committee (AC) members for UK firms are 97.68% and 89.77% of AC members.

Audit_Q suggests that over *97.58%* of firms are audited by the big 4 audit firms with a standard deviation of 2.4. Also, the average percentage of *GOV_Score* is 52.6%, which ranges from 1.08 to 96.05. Furthermore, the mean values of ownership structure are likely to be different among the European countries, which may decrease any potential bias in the sample selection. In specific, the mean values of the CON_OWM, MAN_OWN, FOR_OWN, GOV_OWN and INS_OWN for the UK firms are 78.69%, 5.6%, 9.68%, .4% and 10.12%, respectively. The maximum values are 100%, 81%, 77%, 26%, and 56%.

Furthermore, BSIZE is between 3 and 22 with an average of 9 board members, whereas the mean value of DUAL suggests that 11% of the UK firms have duality in CEO and chairman positions. Also, the mean values for the other firm-specific characteristics, such as SIZE, LIQ, Beta, Sal_Growth, ROA, and LEV, are 6.1, 1.6, 1.3, 2.7, 8.6, and 0.21, respectively.

Panel B. of the same table presents the statistics of the independent variables of the German firms; we can conclude that the average percentage of independent directors (*Brd_Indep)* is

almost 53.4% for UK firms, ranging from a minimum of 0 to a maximum of 100%. However, the percentage of female directors *(Brd_Gend)* is relatively small, almost 17% and almost 0.006% of females are in leadership positions. The mean value of the Risk committee *(Risk_COM)* existence within the German firms is relatively less than the UK firms, where almost 0.5%, whereas the percentage of independent and non-executive audit committee (AC) members for German firms are 94% and 51% of AC members respectively.

Audit_Q suggests that over *68%* of firms are audited by the big 4 audit firms, and the average of the *GOV_Score* is 48.8%, ranging from 2.03 to 95.48. Furthermore, the mean values of ownership structure (CON_OWM, MAN_OWN, FOR_OWN, GOV_OWN and INS_OWN) for the German firms are 59.57%, 20.13%, 9.52%, 0.35%, and 3.5% respectively. Furthermore, BSIZE within the German firms ranges from 2 and 26 with an average of 8 board members, whereas the mean value of DUAL suggests that 13.6% of the German firms have duality in the CEO/chairman positions. Also, the mean values for the other firm-specific characteristics, such as SIZE, LIQ, Beta, Sal_Growth, ROA, and LEV, are 5.8, 1.95, 1.05, 9.3, 5.3, and 0.14, respectively.

Panel C. and Panel D of Table 8.1 summarise the descriptive of the form governance mechanisms for French and Italian firms. As indicated, the independent directors (Brd_Indep) is almost 49.75% for French and 44.97% for Italian firms; however, the percentage of female directors (Brd_Gend) for both countries is almost 33.28% and 24.32%, respectively, and almost 14.56% and 14.88% of females are a CEO or/and chairperson (F-Lead). The mean value of the Risk committee (Risk_COM) existence within the French and Italian firms is relatively less than the UK firms, where almost 0,8% and 0.5%. In contrast, the percentage of independent and non-executive audit committee (AC) members is 95% and 97%, respectively, 69% and 78% of AC members, respectively .

Audit_Q suggests that over 75.5% of French firms and 89.4% of Italian firms are audited by the big 4 audit firms and the average of the GOV_Score is 48. % and 53.7%,. Furthermore, the mean values of ownership structure (CON_OWM, MAN_OWN, FOR_OWN, GOV_OWN and INS_OWN) for the French firms are 53.5%, 26%, 9%, 2.9%, and 3% respectively, and 47%, 21%, 7.6%, 5%, and 1.3% for Italian firms. Furthermore, BSIZE within the French and Italian firms ranges from 3 and 24/26, with an average of 11 board members for French and 10 members for Italian firms board members. In contrast, the mean value of DUAL suggests that 52.5% and 42% of the French and Italian firms, respectively, have duality in the CEO/chairman positions.

Table 8.1. Summary of Descriptive statistics for tested variables

Panel A. Descriptive statistics for the UK firms

Variable	Obs.	Mean	SD	Min	Max
CRDI_Quantity	1,701	360.36	180.223	0	1186
CRD II_Scale	1,701	0.3085	0.1029601	0	0.6527778
CRD III_AHP	1,701	24.52	6.62849	0	46.36386
Firm-level Governance					
Brd_Indep	1,676	54.41	19.90213	0	100
Brd_Gend	1,693	21.28	15.2417	0	100
F-Lead	1,701	0.0382	0.191766	0	1
Risk _COM	1,683	0.8912	0.530352	0	11
AC-INDP	1,696	97.68	9.358563	16.6	100
AC_NonEX.	1,696	89.77	24.33617	0	100
Audit_Q	1,701	0.9758	2.418071	0	1
GOV_Score	1,228	54.97	21.2614	1.08	96.05
Ownership					
CON_OWM	1,629	78.69	18.14772	16	100
MAN_OWN	1,629	5.61	13.07488	0	81
FOR_OWN	1,629	9.97	14.39452	0	77
GOV_OWN	1,629	0.466	2.310291	0	26
INS_OWN	1,629	10.12	8.971747	0	56
Control Variables					
Brd_Size	1,695	8.51	2.30875	3	22
DUAL	1,688	0.1113	0.4167944	0	9
SIZE	1,701	6.12	0.757541	1.69897	8.575435
LIQ	1,691	1.164	30.90482	-1220.64	338.98
Beta	1,700	2.780	18.50955	0.00147	491.5816
Sal_Growth	1,691	8.619	18.35625	-85.15	269.11
ROA	1,698	0.2129	0.2195554	0	2.697856

LEV	1,652	1.329	0.824816	-0.69	4.97
AR_Length	1,701	143.199	76.55	20	218

Panel B. Descriptive statistics for Germany

Variable	Obs.	Mean	SD	Min	Max
CRDI_Quantity	1,025	352.5737	239.9275	0	3168
CRD II_Scale	1,029	0.2672343	0.1105464	0	0.5680708
CRD III_AHP	1,029	21.70304	8.574939	0	48.22039
Firm-level Governance					
Brd_Indep	1,018	53.40145	33.45304	0	100
Brd_Gend	1,028	17.03026	16.11209	0	100
F-Lead	1,029	0.0068027	0.0822376	0	1
Risk _COM	1,029	0.516035	0.4999858	0	1
AC-INDP	1,028	94.10348	13.24196	33	100
AC_NonEX.	1,024	51.90345	239.0865	0	7575
Audit_Q	1,029	0.6870748	0.4639096	0	1
GOV_Score	319	48.84197	23.934	2.03	95.48
Ownership					
CON_OWM	989	59.5723	26.17587	0	100
MAN_OWN	988	20.12551	24.41557	0	98
FOR_OWN	988	9.519231	18.42564	0	90
GOV_OWN	988	0.3552632	2.477518	0	27
INS_OWN	989	3.503539	6.726378	0	76
Control Variables					
Brd_Size	1,029	8.482993	5.503885	2	26
DUAL	1,029	0.1360544	0.3430131	0	1
SIZE	1,027	5.827935	0.9469064	3.824646	8.773777
LIQ	1,028	1.959587	1.329612	0	17.72
Beta	1,001	9.375257	145.9086	0.0004992	4303.256
Sal_Growth	983	5.306439	65.27252	-1216.16	265.92
ROA	1,024	0.1477947	0.1515997	0	1.248418
LEV	1,015	1.052483	0.904586	-1.33	7.46
AR_Length	1029	165.91	78.69	14	177

Panel C. Descriptive statistics for France

Variable	Obs.	Mean	SD	Min	Max
CRDI_Quantity	1,076	498.132	526.1892	0	4006
CRD II_Scale	1,085	0.305246	0.1748035	0	0.4773352
CRD III_AHP	1,085	25.14203	15.61045	0	44.96978
Firm-level Governance					
Brd_Indep	1,066	49.75635	20.84799	0	100
Brd_Gend	1,067	33.27838	13.19855	0	80
F-Lead	1,085	0.1456221	0.3528896	0	1
Risk _COM	1,080	0.8287037	0.7415325	0	11
AC-INDP	1,073	95.47156	10.87101	50	100
AC_NonEX.	1,068	69.53277	27.44642	0	100
Audit_Q	1,078	0.755102	0.4302263	0	1
GOV_Score	445	48.4278	22.59843	4.5	92.8
Ownership					

CON_OWM	1,046	53.50669	24.78237	3	100
MAN_OWN	1,046	26.08413	27.3788	0	97
FOR_OWN	1,046	9.493308	18.40552	0	90
GOV_OWN	1,046	2.93021	9.609102	0	84
INS_OWN	1,046	3.288719	7.090313	0	64
Control Variables					
Brd_Size	1,073	10.88816	3.966344	3	24
DUAL	1,073	0.5256291	0.5014393	-1	1
SIZE	1,080	6.324643	0.929283	4.020651	8.450543
LIQ	1,058	2.000783	8.604384	0.26	254.45
Beta	1,079	8.482969	95.84325	0.0001366	2157.16
Sal_Growth	1,004	7.981015	27.6676	-377.39	265.92
ROA	1,080	0.185109	0.1673244	0	2.007478
LEV	1,050	1.027333	0.5891164	-0.33	3.98
AR_Length	1,001	218.58	108.59	10	568

Panel D. Descriptive statistics for the Italy

Variable	Obs.	Mean	SD	Min	Max
CRDI_Quantity	665	87.96992	67.43698	0	437
CRD II_Scale	665	0.080602	0.0456092	0	0.3052885
CRD III_AHP	665	9.197667	4.749673	0	39.27793
Firm-level Governance					
Brd_Indep	665	44.97227	19.21825	0	95
Brd_Gend	665	24.32534	12.75007	0	55.56
F-Lead	665	0.1488722	0.3562304	0	1
Risk _COM	664	0.5075301	0.5003202	0	1
AC-INDP	665	97.44714	8.946089	40	100
AC_NonEX.	665	78.64821	23.92736	0	100
Audit_Q	665	0.8947368	0.3071232	0	1
GOV_Score	183	53.77328	20.80592	0	98.43
Ownership					
CON_OWM	622	47.00643	19.93508	1	100
MAN_OWN	618	21.34304	26.00901	0	90
FOR_OWN	614	7.631922	17.44845	0	99
GOV_OWN	613	5.083197	13.90906	0	73
INS_OWN	630	1.533333	6.026017	0	69
Control Variables					
Brd_Size	665	10.45714	3.043121	3	26
DUAL	665	0.4210526	0.4940996	0	1
SIZE	665	5.929286	0.8952247	1.583561	8.835898
LIQ	665	1.433376	0.7242446	0.0332683	6
Beta	659	3010.228	36464.28	0.00460	812928.6
Sal_Growth	665	3.35089	8.137677	-45.98	77.13
ROA	665	0.1860686	0.1489981	0	0.743008
LEV	665	0.917203	0.4052089	-0.16	1.86
AR_Length	665	212.64	97.59	14	646

Notes: All variable definitions are presented in Table 4.4.

8.2.2. Correlation Matrix and Multicollinearity Test for UK, Germany, France, and Italy

Table 8.2 presents the correlation matrix, which indicates the initial correlation among the tested variables and provides testing for multicollinearity problems among them. It can be indicated that the quantity of risk disclosure is derived from some firms and countries' specific characteristics.

Panel A of Table 8.2 reports the correlation coefficient for firm-level governance, ownership structure, and risk disclosure quantity and quality for the UK annual reports. Statistically, we can conclude that there are significant associations between CRDI_Quantity and CG attributes, such as *Brd_Indep, AC_NonEX EX, Brd_Gend and AC_INDP* at a p-value < 0.05. However, Female leadership significantly and negatively correlated with risk disclosure quantity at a p-value <0.05. Moreover, *CON_OWM and MAN_OWN* are significantly and positively associated with risk disclosure quantity. However, *FOR_OWN and GOV_OWN* are negatively correlated with risk disclosure quantity. Whilst, *Risk_COM and Audit_Q* associate negatively with the volume of risk disclosure, these relationships are not significant. Nevertheless, overall firms' governance scores (e.g., *GOV_Score*) and *INS_OWN* are positively correlated with risk disclosure quantity, but this correlation is not significant.

These findings approve the pieces of evidence provided by Ntim et al. (2013), Mokhtar, and Mellett (2013), al-Shammari (2014), Aguilera et al. (2008), Barakat & Hussainey (2013), Ntim et al. (2013), and Neri & Elshandidy (2015), that ownership and corporate governance drive managements' attitude toward risk disclosure volume. Moreover, firm-level control variables, such as Brd_Size, *SIZE, and LEV* are significantly and positively correlated with risk disclosure quantity. However, *Dual, LIQ, and ROA are* negatively associated with risk disclosure quantity. On the other hand, the researcher can conclude that there is not any potential

multicollinearity among the tested variables where the correlation coefficients of the tested variables with CRDI_Quantity are relatively low.

Columns 4 and 5 indicate the correlation coefficient of the firm-level governance and ownership structure, which may affect risk disclosure quality for the UK annual reports using CRD II_Scale and CRD III_quality (AHP). We can find a positive correlation between Brd_INDEP, AC_NonEX, AC_INDP, and CON_OWN and risk disclosure quality based on CRD II_Scale and CRD III_quality at p-value< 0.01. INS_OWN is also positively associated with risk disclosure quality based on CRD III_quality at a p-value< 0.05. On the other hand, Brd_Gend, F_Lead, and Risk_COM are negatively and significantly associated with both CRD II_Scale and CRD III_quality at a p-value < 0.05. These findings approve the pieces of evidence provided by Ntim et al. (2013), and Elamer et al. (2019) that firm-level governance and ownership structure have a significant impact on risk disclosure quality within firms. The control variables for the firm, such as Brd_Size *and SIZE* are significantly and positively correlated with risk disclosure quantity. However, Dual, LIQ, and ROA *are* negatively associated with risk disclosure quantity. On the other hand, the researcher can conclude that there is no potential multicollinearity among the tested variables where the correlation coefficients of the tested variables with CRDI_Quantity are relatively low.

Panel B. of Table 8.2 reports the correlation coefficients of firm-level governance and ownership structure with risk disclosure quantity for German annual reports. Statistically, we find that there are significant associations between *CRDI_Quantity* and CG attributes, such as *Brd_Gend* and *Audit_Q* at p-value < 0.05. However, *Brd_Indep* and Risk_COM are significantly and negatively correlated with risk disclosure quantity at a p-value <0.05. Also, the overall firms' governance scores (*GOV_Score*) are positively correlated with risk disclosure quantity. Moreover, *CON_OWM, GOV_OWN and MAN_OWN* are significantly and positively

associated with risk disclosure quantity; however *FOR_OWN* and *INS_OWN* are negatively correlated with risk disclosure quantity. Moreover, firm-level control variables, such as Brd_Size *SIZE, Dual, LIQ, ROA,* and *LEV* are significantly and positively correlated with risk disclosure quantity for German firms. However, *Beta* and *Sal_Growth are* positively associated with risk disclosure quantity.

Furthermore, columns 4 and 5 for Panel B. of Table 8.2 indicate the correlation coefficient of the firm-level governance and ownership structure, which may affect risk disclosure quality for the German annual reports using *CRD II_Scale* and *CRD III_quality*. As indicated, we can find a positive correlation between *Brd_Gend, AC_NonEX, Audit_Q, CON_OWN, MAN_OWN, GOV_OWN* and risk disclosure quality based on *CRD II_Scale and CRD III_quality* at p-value< 0.01. On the other hand, *Brd_Indep, Risk_COM, INS_OWN and FOR_OWN* are negatively and significantly associated with both *CRD II_Scale and CRD III_quality* at a p-value < 0.05. These findings approve the pieces of evidence provided by Ntim et al. (2013), and Elamer et al. (2019) that firm-level governance and ownership structure have a significant impact on risk disclosure quality within firms. The control variables for the firm, such as Brd_Size *SIZE, Dual, LIQ, and ROA* are significantly and positively correlated with risk disclosure quantity. However, Beta is positively associated with risk disclosure quantity. On the other hand, the researcher can conclude that there is not any potential multicollinearity among the tested variables where the correlation coefficients of the tested variables with *CRDI_Quantity, CRD II_Scale, and CRD III_quality* are relatively low.

Panel C. of Table 8.2 reports the correlation coefficients of tested variables for French annual reports. We find that there are significant and positive associations between *Brd_Gend, Risk_COM,* and *Audit_Q* and *CRDI_Quantity* at a p-value < 0.05. However, *F_Lead* is significantly and negatively correlated with risk disclosure quantity at a p-value <0.05.

Moreover, *CON_OWM, GOV_OWN and MAN_OWN* are significantly and positively associated with risk disclosure quantity; however, FOR_OWN and INS_OWN are negatively correlated with risk disclosure quantity. Furthermore, firm-level control variables, such as Brd_Size, *Sal_Growth, and ROQ* are significantly and positively correlated with risk disclosure quantity. However, *SIZE* and LEV *are* negatively associated with risk disclosure quantity.

Columns 4 and 5 for the same Panel indicate the correlation coefficient of the firm-level governance and ownership structure for the French risk disclosure quality in the annual reports using *CRD II_Scale and CRD III_quality (AHP)*. As indicated, we can find a positive correlation between *F_Lead, AC_NonEX, Risk_COM, Audit_Q, MAN_OWN, GOV_OWN* and risk disclosure quality based on *CRD II_Scale and CRD III_quality* at p-value< 0.01. On the other hand, *AC_INDP* is negatively and significantly associated with *CRD II_Scale* at a p-value < 0.05.

Panel D. of Table 8.2 reports the correlation coefficients of tested variables for Italian. We can conclude that there are significant and positive associations between *Brd_Indep* and *CRDI_Quantity* at a p-value < 0.05. Moreover, *CON_OWM, INS_OWN and MAN_OWN* are significantly and positively associated with risk disclosure quantity; however, GOV_OWN is negatively correlated with risk disclosure quantity, but this relationship is not significant. Furthermore, the overall firm governance score is significantly and negatively associated with *CRDI_Quantity* at a p-value <0.05. At the firm-level control variables, we find that Brd_Size Dual, SIZE, *Sal_Growth, and LEV* are significantly and negatively correlated with risk disclosure quantity. However, *Beta* is *positively* associated with risk disclosure quantity.

Columns 4 and 5 for Panel D. indicate the correlation coefficient of the firm-level governance and ownership structure for the quality of French risk disclosure in the annual reports using

CRD II_Scale and CRD III_quality (AHP). We can find negative association between *F_Lead, AC_INDP, Risk_COM, Audit_Q, and CRD II_Scale* at p-value<0.05. However, *AC_INDP and Audit_Q* are positively associated with *CRD III_quality* at p-value <0.05. *MAN_OWN and GOV_OWN* are positively and significantly associated with *CRD II_Scale and CRD III_quality* at p-value< 0.01. On the other hand, *FOE_OWN and GOV_OWN* are negatively and significantly associated with *CRD II_Scale and CRD III_quality* at p-value < 0.05. At the firm-level control variables, we can summarise that Brd_Size, *Dual, and LIQ*, are significantly and negatively correlated with *CRD II_Scale and CRD III_quality*. However, *SIZE* and *Beta* are *positively* associated with *CRD II_Scale and CRD III_quality*. *ROA is positively associated with CRD II_Scale and CRD III_quality* at p-value<0.05. On the other hand, the researcher can conclude that there is not any potential multicollinearity among the tested variables where the correlation coefficients of the tested variables with CRDI_Quantity are relatively low.

The previous findings approve the prior literature (e.g., Ntim et al., 2013; Elamer et al., 2019) and the expectations of agency, resource-dependence, and stakeholders theories that firms with a diverse board of directors in terms of independence and gender and ownership structure have different incentives toward risk disclosure quantity and quality. These firms aim to disclose more content of risk information in their annual reports within an acceptable level of quality to support stakeholders' confidence and get access to the critical resources

Table 8.2. Table 8.2: Correlation matrix (Pearson correlation)
Panel A. for the UK

		1	2	3	4	5	6	7	8	9	10	11	12	13
CRDI_Quantity	1	1												
CRD II_Scale	2	0.22***	1											
CRD III_AHP	3	0.23***	0.82***	1										
Brd_Indep	4	0.21***	0.08**	0.09**	1									
Brd_Gend	5	0.07**	-0.11***	-0.08**	0.05*	1								
F_Lead	6	-0.14***	-0.02	-0.05*	0.1**	-0.04	1							
Risk_COM	7	-0.01	-0.04	-0.08**	-0.02	0.04	-0.02	1						
AC_NonEX	8	0.07**	0.09**	0.12***	0.09**	0.08**	-0.09**	0.01	1					
AC_INDP	9	0.08**	0.15***	0.14***	0.42***	-0.02	0.02	0.01	0.08**	1				
Audit_Q	10	-0.01	0.01	0	-0.01	0.02	0	0	0.01	0.02	1			
CON_OWN	11	0.11**	0.07**	0.06**	0.05*	0.01	0.05*	-0.09**	-0.06**	-0.02	0.03	1		
MAN_OWN	12	0.07**	-0.01	0.04	0.03	0.04	-0.01	0	0.01	0	-0.07**	0.14***	1	
FOR_OWN	13	-0.14***	0.03	-0.02	0	-0.04	0.07**	0.05*	-0.02	0.01	-0.01	-0.03	-0.56***	1
GOV_OWN	14	-0.12***	0.1	0.1	-0.03	-0.07	-0.03	-0.05*	-0.02	0.02	0.11***	-0.01	-0.57***	0.31***
INS_OWN	15	0.02	0	0.08**	0.11**	0	-0.03	-0.03	0.02	0.04	-0.01	-0.03	-0.07**	-0.04
Gov_Score	16	0.02	-0.07**	-0.05*	-0.05**	0.06*	0.01	0.01	-0.07**	-0.12***	0.07**	-0.05*	-0.12***	-0.22***
Brd_Size	17	0.38***	0.15**	0.19**	0.14**	0.17***	-0.09**	-0.03	0.07**	-0.04	-0.01	0.06**	0.05*	-0.1
Dual	18	-0.13***	-0.1	-0.06**	-0.13***	-0.1**	0.06**	0.01	-0.02	-0.05*	0	-0.06**	0.01	-0.06**
SIZE	19	0.51***	0.14**	0.21***	0.4***	0.2***	-0.06**	-0.03	0.07**	0.15***	-0.02	0.1***	0.08**	-0.2
LIQ	20	-0.11***	0.07**	0.04	-0.11***	-0.01	0.03	0	-0.01	-0.1	-0.02	-0.14***	-0.17***	0.25***
Beta	21	0.02	0.01	0.06**	0.02	0.07**	0.03	0.04	0.1	0.04	0.02	0.03	0.06**	0
Sal_Growth	22	0.04	0.07**	0.09**	0.06**	-0.02	-0.01	-0.05*	0.02	0.01	0	0.04	0.01	-0.03
ROA	23	-0.12**	-0.13**	-0.12**	0.01	0.02	0.02	-0.06**	0.06	-0.02	-0.02	-0.01	0.05*	0.07**
LEV	24	0.13**	-0.01	-0.01	0.05*	0	0.17***	0.06**	0.06	0	0.01	0.01	0.05*	-0.12***
AR_Length	25	0.0018	0.0027	-0.0253	0.0572	0.0006	0.0292	0.0282	0.0498	0.1153	-0.005	-0.0496	-0.0153	-0.0202

		14	15	16	17	18	19	20	21	22	23	24	25
GOV_OWN	14	1											
INS_OWN	15	0.2	1										
Gov_Score	16	0.05*	-0.13***	1									
Brd_Size	17	-0.03	-0.01	0.07**	1								
Dual	18	0.01	-0.01	-0.02	0	1							
SIZE	19	-0.08**	0.02	0.1	0.6***	-0.14***	1						
LIQ	20	0.04	-0.01	-0.06**	-0.06**	-0.01	-0.18***	1					
Beta	21	0.02	0.02	0.02	0.07**	0.01	0.01	0	1				
Sal_Growth	22	-0.01	0.02	-0.01	0.07**	-0.02	0.1	-0.02	0.02	1			
ROA	23	0.06**	-0.02	-0.01	-0.02**	0.12***	-0.15***	0	-0.1	-0.01	1		
LEV	24	-0.02	-0.05*	0.03	0.08**	-0.03	0.2	-0.16***	-0.06**	-0.02	-0.05*	1	
AR_Length	25	-0.0151	-0.0286	-0.0026	0.0093	0.0198	0.0399	-0.0364	-0.0331	-0.0067	0.0393	-0.0114	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quantity and its components, where *CRD I_Quantity: corporate risk disclosure Index for measuring the risk disclosure quantity; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, and GOV-Score: firm-level governance score.*

*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

Panel B. for Germany

		1	2	3	4	5	6	7	8	9	10	11	12	13
CRDI_Quantity	1	1												
CRD II_Scale	2	0.54***	1											
CRD III_AHP	3	0.55***	0.99***	1										
Brd_Indep	4	-0.17***	-0.11***	-0.09**	1									
Brd_Gend	5	0.28***	0.24***	0.24***	-0.1	1								
Risk_COM	6	-0.03	-0.06**	-0.06**	0.01	-0.17***	1							
ACNonEx	7	0.04	0.09**	0.08**	0.13***	-0.01	-0.17***	1						
AC_INDP	8	0.01	-0.03	-0.03	-0.04	-0.04	0.04	-0.14***	1					
Audit_Q	9	0.36***	0.34***	0.35***	-0.19***	0.31***	-0.22***	0.21***	-0.1	1				
CON_OWN	10	0.34***	0.31***	0.33***	0.21***	0.02	0.06**	-0.15***	0.02	0.06***	1			
MAN_OWN	11	0.6***	0.45***	0.44***	-0.27***	0.41***	0.07**	0.14	-0.06**	0.41***	0.15***	1		
FOR_OWN	12	-0.2***	-0.22***	-0.23***	-0.06**	-0.25***	0.21***	-0.09**	0.15***	-0.36***	0.18***	-0.1***	1	
GOV_OWN	13	0.72***	0.53***	0.52***	-0.17***	0.49***	-0.15***	0.08**	-0.05*	0.5*	0.07**	0.74***	-0.26***	1
INS_OWN	14	-0.19***	-0.11***	-0.11***	0.1***	-0.09**	0.04	0	0.01	0.07**	-0.13***	-0.3***	0.06**	-0.22***
Gov_Score	15	0.28***	0.08**	0.12***	-0.18***	0.05*	-0.18***	-0.06**	-0.07**	0.22***	0.3***	0.29***	-0.29***	0.17***
Brd_Size	16	0.24***	0.15***	0.17***	-0.04	-0.05*	-0.06**	0.02	0	0.05*	-0.13***	0.11***	-0.03	0.14***
Dual	17	0.1***	0.07**	0.06**	0.02	0.02	0.05**	0	0	-0.04	0.31***	-0.03	0.02	-0.03
SIZE	18	0.24***	0.12***	0.12***	-0.07**	0.32***	-0.1***	-0.1***	-0.04	0.22***	-0.13***	0.25***	-0.18***	0.41***
LIQ	19	0.32***	0.18***	0.18***	0.05*	0.15***	-0.16***	0.05*	0.07**	0.24***	0.08**	0.08**	-0.06**	0.32***
Beta	20	0.28***	0.17***	0.16***	0.07**	0.01	0.08**	0.06**	0.02	0.24***	0.09**	0.14***	0.13***	0.29***
Sal_Growth	21	-0.08**	0.05*	0.04	0.08**	-0.06**	-0.08**	0.14***	-0.03	0.05*	0.004	0.04	0.12***	-0.07**
ROA	22	0.27***	0.12***	0.1***	-0.05*	0.19***	-0.1***	0.09**	-0.02	0.11***	-0.01	0.19***	-0.11***	0.26***
LEV	23	0.17***	0.06**	0.06**	0.1***	-0.02	-0.03	0.13***	-0.01	0.11***	0.08**	-0.02	0.06**	0.04
AR_Length	24	-0.0285	-0.0447	-0.0324	0.0595	-0.042	-0.066*	0.0457	-0.079*	0.0375	-0.0135	-0.068*	0.028	0.0707

		14	15	16	17	18	19	20	21	22	23	24
INS_OWN	14	1										
Gov_Score	15	-0.15***	1									
Brd_Size	16	-0.03	0.07**	1								
Dual	17	-0.03	0.01	0.02	1							
SIZE	18	-0.09***	0.14***	0.06**	0.03	1						
LIQ	19	0.03	0.18***	0.05*	-0.04	0.06***	1					
Beta	20	0.11***	0.18***	0.04	0.05*	0.11***	0.63***	1				
Sal_Growth	21	-0.03	-0.24***	0.04	0.04	0	-0.38***	0.04	1			
ROA	22	-0.09**	0.12***	0.18***	0.02	0.06**	0.11***	-0.22***	0.22***	1		
LEV	23	0.06**	-0.12***	0.04	0.01	-0.02	0.22***	-0.21***	0.03	-0.03	1	
AR_Length	24	0.0234	0.0685*	0.001	0.0961*	-0.0588	-0.0013	0.0291	0.003	0.0287	0.002	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quantity and its components, where *CRD I_Quantity: corporate risk disclosure Index for measuring the risk disclosure quantity; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, and GOV-Score: firm-level governance score.*
*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

Panel C. for France

		1	2	3	4	5	6	7	8	9	10	11	12	13
CRDI_Quantity	1	1												
CRD II_Scale	2	0.44***	1											
CRD III_AHP	3	0.72***	0.66***	1										
Brd_Indep	4	0.0004	0.04	-0.03	1									
Brd_Gend	5	0.07**	-0.01	-0.01	0.11***	1								
F_Lead	6	-0.02	0.13***	0.05*	-0.23***	-0.02	1							
Risk_COM	7	0.17***	0.13***	0.14***	0.07**	0	0.1***	1						
AC_NonEX	8	0.2***	0.22***	0.27***	0.1***	-0.11***	-0.1***	0.11***	1					
AC_INDP	9	-0.04	-0.06**	-0.01	0.42***	0.07**	-0.12***	0.01	0.22***	1				
Audit_Q	10	0.17***	0.13***	0.14***	-0.02	0.04	0.16***	0.15***	0.01	-0.07**	1			
CON_OWN	11	0.16***	-0.02	0.04	0.25***	0.05*	-0.08**	0.05*	-0.04	0.22***	0.01	1		
MAN_OWN	12	0.21***	0.2	0.32***	-0.02	-0.03	-0.1***	0.1***	0.3	0.1***	0.2	-0.15***	1	
FOR_OWN	13	-0.15***	-0.03	-0.03	0.22***	0.17***	-0.18***	-0.03	0.01	0.22***	0.09**	-0.04	0.26***	1
GOV_OWN	14	0.22***	0.13***	0.2	0.2	0.04	-0.13***	0.01	0.25***	0.29***	0.28***	0.11***	0.7***	0.24***
INS_OWN	15	-0.02***	0.04	0.02	-0.06**	-0.21***	-0.03	0.01	0.04	-0.23***	0.04	-0.01	-0.09**	-0.09**
Gov_Score	16	0.03	0.06**	0.04	-0.09**	-0.09**	-0.1	-0.05*	0.22***	-0.02	-0.07**	-0.01	0.14***	-0.14***
Brd_Size	17	0.06**	-0.01	0	0.05*	-0.05*	-0.04	0.01	0.05*	0.05*	0.06**	0.09**	0.14***	-0.03
Dual	18	-0.03	-0.13***	-0.08**	0.03	0.02	0.05*	-0.01	-0.05*	0.16***	0	0.04	0.05*	0.06**
SIZE	19	-0.12***	-0.01	-0.12	0.11***	0.11***	0.06**	-0.09***	-0.07**	0.19***	-0.01	-0.03	-0.03	-0.02
LIQ	20	-0.01	0.05*	0.06**	0.15***	0.08**	0.03	0.12***	0.12***	0.14***	0.03	0.15***	0.07**	0.01
Beta	21	0.01	0.02	0.06**	0	0.04	0.1***	0.1***	0.11***	0.08**	0.04	0.17***	0.07**	0.12***
Sal_Growth	22	0.1***	0.06**	0.13***	-0.07**	-0.03	0.09**	-0.02	-0.04	0.03	0.18***	0.06**	-0.01	-0.19***
ROA	23	0.08**	-0.05*	-0.03	-0.19***	-0.15***	0.09**	-0.08**	0.01	-0.02	0.03	0.04	0.07**	-0.13***
LEV	24	-0.07**	-0.05*	-0.05*	-0.06***	-0.12***	0.09**	0.13***	-0.13***	-0.06**	0.03	0.05*	-0.16***	-0.04
AR_Length	25	0.0929*	0.0579	0.0391	-0.0301	-0.048	-0.0022	0.0802*	0.0544	0.015	0.029	0.0102	-0.107**	-0.0318

		13	14	15	17	18	19	20	21	22	23	24	25
GOV_OWN	14	1											
INS_OWN	15	-0.2***	1										
Gov_Score	16	0.17***	-0.1***	1									
Brd_Size	17	0.15***	-0.01	-0	1								
Dual	18	0.18***	-0.02	0.04	0.01	1							
SIZE	19	0.14***	-0.13***	0.04	0.01	0.003	1						
LIQ	20	0.16***	0.01	0.06**	-0.01	0.06**	0.005	1					
Beta	21	0.17***	0.08	0.08**	0.01	0.06**	0.02	0.69***	1				
Sal_Growth	22	-0.02	-0.01	0.06**	-0	-0.05*	0.01	-0.23***	-0.08**	1			
ROA	23	0.1***	0.02	0.29***	-0.05*	0.18***	-0.11***	0.03	-0.28***	0.09**	1		
LEV	24	-0.17***	0.11***	-0.08**	0.2***	-0.04	0.04	0.08**	-0.22***	0.19***	0.005	1	
AR_Length	25	0.0037	-0.0149	0.0479	-0.031	0.0086	-0.0141	-0.022	0.10**	0.0564*	0.096**	-0.003	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quantity and its components, where *CRD I_Quantity: corporate risk disclosure Index for measuring the risk disclosure quantity; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, and GOV-Score: firm-level governance score.*

*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

Panel D, For Italy

		1	2	3	4	5	6	7	8	9	10	11	12	13
CRDI_Quantity	1	1												
CRD II_Scale	2	0.03	1											
CRD III_AHP	3	-0.02	-0.13***	1										
Brd_Indep	4	0.08**	-0.03	0.05	1									
Brd_Gend	5	0.1	-0.04	-0.05*	0.05*	1								
F_Lead	6	0.04	-0.09**	0.02	-0.1***	0.06**	1							
Risk_COM	7	0.01	-0.07**	0.1	0.06**	-0.11***	-0.12***	1						
ACNonEx	8	-0.04	0.01	-0.05*	0.12***	0.09**	0.09**	-0.08**	1					
AC_INDP	9	0.04	-0.28***	0.23***	0.56***	0	0.15***	0.2	0.03	1				
Audit_Q	10	0.04	0.04	0.03	0.02	-0.04	0.03	-0.07**	0.22***	-0.06**	1			
CON_OWN	11	0.12***	0.03	0.02	0.45***	0.14***	0.07**	0.02	0.19***	0.34***	-0.01	1		
MAN_OWN	12	0.16***	-0.01	0.07**	0.06**	0.13***	-0.01	-0.08**	0.06**	0.01	0.07***	0.03	1	
FOR_OWN	13	0.01	-0.03	-0.11***	-0.05*	-0.07**	0.1***	-0.01	-0.14***	-0.04	-0.13***	0.06***	-0.26***	1
GOV_OWN	14	-0.01	0.14***	-0.08**	0.08**	-0.05*	-0.01	-0.02	0.05*	-0.04	0.03	0.04	-0.25***	-0.31***
INS_OWN	15	0.07**	-0.02	0.01	0.03	0.15***	-0.12***	0.04	0.03	-0.01	0.02	-0.05*	-0	-0.25***
Gov_Score	16	-0.06**	-0	0.02	-0.03	-0.06**	-0.02	0.1	0.04	-0.06**	0.02	-0.1***	-0.07**	-0.17***
Brd_Size	17	-0.06**	-0.16***	-0.12***	0.26***	-0.1***	0.26***	-0.05*	0.09**	0.19***	0.01	0.02	-0.1***	0.05*
Dual	18	-0.06**	-0.1	0.14***	-0.12***	-0.06**	-0.02	0.06**	-0.05*	-0.03	0.04	-0.14***	0.08**	-0
SIZE	19	-0.03	0.15***	0.02	0.37***	-0.02	-0.29***	-0.08**	0.15***	0.11***	0.04	0.43***	-0.03	-0.02
LIQ	20	-0.01	-0.1***	-0.05*	-0.07**	-0.02	-0.13***	-0.1	0.15***	-0.07**	0.08**	-0.16***	0.06**	-0.06**
Beta	21	0.08**	0.08**	0.05*	0.2***	0.07**	0.12***	0.06**	0.13***	0.21***	0.03	0.1***	0.02	0
Sal_Growth	22	-0.07**	0.26***	0.02	-0.09**	-0.15***	-0.06**	-0.01	0.06**	-0.23***	0.01	0.07**	-0.09**	-0
ROA	23	0.09***	-0.21***	0.11***	-0.11***	-0.04	0.07**	0.01	0.22***	0.05*	-0.04	-0.24***	-0	-0.04
LEV	24	-0.03	-0.01	-0.04	0.34***	-0.05*	0.16***	-0.06**	-0.17***	0.21***	-0.07**	0.09**	-0.07**	0.13***
AR_Length	25	-0.0425	-0.087*	0.101**	-0.067*	-0.161**	-0.070*	0.085**	0.0342	0.0211	0.134**	0.0554	-0.054	0.0285

		15	16	17	18	19	20	21	22	23	24	25
GOV_OWN	14	1										
INS_OWN	15	-0.09**	1									
Gov_Score	16	0.068***	-0.05*	1								
Brd_Size	17	-0.04	-0.11***	0.058*	1							
Dual	18	0.049	-0.07**	0.125***	-0.18***	1						
SIZE	19	-0.01	-0.04	0.016	0.042	-0.03						
LIQ	20	-0.04	-0	0.08**	0.06**	0.071**	1					
Beta	21	0.023	0.06**	0.011	0.013	0.07**	0.19***	1				
Sal_Growth	22	0.177***	-0.05*	0.033	-0.09**	-0.07**	-0.08**	-0.11***	1			
ROA	23	-0.01	-0.01	-0.01	-0.02	0.218***	0.21***	-0.29***	-0.05*	1		
LEV	24	0.047	-0.07**	-0.08**	0.201***	-0.12***	-0.26***	0.05*	-0.04	-0.26***	1	
AR_Length	25	0.043	0.173**	0.133**	-0.106**	-0.161**	0.0465	-0.0302	0.02	0.0214	-0.079*	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quantity and its components, where *CRD I_Quantity: corporate risk disclosure Index for measuring the risk disclosure quantity; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, and GOV-Score: firm-level governance score.*
*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

8.3. Multivariate Regression Analysis for The Effects of Firm-Level Governance within and between UK, German, French, and Italian Firms

In this section, we present the results of two main regression models for the relationship between corporate governance, ownership structure, and risk disclosures within and between firms in the four EU countries.

8.3.1. Firm-Level Governance and Risk Disclosure Quantity and Quality in The UK

Table 8.3 presents the results of the regression analysis. Table 8.3 indicates that there is a significant association between *Brd_indep and CRDI_Quantity* at a coefficient of 175.86 and a t-value of 3.22 (p-value<0.05). This result means that *Brd_indep* is significant in explaining differences in *CRDI_Quantity*, where any increment in independent directors by one will cause an increment in total risk quantity by 175.86 text words. However, the specific components of risk disclosure (e.g., *OR, MR, and FR*) are also significantly and positively affected by *Brd_indep* with coefficients of 1.311, 1.245, and 1.476, respectively and t-value of 1.73, 165, and 1.99, respectively. Similarly, *Brd_Gend and F_Lead* are significantly and positively associated by *CRDI_Quantity* with coefficients of 1.59 and 67.26, respectively, at t-value of 2.23 and 2.13, respectively, which indicate that firms with a high percentage of board diversity in terms of gender and led by female tend to disclose more extent of risk disclosure. These results support the research hypotheses Ha2 and Ha3 that firms with a high percentage of independent and female directors may disclose more risk information. Consequently, the results match the arguments of the agency and resource dependence theories that independent and female directors are an essential requirement of CG to promote the interests of other stakeholders in information disclosure through minimising the information asymmetry and conflict of interest, which support firm to gain access to the critical resources.

Furthermore, firms that have risk committees are more likely to disclose more volume of risk information related to business and operational risks, with a coefficient of 19.26 and a t-value of 1.90. This result confirms the research hypothesis Ha4 and agency and stakeholders' perceptions that the existence of a risk committee supports management to identify, assess, and manage risks, to enhance the quantity of risk disclosure in particular (Jia, 2019; Subramanian et al., 2009; Nahar & Jahan, 2021).

Also, firms audited by one of the big four audit partners tend to disclose more extent of risk disclosure, where the sign of the Audit_Q is positive at a coefficient of .8091 and t-value of 3.77. This result supports hypothesis Ha5, which claims that big 4 auditors are more likely to provide the best auditing and insurance services, contributing to more risk disclosure. Similarly, *AC_NonEX and AC_INDEP* are correlated positively with *CRDI_Quantity* and its components at a coefficient of 1.804 and .7966, and t-value of 1.93, 1.81, and 2.10 respectively (p-value<0.05) for AC_NonEX, at a coefficient of .809, 1.3, and .045 and t-value of 3.77 and 2.22 respectively.

Additionally, the Adj R^2 values for the five models are 23.49%, 30.38%, 26.05%, 32.37%, 21.9%, 27.36%, 22.18%, 27.12%, 23.01%, and 27.39%, respectively, and the VIF values are 1.307, 1.43, 1.352, 1.478, 1.280, 1.376, 1.285, 1.372, 1.298, and 1.377 respectively. This indicates that the examined variables are not multi-collinear.

On the other hand, Models 2, 4, 6, 8, and 10 confirm that there is a significant relationship between GOV_Score and *total CRDI-Quantity, Business, Operational, Management, and Fluctuations Risk sub-categories* with a coefficient of 1.44, .5914, 1.928, 1.846, and 1.41 and t-value of 2.81, 2.27, 2.84, 2.77, and 2.18 (p-value<0.05). These results support the research hypothesis Ha5 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms

and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Table 8.3. Multivariate Regression Analysis for Risk Disclosure Quantity for the UK firms

Independent Variables (Model)	Total CRDI_Quantity		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	175.86**		24.234		1.311*		1.245*		1.476**	
	(3.22)		(0.97)		(1.73)		(1.65)		(1.99)	
Brd_Gend	1.59 **		23.37		1.816*		1.788 *		.955	
	(2.23)		(0.77)		(1,74)		(1.94)		(0.41)	
F-Lead	67.26**		22.653*		102.54*		41.25		28.378	
	(2.13)		(1.61)		(1.94)		(0.58)		(0.41)	
Risk_COM	19.26*		55.195*		10.87*		20.380		29.751	
	(1. 90)		(1.70)		(1.84)		(0.90)		(1.34)	
Audit_Q	.8091***		.2561		.9173		.883		1.871	
	(3.77)		(0.16)		(0.19)		(0.18)		(.39)	
AC_NonEX.	.123		.7988*		1.167		2.836**		-1.903	
	(0.038)		(1.81)		(0.86)		(2.10)		(1.44)	
AC-INDP	1.804*		.2394		.8443		1.30**		.04095	
	(1.93)		(1.25)		(1.43)		(2.22)		(0.71)	
GOV_Score		1.444***		.5914*		1.928***		1.846**		1.41**
		(2.81)		(2.27)		(2.84)		(2.77)		(2.18)
Brd_Size	28.18***	20.254***	10.42***	8.282***	202.03***	19.96***	-38.77***	28.14**	35.971***	24.70***
	(5.51)	(3.33)	(4.82)	(3.22)	(3.56)	(2.49)	(5.87)	(3.56)	(5.52)	(3.22)
DUAL	-51.60*	-21.595	-26.439**	-11.68	-39.09	5.869	-50.766	-24.26	-67.020**	-55.196
	(-1.96)	(-.64)	(-2.38)	(-0.82)	(-1.15)	(0.13)	(-1.50)	(-0.55)	(-2.01)	(-1.29)
SIZE	189.08***	254.966***	90.19***	111.16***	266.47***	334.45	212.9***	291.97***	218.216***	285.233***
	(10.67)	(12.67)	(12.08)	(-13.05)	(11.76)	(12.60)	(9.36)	(11.18)	(9.69)	(11.26)
LIQ	.125	9.738***	0.0442	-1.074	.1231	16.78	.02054	5.14**	0334	18.18**
	(.043)	(10.85)	(0.36)	(-0.41)	(0.32)	(2.06)	(0.05)	(.64)	(0.90)	(2.34)
Beta	3.23	10.381	3.30	.2027	15.047	23.544	5.8106	12.37	4.534	5.661
	(0.27)	(0.78)	(0.65)	(0.04)	(0.96)	(1.34)	(.37)	(.72)	(0.30)	(0.34)
Sal_Growth	-.723	-.4230	-.0687	-.3415*	.6748	-.149	.00978	-1.62	-.2361	-.6000

	(-.71)	(-0.84)	(-0.32)	(-1.60)	(1.04)	(-.23)	(0.02)	(-1.14)	(-.36)	(-.95)
ROA	.7321	-1.291	.2552	-0..660	1.767**	-1.353	.9469	-1.353	.16073	-1.568
	(1.39)	(-1.18)	(1.17)	(-1.43)	(2.63)	(-.347)	(1.42)	(-0.94)	(.25)	(-1.14)
LEV	-19.37	95.899*	-3.24	51.032	-101.123*	15.02	-22.94	105.16	37.898	208.95***
	(-.44)	(1.65)	(-.017)	2.08	(-1.76)	(0.20)	(-0.40)	(1.40)	(0.68)	(2.86)
AR_Length	.0160*	.0656*	.0174**	.0427*	.0768	.0124*	.0636**	.2016*	.0549*	.0304*
	(1.895)	(1.653)	(2.34)	(1.81)	(1.49)	(1.81)	(2.41)	(1.65)	(1.72)	(1.945)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-805.68***	-805.49***	-337.9***	-349.23***	1633.7***	-1141.8***	406.58**	-852.47***	-1141.8***	-877.4***
	(-6.49)	(-7.43)	(-6.53)	(-7.61)	(7.31)	(-7.99)	(2.11)	(-6.06)	(-7.99)	(-6.43)
Obs.	1,595	1,167	1,626	1,167	1,578	1,167	1,578	1,167	1,578	1,167
F-statistics Prob	0,0000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adj R2	23.49%	30.38%	26.05%	32.37%	21.9%	27.36%	22.18%	27.12%	23.01%	27.39%
VIF	1.307	1.43	1.352	1.478	1.280	1.376	1.285	1.372	1.2988	1.377

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.4 summarises the relationship between Firm-Level Governance and Risk Disclosure quantity and quality within UK firms. Models 1, 7, and 9 in Table 8.4 indicate that there is a positive and significant association between *AC_INDP* and *Total CRD II_Scale* (model 1) for The UK firms at the coefficients of 7.20, .0009, and 10.45 and a t-value of 5.85, 6.07, and 3.02 respectively (p-value < 0.001), which suggests that the high percentage of independent audit committee members in the UK firms explains the differences in risk disclosure quality among The UK firms. Furthermore, the *total CRD II_Scale, Business, Operational, and Management Risk Quality* in the UK annual reports are positively by *Brd_indep* at the coefficients of .0036, .232, .0004, and .0004 and t-value of 2.28, 3.22, 3.49, and 2.26 2.28 respectively(p-value<0.05). Also, *Brd_Gend* is positively and significantly associated with *CRD II_Scale, Business, Operational, and Management Risk Quality* in the UK annual reports at the coefficients of -7.40, .0323, .0003, and .0008 and t-value of 3.82, 3.56, 2.71, and 3.48 respectively.

Similarly, the results of model 9 indicate that there is a significant and positive association between *F_Lead* and *CRD II_Scale* and the Fluctuation risks for the UK firms at the coefficients of .0143 and 54.41 and t-value of 2.53 and 1.9 (p-value<0.05), which suggests that female leadership in the UK are significant factors in explaining the differences in risk disclosure quantity among The UK firms. Furthermore, the Business Risk Disclosure Quality in the UK annual reports is positively affected by *Risk_COM* at the coefficients of .0101 and t-value of 4.53 (p-value<0.05). Furthermore, AC_INDP is significantly and positively associated with *CRD II_Scale, Operational, Management, and Fluctuation risks of CRD II_Scale at a p-value<0.05.*

Models 2, 4, 6, 8, and 10 of Table 8.4 reports the results of the impact of the governance score on risk disclosure quality based on CRD II_Scale and its components. It can be concluded that there is a significant relationship between *GOV_ Score* and total *CRDI_Quantity* with a

coefficient of 0.00052 and t-value of 3.89 (p-value<0.001). Also, it is significantly and positively associated with Business, Operational, and Management risk sub-categories with coefficients .0002, .0003, .0006, and .0008 and t-value of 3.43, 3.96, 3.75, and 3.43, respectively. Thus, these results support the research hypothesis Ha5 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Moreover, concerning the validity of the results, the VIF for each model are 1. 201, 1.28, 1. 21, 1.189, 1.205, 1.24, 1.189, 1.251, 1.208, and 1.278, respectively. This indicates that there is no multicollinearity among the tested variables. Finally, The Adj R^2 for each model are 16.79%, 22.05%, 17.58%, 15.92%, 17.07%, 19.87%, 15.95%, 20.07%, 17.22%, and 21.81%, respectively, and the VIF for each model indicates that there is no any multicollinearity among the tested variables.

Table 8.4. Multivariate Regression Analysis for Risk Disclosure Quality (CRD II_Scale) for the UK firms

Independent Variables (Model)	Total CRD II_Scale		Business Risks-quality		Operational Risks-quality		Management Risks-quality		Fluctuations Risks- quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.00036**		.232***		.0004***		.0004**		42.42**	
	(2.28)		(3.22)		(3.49)		(2.26)		(2.83)	
Brd_Gend	0.00740***		.0323***		.0003**		.0008***		.165	
	(3.82)		(3.56)		(2.71)		(3.48)		(0.57)	
F-Lead	.0143**		.0012		.0093		.0133		54.41 **	
	(2.53)		(-.21)		(0.98)		(0.87)		(1.90)	
Risk_COM	.000051		.0101***		.0062*		.004		.167	
	(1.09)		(4.53)		(1.73)		(0.82)		(0.89)	
Audit_Q	0.0003		.0002		-.0001		.0003		014***	
	(.30)		(0.51)		(-0.24)		(0.30)		(6.27)	
AC_NonEX.	0.00137		.00012		-.0001		.0002		-22.56	
	(0.48)		(0.81)		(-0.58)		(0.65)		(-0.41)	
AC-INDP	7.20***		4.026		.0005***		.0009***		10.45***	
	(5.85)		(0.94)		(5.98)		(6.07)		(3.02)	
GOV_Score		.00052***		.0002***		.0003***		.0006***		.0008***
		(3.89)		(3.43)		(3.96)		(3.75)		(3.43)
Brd_Size	.000035**	.0027*	.00005	.0006	.002*	.00166	.0038*	.002	-16.28***	.006**
	(2.54)	(1.71)	(0.09)	(0.86)	(2.11)	(1.42)	(2.24)	(1.10)	(-8.12)	(2.19)
DUAL	-.00007	-.0256**	.0008	-.007	-.003	-.016**	-.006	-.020*	2.44	.0063***
	(-1.02)	(-2.91)	(0.26)	(-1.59)	(-0.61)	(-2.47)	(-0.73)	(-1.92)	***(4.18)	(-3.64)
SIZE	.00009*	.0290***	-0113***	.0164***	.0132***	.0190***	.00730	.0209***	-.17 *	.273**
	(1.95)	(4.00)	(5.07)	(6.25)	(3.66)	(4.92)	1.25	(3.23)	(-1.93)	(2.86)
LIQ	0.0026***	.0063***	.00006	.0022**	.0002***	.004***	.0003***	0.006***	014***	.011***
	(3.34)	(3.95)	(-0.91)	(2.80)	(3.32)	(3.62)	(3.24)	(3.52)	(6.27)	(4.03)
Beta	0.007	.0011	.0013	.0021	.0012	.0015	.0006	.004	16.28***	.0035
	(0.22)	(0.13)	(0.91)	(1.25)	(.51)	(0.59)	(0.16)	(1.01)	(8.12)	(0.56)
Sal_Growth	0.0002**	.00001	.0001***	.0001*	.0002**	.00002	.0003*	.00001	2.44***	.00008
	(2.11)	(0.13)	(3.05)	(1.73)	(2.14)	(0.28)	(1.90)	(0.08)	(4.18)	(-0.36)
ROA	-0.00146	-.0011***	-.0001*	-.0004***	-.00014	-.0007***	-.0001	-.0013***	-.17 *	1.488

	(-1.04)	(-4.17)	(-1.68)	(-3.35)	(-1.39)	(-4.50)	(-1.15)	(-3.97)	(-1.93)	(-1.43)
LEV	-.00001	0.0130	-.002	-.0190**	-.007	-.017	-.005	-.122	14.32	29.673*
	(-0.11)	(-0.86)	(-0.37)	(-2.61)	(-.84)	(-1.56)	(-0.35)	(-0.66)	*(1.88)	(1.66)
AR_Length	.0008**	0.003	.002*	0.004	.0000	0.002	.0001***	0.004*	.0001***	0.001*
	(2.37)	(.36)	(1.72)	(0.04)	(1.18)	(1.19)	(3.50)	(1.64)	(4.01)	(1.74)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	.0017***	.1942***	.1467***	.1194***	.1184***	.1163***	.1910***	.2285***	.2850***	.3125***
	(5.32)	(6.88)	(9.37)	(8.41)	(4.68)	(5.57)	(4.66)	(6.55)	(4.89)	(6.07)
Obs.	1578	1167	1578	1167	1578	1167	1578	1167	1578	1167
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	16.79%	22.05%	17.58%	15.92%	17.07%	19.87%	15.95%	20.07%	17.22%	21.81%
VIF	1.201	1.28	1.213	1.189	1.205	1.24	1.189	1.251	1.208	1.278

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.5 reveals that there is a significant and positive association between *Brd_Indep* and *Total CRD III_AHP* at the coefficients of 2.12 and t-value of 2.08 (p-value<0.05), which suggests that *Brd_Indep* is significant in explaining differences in *CRD III_AHP*. Furthermore, the specific components of risk disclosure (e.g., PR and OR) are significantly and positively affected by *Brd_indep* with coefficients of 1.15 and .006, respectively and t-values of 2.63, and 2.38, respectively. On the contrary, the results support that *Brd_Indep* is positively and significantly associated with other sub-categories of risk disclosure quality (e.g. MR and FR), respectively, but these relationships are not significant. These results support hypothesis Ha1 that independent board members direct the management attitude toward disclosing high-quality risk disclosure related to business and operational risk information. Also, these findings support the agency framework that independent directors are an important requirement of the governing board of directors, not just to deal with agent and principal agency problems (Linsley & Shrives, 2006; Oliveira et al., 2011) but also to endorse the interests of other stakeholders, because they are more likely to be independent in their opinions and able to give objective and beneficial thoughts, which are more likely to mitigate agency conflicts between principals and agents (Elshandidy & Neri, 2015).

Models 2, 5, and 7 reveal that *Brd_Gend* is significantly and positively associated with the quality of risk disclosure subcategories such as BR, OR, and MR with the coefficients of 1.47, .011, and 0.62, respectively and t-value of 2.76, 3.46, and 3.82 respectively. These results support hypothesis Ha2 that gender diversity on the board of directors positively supports the quality of risk disclosure. Also, the existence of risk committee in UK firms are significantly and positively related to CRD III_quality and its components. This result supports the fourth hypothesis Ha4 that the risk committee increases the efficiency of companies using risk-related

tools and helps the audit committee by ensuring the quality of financial reporting and internal control (Jia, 2019; Marsden & Prevost, 2005; Subramanian et al., 2009; Nahar & Jahan, 2021). In addition, other firm control variables are correlated positively with CRD III_quality (AHP), such as Brd_SIZE, SOZE, LIQ, Sal_Growth, and LEV. Moreover, concerning the validity of the results, the VIF for each model indicates no multicollinearity among the tested variables. Last of all, The Adj R2 for each model are 18.08%, 21.35%, 17.49%, 16.26%, 17.91%, 19.99%, 16.59%, 20.84%, 18.25%, and 21.5%, respectively, indicates that there is no any multicollinearity among the tested variables

Models 2, 4, 6, 8, and 10 of Table 8.5 report the impact of the governance score on risk disclosure quality based on CRD III_quality and its components. It can be concluded that there is a significant and positive relationship between GOV_ Score and total CRD III_quality and Business, Operational, Fluctuation, and Management risk sub-categories for German firms. Thus, these results support the research hypothesis Ha5 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001) .

Table 8.5. Multivariate Regression Analysis for Risk Disclosure Quality (CRD III_quality-AHP index) for the UK firms

Independent Variables (Model)	Total CRD III_quality		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	2.12**		1.15**		.006**		0.001		.0002	
	(2.08)		(2.63)		(2.38)		(0.62)		(0.15)	
Brd_Gend	0.46**		1.47**		.011***		.010***		.0004	
	(2.20)		(2.76)		(3.46)		(-3.82)		(0.20)	
F-Lead	.162		.158		.174		.012		.2185	
	(0.20)		(0.46)		(.58)		(0.07)		(1.46)	
Risk_COM	.829**		.630***		.129*		.062		.0293	
	(2.71)		(4.79)		(1.65)		(0.89)		(0.51)	
Audit_Q	.0181		.0133		-.004		.004		.008	
	(.28)		(0.48)		(-0.29)		(0.31)		(0.73)	
AC_NonEX.	.020		.010		.0003		.005		.002	
	(1.11)		(1.30)		(0.04)		(1.29)		(0.81)	
AC-INDP	.033***		.007**		.009**		.008***		.005***	
	(4.27)		(2.33)		(4.74)		(4.66)		(3.79)	
GOV_Score		0.278***		.011**		.006***		.006***		.0037**
		(3.17)		(2.91)		(3.00)		(3.13)		(2.21)
Brd_Size	.199**	-.130	.022	.045	.052**	.020	.540**	.212	.040	.043**
	(2.24)	(1.25)	(0.59)	(0.97)	(2.30)	(0.81)	(2.66)	(0.91)	**(2.44)	(2.14)
DUAL	.037	-.170	.121	-.053	-.048	-.078	-.022	.001	.021 (0.25)	-.040***
	(.488)	(-.29)	(0.62)	(-0.21)	(-0.41)	(-0.55)	(-.21)	(0.01)		(4.18)
SIZE	.97***	2.14***	.5721***	1.03	.299***	.515***	.065	.318***	.143**	.061***
	(3.18)	(6.22)	(4.33)	(-.21)	(3.79)	(6.13)	(0.94)	(-4.14)	(2.48)	(3.01)
LIQ	.016***	.328***	.004*	0.10**	.004***	.089***	.003***	.0736***	.003***	-.061
	(3.16)	(3.11)	(1.86)	(2.19)	(3.49)	(3.48)	(3.40)	(3.12)	(3.77)	(-1.37)
Beta	.246	.479**	.088	.148	.088**	.14**	.062	.125**	.0183	.0610
	(1.17)	(2.10)	(0.98)	(1.46)	(1.64)	(2.59)	(1.31)	(2.47)	(0.47)	(1.37)
Sal_Growth	.022**	.006	.011***	.0065*	.004**	.0009	.003*	.0002	-.0001	-.0007
	(2.24)	(0.89)	(3.05)	(1.71)	(2.00)	(0.43)	(1.80)	(0.11)	(-0.10)	(-0.78)
ROA	-.018**	-0.74**	-0.005	-.026***	-.006**	-0.16***	-.003*	-.017***	-.003*	-.0137***

	(-2.03)	(-4.01)	(-1.33)	(-3.20)	(-2.71)	(-3.59)	(-1.74)	(-4.31)	(-1.97)	(-3.78)
LEV	.56	-2.04**	3.632	-1.08**	-.051	-.641**	.172	-.227	.1910	-.089
	(0.74)	(-2.06)	(1.16)	(-2.45)	(-.26)	(-2.64)	(0.98)	(-1.02)	(1.33)	(-0.46)
AR_Length	0.03**	0.462*	0.009	0.141*	0.022	0.798*	0.043	0.421*	0.054	0.446
	(2.42)	(1.62)	(0.25)	(1.72)	(0.24)	(1.75)	(0.51)	(1.91)	(0.62)	(1.02)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	14.813***	13.665***	8.659**	6.777***	2.409***	2.347***	2.168***	2.579***	1.800***	1.961***
	(6.92)	(7.36)	(9.39)	(8.15)	(4.36)	(5.18)	(4.43)	(6.22)	(4.45)	(5.43)
Obs.	1578	1167	1578	1167	1578	1167	1578	1167	1578	1167
F-statistics Prob	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	18.08%	21.35%	17.49%	16.26%	17.91%	19.99%	16.59%	20.84%	18.25%	21.5%
VIF	1.221	1.27	1.212	1.194	1.218	1.249	1.198	1.26	1.22	1.27

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively

8.3.2. Firm-Level Governance and Risk Disclosure Quantity and quality in Germany

Table 8.6 presents the results of the regression analysis for the impact of firm-level governance and German firms' risk disclosure quantity. Table 8.6 indicates that there is a significant association between *Brd_Gend and CRDI_Quantity* at a coefficient of 1.81 and a t-value of 2.42 (p-value < 0.05). The specific components of risk disclosure quantity for the German firms (e.g., *BR, MR, and FR*) are also significantly and positively affected by *Brd_Gend*. These results do not support hypothesis Ha2 that board diversity in terms of gender affects the extent and the quality of risk disclosure positively. Similarly, Brd_SIZE, F_Lead, Audit_Q, and Risk_COM are positively associated with CRD I_Quantity. However, these relationships are not significant.

On the other hand, Models 2, 4, 8, and 10 confirm a significant relationship between GOV_Score and *total CRDI-Quantity, Business, Management, and Fluctuations Risk sub-categories* at p-value<0.05. These results support the research hypothesis H1 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Table 8.6. Multivariate Regression Analysis for Risk Disclosure Quantity (CRD I_Quantity) for German firms

Independent Variables (Model)	Total CRD I_Quantity		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.0597		4.68		.5628		.0508		.7718*	
	(0.17)		(0.21)		(1.17)		(0.12)		(1.65)	
Brd_Gend	1.81**		104.22**		3.093		2.874***		3.098**	
	(2.42)		(2.20)		(1.28)		(3.31)		(2.97)	
F-Lead	172.36		106.74		233.90		-105.94		154.41	
	(1.25)		(1.20)		(1.28))		(00.64)		(.82)	
Risk_COM	28.61		14.67		14.531		23.861		55.36*	
	(1.31)		(1.06)		(0.51)		(0.92)		(1.82)	
Audit_Q	30.077		3.960		10.157		55.90		43.715	
	(1.16)		(0.24)		(0.30)		(1.80)		(1.22)	
AC_NonEX.	.998		.1209		1.437		.4276		2.082*	
	(1.21)		(0.23)		(1.29)		(0.43)		(1.81)	
AC-INDP	.0469		.0284		.8082		.07775*		.2915	
	(1.17)		(1.11)		(1.53)		(1.63)		(0.52)	
GOV_Score		2.521***		1.1648**		3.220		3.220***		2.124**
		(3.29)		(2.96)		(0.001)		(3.21)		(2.07)
Brd_Size	25.35***	-9.3633*	9.185***	2.858	260.19***	-3.412	31.00***	3.412	29.646***	20.501**
	(8.23)	(1.69)	(4.83)	(1.00)	(7.68)	(0.47)	(8.41)	(0.47)	(6.91)	(2.76)
DUAL	-98.86***	-66.94	-9.185	-4.110	-146.24***	-135.54*	-121.14***	-135.543*	-136.91***	-61.999
	(-3.09)	(-1.16)	(-0.45)	(-0.14)	(-3.36)	(-1.80)	(-3.17)	(-1.80)	(-3.07)	(-.81)
SIZE	168.321***	265.96***	93.01***	143.98***	206.397**	346.48***	147.53***	346.48***	206.16***	276.80***
	(9.73)	(8.00)	(8.37)	(8.43)	(9.36)	(7.96)	(7.15)	(7.96)	(8.56)	(6.21)
LIQ	-.290	35.78**	-2.46	10.321	18.8773**	57.844**	-8.215	57.844**	-12.274	36.488
	(-.04)	(2.09)	(-0.49)	(1.17)	(1.83)	(2.58)	(-0.88)	(2.58)	(-1.13)	(-1.43)
Beta	9.064	82.75**	1.656	57.059**	1.6560	119.77**	26.080*	119.77**	20.50	107.49***
	(0.68)	(2.17)	(.925	(2.91)	(0.09)	(2.40)	(1.64)	(2.40)	(1.11)	(2.10)
Sal_Growth	.2143***	.2399***	.1049**	.10994***	.3322***	.2624**	.3218***	.2624**	.2422 **	.2947***
	(3.18)	(3.43)	(2.42)	(3.06)	(3.76)	(2.87)	(4.02)	(2.87)	(2.58)	(3.15)
ROA	.4572**	.7667***	.2071**	.3664***	.5473**	.9259***	.50944**	.9259***	.6826***	.8878***

	(2.99)	(3.28)	(2.11)	(3.05)	(2.74)	(3.03)	(2.82)	(3.03)	(3.21)	(2.83)
LEV	83.12	-215.04	59.606	-140.759	23.850	-551.20**	148.88*	-551.20**	230.07**	-9.0126
	(1.17)	(-1.27)	(1.32)	(-1.61)	(0.25)	(-2.48)	(1.75)	(-2.48)	(2.32)	(-.04)
AR_Length	0.225**	0.824*	0.12*	0.824	.115	0.993	0.164*	1.085	.192**	0.977
	(2.80)	(1.72)	(1.76)	(0.72)	(1.20)	(0.65)	(1.93)	(0.9)	(2.17)	(0.67)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-199.05	-973.23***	-220.9***	-647.79***	-798.03***	-1445.9***	-257.32	-1445.9***	142.009	-641.82***
	(-1.36)	(-4.37)	(-2.38)	(2.84)	(-5.66)	(-4.96)	(-1.48)	(-4.96)	(.70)	(-2.15)
Obs.	919	295	930	295	919	295	918	295	919	295
F-statistics Prob	0.000	0.000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	50.3%	64.7%	30.06%	62.74%	41.46%	59.86%	42.85%	59.86%	46.32%	61.21%
VIF	2.014	2.83	1.539	2.683	1.7069	2.491	1.749	2.491	1.862	2.577

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.7 summarises the relationship between firm-level governance and risk disclosure quality within German firms. Models 1, 3, 5, 7, and 9 in Table 8.7 indicate that there is a positive and significant association between *Brd_Gend* and *Total CRD II_Scale* (model 1) for The German firms at p-value < 0.001), which suggests that the high percentage of female members on the board of directors of the German firms drive the management pressures regarding risk disclosure quality. Furthermore, *Total CRD II_Scale, Management and fluctuation Risk Quality* in the German annual reports are positively affected by *Brd_indep* at a p-value<0.05. The results of model 3 indicate that there is a significant and positive association between *Risk_COM* and the Business risks of *CRD II_Scale* for the German firms at a p-value<0.05, which suggests that the existence of a risk committee in Germany is a significant factor in explaining the differences in business risk disclosure quality among the German firms.

This result supports hypotheses Ha4 and agency theory that risk committees are expected to produce a higher quality of risk management and internal control of firms' risk profile by providing adequate risk disclosure to different stakeholders, which results in a reduction in information asymmetry and subsequently reduces any risks associated with investors' devaluation of the firm and agency costs (Jensen and Meckling, 1976; Subramanian et al., 2009; Ishak & Yusof, 2020; Jia et al., 2019; Nahar & Jahan, 2021). Furthermore, F_Lead and Audit_Q positively affect *CRDI_Quantity* and its components; however, this relationship is not significant.

Models 2, 4, 6, 8, and 9 of Table 8.7 reports the results of the impact of the governance score on risk disclosure quality based on CRD II_Scale and its components. It can be concluded that there is a significant relationship between *GOV_ Score* and total *CRDI_Quantity* with a coefficient of 0.0005 and t-value of 2.22 (p-value<0.001). Also, it is significantly and positively

associated with Business, Operational, Fluctuation, and Management risk sub-categories. Thus, these results support the research hypothesis H1 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Moreover, concerning the validity of the results, the VIF for each model and The Adj R^2 for each model indicate that there is not any multicollinearity among the tested variables.

Table 8.7 Multivariate Regression Analysis for Risk Disclosure Quality (CRD II_Scale) for German firms

Independent Variables (Model)	Total CRD II_Scale		Business Risks-quality		Operational Risks- quality		Management Risks- quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.232***		.00006		.00007		.0004**		.0004*	
	(3.22)		(0.59)		(0.99)		(2.26)		(1.92)	
Brd_Gend	.0008***		.0323***		.00039**		.0008***		.0016***	
	(3.49)		(3.56)		(2.43)		(3.48)		(3.81)	
F-Lead	.0117		.0012		.0035		.0133		.0198	
	(0.27)		(.21)		(0.11)		(0.87)		(0.24)	
Risk_COM	.0076		.0101***		.00604		.004		.0156	
	(1.10)		(4.53)		(1.23)		(0.82)		(1.22)	
Audit_Q	.0112		.0002		-.0053		.0003		.0173	
	(1.37)		(0.51)		(0.92)		(0.30)		(1.14)	
AC_NonEX.	.00006		.00012		.0001		.0002		.00002	
	(0.24)		(0.81)		(0.56)		(0.65)		(0.05)	
AC-INDP	0.00322		4.026		0.00268		.0009***		0.00463	
	(0.25)		(0.94)		(0.32)		(6.07)		(0.20)	
GOV_Score		.0005**		.0005**		.0005**		.0008***		.0004
		(2.22)		(2.99)		(2.63)		(3.39)		(0.89)
Brd_Size	.0049***	.0038**	.00005	.0017	.0032***	.0012	.0038**	.0033*	.0085***	.0091**
	(5.0)	(2.09)	(0.09)	(1.41)	(4.69)	(0.92)	(2.24)	(1.86)	(4.72)	(-2.68)
DUAL	-.022**	-.0559**	.0008	-.022*	-.0199**	-.0455***	-.006	-.0544**	-.042**	-.101**
	(-2.24)	(-2.90)	(0.26)	(-1.73)	(-2.77)	(-3.20)	(-0.73)	(-2.91)	(-2.23)	(-2.84)
SIZE	.0249***	.0414***	-0113***	.02930***	.0160***	.0285***	.00730	.0377***	.0482***	.0703***
	(4.51)	(3.70)	(5.07)	(3.89)	(4.12)	(3.45)	1.25	(3.48)	(4.73)	(3.40)
LIQ	.0012	.0050	.00006	.0024	.0023*	.0022	.0003***	.00732	.0002	.0080
	(0.51)	(0.87)	(-0.91)	(0.63)	#(1.35)	(0.53)	(3.24)	(1.31)	(0.06)	(0.75)
Beta	.0092**	.0186	.0013	.0023	.0027	.0075	.0006	-.0194	-.022**	-.0500**
	(2.18)	(1.47)	(0.91)	(0.28)	(.92)	(0.80)	(0.16)	(1.59)	(2.87)	(2.14)
Sal_Growth	.00002	.00003	.0001***	.00003**	.00003**	.00003*	.0003*	.00004*	.00002	-.00004
	(1.39)	(1.56)	(3.05)	(2.18)	(2.24)	(1.75)	(1.90)	(1.80)	(0.61)	(0.94)
ROA	0.00349	.00012*	-.0001*	.00007	-.00010	.00006	-.0001	.0001*	0.00875	.0002*
	(0.07)	(1.63)	(-1.68)	(1.47)	(0.31)	(1.20)	(-1.15)	(1.63)	(0.10)	(1.65)

LEV	.022	-.0813	-.002	-.0682*	-.0126	-.0394	-.005	-.0614	.0418	-.15611
	(0.99)	(-1.43)	(-0.37)	(-1.78)	(.79)	(-0.94)	(-0.35)	(-1.11)	(1.00)	(-1.48)
AR_Length	.961**	21.41	.961**	21.41	1.094*	2.923	.492	1.648	2.36***	.17
	(1.98)	(0.32)	(1.98)	(0.32)	(1.63)	(0.24)	(0.87)	(0.6)	(4.06)	(0.3)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	.120***	-.0329	.088***	-.038	.076***	-.0206	.119***	-.048	.169**	-.0245
	(2.57)	(-0.44)	(2.72)	(-0.75)	(2.33)	(-0.37)	(2.61)	(-0.67)	(1.96)	(-0.18)
Obs.	920	296	934	296	920	296	920	296	920	296
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	22.99%	36.89%	17.94%	37.33%	17.61%	31.56%	19.27%	36.55%	23.92%	34.96%
VIF	1.298	1.584	1.218	1.595	1.213	1.461	1.238	1.576	1.314	1.537

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.8 reveals that there is a significant and positive association between *Brd_Indep and Total CRD III_AHP with a coefficient of .005 and t-value of 1.81;* the results support that *Brd_Indep* is positively and significantly associated with Fluctuation risk disclosure quality. Similarly, the results support a positive and significant relationship between *Brd_Gend* and *Total CRD III_AHP* at the coefficients of .06225 and a t-value of 3.34 (p-value < 0.05), which suggests that *Brd_Gend* is significant in explaining differences in *CRD III_AHP*. These results support hypotheses Ha1 and Ha2 that independent and female board members direct the management attitude toward disclosing high-quality risk disclosure related to business and operational risk information. Furthermore, the specific components of risk disclosure (e.g., *BR, MR, FR, and OR*) are significantly and positively affected by *Brd_Gend. Also, F_Lead positively affected CRD III_AHP;* however, this relationship is not significant.

In addition, other firm control variables are correlated positively with *CRD III_quality (AHP),* such as *Brd_SIZE, SOZE, LIQ, Sal_Growth, and LEV*. Moreover, concerning the validity of the results, the VIF and Adj R^2 for each model indicate that there is no multicollinearity among the tested variables.

Models 2, 4, 6, and 8 of Table 8.8 reports the results of the impact of the governance score on risk disclosure quality based on *CRD III_quality* and its components. It can be concluded that there is a significant and positive relationship between *GOV_ Score and total CRD III_quality* and Business, Operational, and Management risk sub-categories for German firms. Thus, these results support the research hypothesis H1 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Table 8.8. Multivariate Regression Analysis for Risk Disclosure Quality (CRD III_quality- AHP) for German firms

Independent Variables (Model)	Total CRD III_ AHP		Business Risks-quality		Operational Risks-quality		Management Risks-quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.005*		.086		.002		.00001		002**	
	(1.81)		(0.18)		(1.37)		(0.01)		(2.03)	
Brd_Gend	0.0625***		.2.99***		.008**		.009***		.011***	
	(3.34)		(3.03)		(2.2)		(3.41)		(3.81)	
F-Lead	.9840		1.606		.050		0135		.146	
	(0.28)		(0.33)		(0.07)		(0.26)		(0.26)	
Audit_Q	.8513		.387]		.1110		.182*		.123	
	(1.32)		(1.12)		(0.85)		(1.87)		(1.15)	
AC_NonEX.	.003		.005		004		.002		.0002	
	(0.16)		(0.74)		(0.97)		(0.72)		(0.70)	
AC-INDP	.0001		-0.00786		.00003		.0001		.00002	
	(0.11)		(-0.01)		(0.18)		(0.73)		(0.15)	
GOV_Score		.054**		.030**		.011**		.010***		.002
		(2.78)		(2.99)		(2.63)		(3.39)		(0.89)
Brd_Size	.3723***	.236**	.153***	-.104	.622***	.0277	.061***	.040**	.061***	.064**
	(4.83)	(1.67)	(3.87)	(1.41)	(4.86)	(0.92)	(5.28)	(1.86)	4.79)	(2.68)
DUAL	-1.358	-3.69**	-.361	-1.32*	-.410**	-1.002***	-.273**	-.653**	-.293**	-.709**
	(-1.70)	(-2.50)	(-0.84)	(-1.73)	(-2.57)	(-3.20)	(-2.25)	(-2.91)	(-2.22)	(-2.84)
SIZE	1.798***	-3.69**	.894***	1.72***	.359***	.627***	.2198***	.452***	.326***	.492***
	(4.15)	(-2.50)	(3.85)	(-3.89)	(4.31)	(3.45)	(3.37)	(3.48)	(4.55)	(3.40)
LIQ	.110	.339	.0278	0.145	.052	.049	.0239	0.087	.002	.056
	(.056)	(0.77)	(.27)	(0.63)	(1.45)	(0.53)	(0.81)	(1.31)	(0.07)	(0.75)
Beta	.5198	.608	.4069	.140	.063	.165	.113**	.233	.163**	.350**
	(1.56)	(0.63)	(.88)	(.28)	(0.95)	(0.80)	(2.26)	(1.59)	(2.96)	(2.14)
Sal_Growth	.003*	.0034*	.0019**	.002**	.0007**	.0006*	.0004**	.00004*	.0001	.0002
	(1.83)	(1.94)	(2.14)	(2.18)	(2.32)	(1.75)	(1.96)	(1.80)	(0.60)	(0.94)
ROA	.0001	.009	-0.0001	.004	.0002	.001	.0001	.001	.0008	.0016*
	(.04)	(1.55)	(-0.09)	(1.47)	(.32)	(1.20)	(0.30)	(1.63)	(-.13)	(1.65)
LEV	1.69	-6.723	.812	-4.02*	.356	-.868	.336	-.73	.3172	-1.092
	(.95)	(-1.55)	(0.86)	(-1.78)	(0.98)	(-.94)	(1.25)	(-1.11)	(1.07)	(-1.48)

AR_Length	0.361**	1.889***	0.155**	0.71***	0.34*	2.184***	0.441**	2.44***	0.533**	2.393***
	(2.53)	(6.12)	(2.28)	(4.64)	(1.86)	(5.51)	(2.52)	(6.45)	(2.99)	(6.42)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	10.610 ***	-3.453	5.329***	-2.246	1.216*	-.4532	1.465***	-.581	1.254***	-.172
	(2.90)	(-0.60)	(2.75)	(-.75)	(1.74)	(-.37)	(2.66)	(-0.67)	(2.07)	(-0.18)
Obs.	920	296	934	296	920	296	920	296	920	296
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	20.9%	37.4%	17.8%	37.3%	17.4%	31.5%	19.04%	36.5%	23.8%	34.9%
VIF.	1.265	1.599	1.216	1.588	1.211	1.461	1.235	1.57	1.312	1.537

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

8.3.3. Firm-Level Governance And Risk Disclosure Quantity And Quality In France

Table 8.9 presents the results of the regression analysis for the impact of firm-level governance and French firms' risk disclosure quantity. Table 8.9 indicates a significant association between *Brd_Indep* and the number of business risks at a coefficient of .0045 and a t-value of 1.98 (p-value<0.01), which supports hypothesis Ha1 that the independent board of directors control the management pressure in risk disclosure. The specific components of risk disclosure quantity for French firms (e.g., MR) are also significantly and positively affected by *Brd_Gend*. This result supports Ha2 that board diversity in terms of gender affects the extent of risk disclosure positively. However, Model 9 indicates that there is a significant and positive correlation between the quantity of fluctuation risk disclosure and *F_lead* at a coefficient of 134.148 and t-value of 1.68, which supports Ha3 that females in the top management position motivated management toward an intensive volume of risk disclosure. This result also confirms the theoretical framework (Agency and Resource-dependence theories) that firms with a female chairman/CEO can provide oversight, control and report risks effectively.

On the other hand, Models 4 and 8 confirm that there is a significant and positive relationship between *GOV_Score and total Operational and Management* Risk sub-categories at a p-value<0.05. These results support the research hypothesis H1 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Table 8.9. Multivariate Regression Analysis for Risk Disclosure Quantity (CRD I_Quantity) for French firms

Independent Variables (Model)	Total CRD I_Quantity		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	0.9152		.0045*		1.668		1.2081		1.445	
	(0.67)		(1.98)		(0.85)		(0.79)		(0.94)	
Brd_Gend	.9308		.00218		3.910		4.242**		1.336	
	(0.45)		(0.65)		(1.40)		(1.95)		(0.57)	
F-Lead	102.08		.0192		161.38		105.94		134.14*	
	(1.42)		(0.17)		(1.57)		(00.64)		(1.68)	
Risk_COM	45.653		01103**		61.309		23.861		25.187	
	(1.41)		(2.18)		(1.33)		(0.92)		(0.70)	
Audit_Q	83.3757		.1207		85.372		55.90*		90.920	
	(1.32)		(1.18)		(0.94)		(1.80)		(1.28)	
AC_NonEX.	12.41***		.0248***		20.971***		-.4276		11.61***	
	(4.79)		(5.92)		(5.62)		(-0.43)		(4.00)	
AC-INDP	.1827		.00344*		.8636		.0777*		.990	
	(0.16)		(1.90)		(0.54)		(1.63)		(0.80)	
GOV_Score		1.703		.0058**		3.168		3.220***		.3203
		(1.05)		(2.05)		(1.41)		(3.21)		(0.16)
Brd_Size	13.63	45.289***	-.0174	.0953***	158.868	51.897**	31.00***	3.412	19.527**	53.197***
	(1.57)	(3.28)	(-1.22)	(3.89)	(1.19)	(2.70)	(8.41)	(0.47)	(2.01)	(3.08)
DUAL	-63.37	-284.57	-.0422	-4.3062**	-5.241	-253.88**	-121.14***	-135.54*	-86.800	-270.740**
	(-1.20)	(-3.83)	(-0.49)	(-2.34)	(-0.07)	(-2.46)	(-3.17)	(-1.80)	(-1.47)	(-2.92)
SIZE	18.50	125.35**	.0188	-.0060	-1.386	128.728	147.53***	346.48***	24.77	122.415*
	(.48)	(2.21)	(0.30)	(-0.06)	(-0.03)	(1.63)	(7.15)	(7.96)	(0.58)	(1.73)
LIQ	.60522	1.089	.00196	.00002***	1.8457	3.7055	-8.215	57.844**	-1.211	-.15099
	(0.22)	(0.43)	(0.46)	(10.01)	(0.47)	(1.05)	(-0.88)	(2.58)	(-0.39)	(-0.05)
Beta	69.36	46.793	.00652	.10930	73.541	98.913	26.080*	119.77**	67.22	10.209
	(1.51)	(0.72)	(0.09)	(0.97)	(1.13)	(1.10)	(1.64)	(2.40)	(1.31)	(0.24)
Sal_Growth	.0354	-1.349**	.00009	-.0007	.3802	-1.7307**	.3218***	.2624**	.0487	-1.676**
	(0.15)	(-2.15)	(0.24)	(-0.72)	(1.12)	(-1.99)	(4.02)	(2.87)	(-0.18)	(-2.14)
ROA	-1.480	-3.338**	-.0008	-.0009	-2.4636	-5.150**	.5094**	.9259***	-2.285**	-3.9295**
	(-0.61)	(-2.22)	(-0.57)	(-0.36)	(-1.92)	(-2.48)	(2.82)	(3.03)	(-2.28)	(-2.10)

LEV	-92.10	-504.157*	.05101	-11.588***	-264.741	-971.30**	148.88*	-551.20**	--53.412	-104.114
	(-0.61)	(-1.82)	(0.21)	(-3.27)	(-1.23)	(-2.54)	(1.75)	(-2.48)	(-0.32)	(-0.30)
AR_Length	1.40**	.383	1.08***	.276	1.58**	.114	.083	1.35	2.94***	.618
	(2.89)	(0.22)	(3.72)	(0.36)	(2.36)	(0.06)	(0.15)	(0.69)	(5.03)	(0.28)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-568.14*	-543.54*	2.963***	3.671***	-1148.3**	-396.36	-803.07**	-396.36	-382.03	-554.60
	(-1.83)	(-1.68)	(5.87)	(6.55	(-2.73)	(-0.88)	(-2.36)	(-0.88)	(-1.10)	(-1.37)
Obs.	913	402	823	374	909	401	909	295	909	401
F-statistics Prob	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	10.54%	18.46%	10.35%	18.03%	10.36%	15.88%	9.37%	59.86%	8.82%	16.08%
VIF	1.117	1.226	1.115	1.219	1.115	1.188	1.103	2.491	1.096	1.191

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.10 summarises the relationship between firm-level governance and risk disclosure quality within French firms. Models 1, 3, 5, 7, and 9 in Table 8.10 indicate that there is a positive and significant association between *Brd_Gend* and the quality of the operational risk disclosure for The French firms at p-value < 0.001), which confirm hypothesis Ha1. Also, *F_Lead* positively and significantly influence *Total CRD II_Scale* and its components (e.g. BR, OR, MR, and FR) at a p-value < 0.001), which confirms Ha2, which suggests that females in top management positions in French firms drive the management pressures regarding risk disclosure quality. Furthermore, *t*he results of all models indicate that there is a significant and positive association between Risk_COM, *AC_NonEX, and AC_INDP* and the risks disclosure quality of *CRD II_Scale* and its components for French firms at p-value<0.05. These results confirm hypotheses Ha3 and Ha4 and also support the argument of agency, resource dependence, stakeholders' theories and the previous studies that the existence of a risk committee, female leadership and independent and non-executive AC members are driving the management attitude toward risk discourse quality to exert the agency conflict, support stakeholders confidence to help firms to access to critical resources. However, Audit_Q is positively associated with *Total CRD II_Scale* and its component; this relationship is not significant for French companies.

Models 2, 4, 6, 8, and 9 of Table 8.10 report the impact of the governance score on risk disclosure quality based on CRD II_Scale and its components. It can be concluded that there is a positive and insignificant relationship between *GOV_ Score* and total *CRDI_Quantity*, Business, Operational, Fluctuation, and Management risk sub-categories in France. Thus, these results support the research hypothesis H1 and previous studies. Moreover, concerning the validity of the results, the VIF for each model and the Adj R^2 for each model indicate that there is no multicollinearity among the tested variables.

Table 8.10. Multivariate Regression Analysis for Risk Disclosure Quality (CRD II_Scale) for French firms

Independent Variables (Model)	Total CRD II_Scale		Business Risks-quality		Operational Risks- quality		Management Risks- quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.0001		.0159		.00009		.00003		.00015	
	(0.33)		(0.57)		(0.31)		(0.24)		(0.51)	
Brd_Gend	.0004		.02224		.0014***		.0002		.0004	
	(1.02)		(0.53)		(3.20)		(0.95)		(0.90)	
F-Lead	.0650***		.663		.0720***		.2494***		.0535***	
	(4.06)		(0.46)		(4.46)		(3.00)		(3.36)	
Risk_COM	.0113		1.326**		-.0140*		.0050		.0094	
	(1.57)		(2.03)		(1.94)		(1.36)		(1.31)	
Audit_Q	.0141		1.732		.0041		.0073		.0173	
	(1.00)		(1.36)		(0.29)		(1.00)		(1.14)	
AC_NonEX.	.0017***		.2554***		.00133**		.0014***		.0022***	
	(3.07)		(4.86)		(2.30)		(4.88)		(3.86)	
AC-INDP	.00056**		.0294		.00072 **		.00027**		0.00463	
	(2.26)		(1.31)		(2.89)		(2.11)		(0.20)	
GOV_Score		.0001		.0505		.0002		.0001		.0003
		(0.48)		(1.51)		(0.75)		(0.52)		(0.98)
Brd_Size	.00057	.0109***	.2614	1.242***	.0035*	.0114***	-.00012	.0038**	-.00019	.0132***
	(0.30)	(3.39)	(1.48)	(4.33)	(1.83)	(3.37)	(-0.12)	(2.37)	(0.10)	(4.15)
DUAL	-.0050	-.0422**	-.3057	-4.087**	-.0093	-.0505**	.0085	-.0064	.0069	-.0472**
	(-0.43)	(-2.45)	(-0.29)	(-2.66)	(-0.78)	(-2.77)	(1.39)	(-0.74)	(0.59)	(-2.76)
SIZE	.0035	-.0018	-.2185	.4438	.0032	.0025	-.0002	.00005	-.0038	-.0085
	(0.41)	(-0.14)	(-0.28)	(0.38)	(0.38)	(0.18)	-0.05	(0.01)	(0.44)	(-0.65)
LIQ	.0006	.0003	.0359	.0184	-.00016	-.0002	.0003	.00031	.0008	.0006
	(1.00)	(0.59)	(0.64)	(0.35)	(-0.26)	(-0.43)	(1.07)	(1.03)	(1.31)	(1.07)
Beta	.0046	.0004	.7929	.0310	.0008	.0094	.0016	.0060	.0046	.00346
	(0.46)	(0.03)	(0.85)	(0.02)	(.26)	(0.59)	(0.30)	(0.79)	(0.46)	(0.23)
Sal_Growth	.00006	-.0001	.0014	-.0186	-.00005	.-.0002	.-.00001	.-.00003	.-.00006	-.0002
	(-1.22)	(-1.31)	(0.30)	(1.43)	(-0.97)	(-1.36)	(-0.39)	(-0.53)	(-1.29)	(-1.41)
ROA	-.00047**	.0008**	-.0300*	.0504*	-.0004**	-.0008**	-.00028**	.0005**	-.0004**	-.0007**

	(-2.38)	(2.42)	(-1.65)	(-1.63)	(-2.19)	(-2.25)	(-2.73)	(-2.95)	(-2.30)	(-2.20)
LEV	-.0001	-.008	1.712	-12.004**	.0110	-.0592	-.007	.0128	-.0017	.0385
	(-0.00)	(0.13)	(0.56)	(-2.09)	(0.33)	(-0.87)	(-0.41)	(0.39)	(0.05)	(0.60)
AR_Length	0.133*	.351*	.035*	.037	.121	.368*	.180**	.251	.19**	.89*
	(1.79)	(1.87)	(1.93)	(0.21)	(1.23)	(1.77)	(2.06)	(0.55)	(2.17)	(1.71)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	.0448	.01340	-4.567	.116	-.0406	-.0425	-.0220	-.0011	-.0251	.0140
	(0.65)	(0.18)	(-0.73)	(0.02)	(-0.59)	(-0.53)	(-0.62)	(-0.03)	(-0.37)	(0.19)
Obs.	914	403	914	403	914	403	914	403	914	
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	11.28%	17.01%	10.22%	17.06%	12.69%	14.68%	11.41%	18 %	12.02%	34.96%
VIF	1.127	1.204	1.113	1.205	1.145	1.172	1.128	1.219	1.316	1.537

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.11 reveals that there is a significant and positive relationship between *Risk_COM* and *CRD III_AHP* and its components. These results support hypothesis Ha4 that the existence of a risk management committee directs the management attitude toward disclosing high-quality risk disclosure related to business and operational risk information. In addition, the results indicate that there are positive relationships between *Brd_Indep, Brd_Gend, F-Lead, Audit_Q, and AC-INDP and CRD III_AHP* and support the research hypotheses Ha1, Ha2, Ha3, and Ha4; however, these relationships are not significant within French firms. Other firm control variables are correlated positively with CRD III_quality (AHP), such as Brd_SIZE, SIZE, LIQ, Sal_Growth, and LEV. Moreover, concerning the validity of the results, the VIF and Adj R^2 for each model indicate that there is no multicollinearity among the tested variables.

Models 2, 4, 6, and 8 of Table 8.11 reports the results of the impact of the governance score on risk disclosure quality based on CRD III_quality and its components. It can be concluded that there is a significant and positive relationship between GOV_ Score and Operational and Management risk sub-categories for French firms. Thus, these results support the research hypothesis Ha5 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001) .

Table 8.11. Multivariate Regression Analysis for Risk Disclosure Quality (CRD III_quality- AHP) for French firms

Independent Variables (Model)	Total CRD III_AHP		Business Risks-quality		Operational Risks-quality		Management Risks-quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.015		.012		.0007		0.002		.0009	
	(.57)		(.67)		(0.21)		(0.63)		(0.24)	
Brd_Gend	.022		.004		.004		.0014		.004	
	(0.53)		(0.15)		(0.85)		(0.28)		(0.85)	
F-Lead	.663		.510		-.650		.0223		.197	
	(.46)		(.53)		(-0.35)		(0.12)		(0.99)	
Risk _COM	1.36**		.807*		.164**		.2023**		.1600***	
	(2.03)		(1.86)		(1.99)		(2.31)		(3.96)	
Audit_Q	1.73		1.56*		.0514		.094		014**	
	(1.36)		(1.85)		(0.32)		(0.55)		(6.27)	
AC_NonEX.	.255***		.152***		.042***		.035***		.0014	
	(4.86)		(4.35)		(6.45)		(5.03)		(0.46)	
AC-INDP	.029		.021		.002		.004		.031	
	(1.31)		(1.41)		(0.83)		(1.57)		(0.18)	
GOV_Score		.0505		.026		.006*		.008*		.008*
		(1.51)		(1.21)		(1.61)		(1.94)		(1.71)
Brd_Size	.261	1.24	.121	.6940***	.022*	.147	.059**	.223	.037	.176***
	(1.48)	(4.3)	1.04)	(3.66)	(1.89)	(4.0)	(2.52)	(5.74)	(1.54)	(4.36)
DUAL	-.305	-4.08**	-.708	-3.39***	.313**	.035	.020	-.467**	.1042	-.264
	(-.29)	(-2.66)	(.99)	(3.33)	(2.31)	(0.18)	(0.14)	(-2.24)	(0.71)	(-1.21)
SIZE	-.218	.4438	.193	1.05	-.177*	-.184	-.1446	-.220	-.114	-.206
	(-.28)	(-0,38)	(0.37)	(1.35)	(-1.80)	(-1.23)	(-1.38)	(-1.38)	(-1.07)	(-1.24)
LIQ	.035	.018	.0022	-.004	.009	0.007	.0095	.008	.0103	.006
	(0.64)	(0.35)	(0.08)	(-0.14)	(1.36)	(1.18)	(1.27)	(1.19)	(1.34)	(0.90)
Beta	792	.0310	.541	.330	.027	.061	.090	.104	.179	.256
	(0.85)	(.02)	(0.87)	(0.37)	0.23)	(0.36)	(0.72)	(0.57)	(1.41)	(1.35)
Sal_Growth	1.02**	-.018	.0003	-.0128	.0006	-.0007	.0005	-.002	.0003	-.0024
	(.488)	(-1.43)	(0.11)	(-1.49)	(1.04)	(-0.47)	(0.81)	(-1.40)	(0.47)	(-1.34)
ROA	.001	-.050	-.015	-.031	-.005**	-.008**	-.0053**	-.006	-.004*	-..4
	(0.30)	(-1.63)	(-1.30)	(-1.55)	(-2.20)	(-2.04)	(-2.18	(-1.50)	(-1.72)	(-0.96)

LEV	1.71	-12.0**	2.366	-9.477**	-.250	-.877	-.206	-.781	-.194	-.868
	(0.56)	(-2.09)	(1.17)	(-2.50)	(-0.65)	(-1.20)	(-0.50)	(-1.00)	(-0.47)	(-1.07)
AR_Length	3.4***	2.58***	.74**	.47	4.35***	3.33***	5.65***	4.7***	3.1***	2.04**
	(6.05)	(3.82)	(2.19)	(1.56)	(5.47)	(3.80)	(8.40)	(6.31)	(4.59)	(2.41)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-4.56	.116	-6.185	-4.254	.0093	1.640*	-.197	1.107	1.593*	1.624*
	(-0.73)	(0.02)	(-1.48)	(-0.96)	(0.01)	(1.92)	(-0.24)	(1.22)	(1.85)	(1.71)
										(0.59)
Obs.	914	403	914	403	914	403	914	403	914	403
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	10.2%	17.6%	10.5%	17.6%	11.3%	15.6%	19.3%	18.9%	17.8%	15.18%
VIF.	1.11	1..20	1.117	1.211	1.12	1.184	1.239	1.233	1.216	1.178

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

8.3.4. Firm-level governance and Risk Disclosure Quantity and quality in Italy

Table 8.12 presents the results of the regression analysis for the impact of firm-level governance and Italian firms' risk disclosure quantity. Table 8.9 indicates that there is a significant and positive association between *Brd_Indep* and *CRD I_Quantity, Business, and Operational risk sub-categories* (Model 1, 2, 1nd 3). The specific components of risk disclosure quantity for Italian firms (e.g., MR) are also significantly and positively affected by *Brd_Gend*. These results support hypotheses Ha1 and Ha2 that board diversity in terms of independence and gender affect positively the volume of risk disclosure, which confirms the theoretical framework (Agency and Resource-dependence theories) that firms with a high percentage of independent and female directors can provide oversight, control and report risks effectively. Also, *Risk_COM and Audit_Q* have a positive impact on *CRD I_Quantity;* however, these relationships are not significant within the Italian firms. Models 1, 2, and 3 also indicate that there is a significant and positive correlation between *AC_NonEX and CRD I_Quantity, Business, and Operational risks* at a p-value <0.05.

On the other hand, Models 2, 4, 6, 8 and 10 confirm an insignificant positive relationship between *GOV_Score and total CRD I_Quantity and its components* at a p-value<0.05. These results support the research hypothesis Ha5 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001).

Table 8.12. Multivariate Regression Analysis for Risk Disclosure Quantity (CRD I_Quantity) for Italian firms

Independent Variables (Model)	Total CRD I_Quantity		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.3835**		32.085*		.4958*		.0001		.0010	
	(1.96)		(1.68)		(1.64)		(1.05)		(-0.03)	
Brd_Gend	.3002		13.959		.3378		.0003**		.0128	
	(1.33)		(-0.06)		(0.94)		(2.46)		(0.28)	
F-Lead	3.921		.5297		10.390		.0145**		-2.144	
	(0.46)		(0.06)		(0.78)		(2.92)		(1.25)	
Risk_COM	.7027		4.309		.19679		.0003		1.048	
	(0.12)		(0.73)		(0.02)		(0.10)		(0.86)	
Audit_Q	2.827		3.223		7.0838		-.0048		2.555	
	(0.28)		(0.33)		(0.45)		(-0.82)		(1.24)	
AC_NonEX.	.9541**		.6021*		1.2865**		0.00445		.0434	
	(2.77)		(1.79)		(2.42)		(0.02)		(0.62)	
AC-INDP	.1448		.0943		.2826		.00013*		.0117	
	(1.01)		(0.68)		(1.26)		(1.72)		(0,40)	
GOV_Score		.04019		.3324		.3500		.0001		.2292
		(0.12)		(1.08)		(0.65)		(0.66)		(0.31)
Brd_Size	-1.124	-2.744	-1.1968	-.99322	-18.999	-5.485*	-.0014**	-.0005	-.1144	-.5392
	(-1.04)	(-1.30)	(-1.13)	(-0.52)	(-1.09)	(-1.65)	(-2.23)	(-0.47)	(-0.52)	(-1.18)
DUAL	2.426	-21.231	-5.0969	-35.531**	7.172	-38.805	.0144***	.00519	-.691	-2.275
	(0.39)	(-1.38)	(-0.84)	(-2.52)	(0.72)	(-1.59)	(3.90)	(0.59)	(-0.55)	(-0.68)
SIZE	-2.894	9.527	-2.324	7.7766	-5.4974	18.515	.00312	.0093**	-.99131	.8769
	(-0.70)	(1.38)	(-0.57)	(1.23)	(-0.85)	(1.70)	(1.30)	(2.38)	(-1.18)	(0.58)
LIQ	3.631	2.689	1.1823	-6.2685	6.7432	9.862	-.0045*	-.01439**	.6109	-.1683
	(0.85)	(0.29)	(0.29)	(-0.74)	(1.03)	(0.67)	(-1.86)	(-2.71)	(0.71)	(-0.08)
Beta	3.460	6.549	3.312	29.066*	6.2725	2.317	.0111**	.012979	.8919	1.8329
	(0.47)	(0.40)	(046)	(1.92)	(0.54)	(0.09)	(2.56)	(1.38)	(0.60)	(0.51)
Sal_Growth	.00009	-.0002**	-.00008	-.0001	-.0001	-.0002*	0.0050	0.00034	-0.0029	-0.0067
	(-1.25)	(-2.20)	(-1.07)	(-1.27)	(-1.21)	(-1.62)	(1.09)	(0.66)	(-.19)	(-0.34)

ROA	.0744	-.2502	.1095	2.348**	.22185	-.61337	.00002	0.0035	-.0051	-.0753
	(0.21)	(-0.23)	(0.32)	(2.38)	(0.39)	(-0.36)	(0.10)	(0.01)	(0.07)	(-0.32)
LEV	3.411	-3.697	1.7575	-3.4357	6.7088	12.0399	-.1497 (-	-.0578**	4.555	-3.169
	(0.15)	(-0.09)	(0.08)	(-0.09)	(0.20)	(0.18)	1.17)	(-2.34)	(1.01)	(-0.33)
AR_Length	2.993**	3.552**	0.172	0.666**	3.488**	3.731**	5.501**	5.945**	3.175**	3.842**
	(3.74)	(6.54)	(0.39)	(2.41)	(3.21)	(5.06)	(5.73)	(2.12)	(4.59)	(5.78)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	149.33***	52.60	176.4***	11.36	1633.7***	271.2***	59.2	.0890***	.0603*	19.20**
	(4.44)	(0.95)	(4.12)	(0.22)	(7.31)	(3.69)	(0.68)	(3.38)	(1.92)	(2.16)
Obs.	658	182	658	182	658	182	658	182	658	182
F-statistics Prob	0.084	0.0731	0.0330	0.0635	0.2923	0.3225	0.0000	0.0031	0.8678	0.8091
Adj R2	17.54%	18.05%	16.7%	18.36%	13.98%	14.09%	19.54%	23.87%	13.18%	19.61%
VIF	1.213	1.220	1.20	1.224	1.163	1.164	1.243	1.313	1.152	1.244

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.13 summarises the relationship between firm-level governance and risk disclosure quality within Italian firms. Models 1, 3, 5, 7, and 9 in Table 8.13 indicate that there is a positive relationship between *Brd_Indep* and *Operational Risks- quality with a* coefficient of .0008 and t-test of 2.97, which supports the research hypothesis Ha1 that firms with a high percentage of independent directors are more likely to disclose high-risk information quality. *Also, Brd_Gend positively affected Total CRD II_Scale* at a coefficient of .0003 and t-test of 2.45, which supports the research hypothesis Ha2 that firms with diverse boards in terms of gender are more likely to disclose high-risk information quality.

Furthermore, the results reveal that there are positive and significant associations between *F_Lead, AC_INDP* and *Total CRD II_Scale* and its components (e.g. BR, and MR) for the Italian firms at a p-value < 0.001), which suggests that the existence of females in top management positions and AC independent directors for Italian firms drive the management pressures regarding risk disclosure quality. *Risk_COM,* on the other hand, is significantly and positively associated with risk disclosure quality, particularly Fluctuations Risks-quality at p-value< 0.1, which support hypothesis Ha4 that firms with risk committee seem to disclose high-quality risk information.

Moreover, the results of all models indicate that there is a significant and positive association between *Audit_Q* and the risks disclosure quality (*CRD II_Scale)* and risk components for Italian firms at a p-value<0.05. These results confirm hypotheses Ha3 and Ha4, and also support the argument of agency, resource dependence, stakeholders' theories and the previous studies that the existence of a risk committee, female leadership and independent and non-executive AC members are driving the management attitude toward risk discourse quality to exert the agency conflict, support stakeholders confidence to help firms to access to critical

resources. On the other hand, *Brd_Indep and Brd_Gend significantly and positively affect the quality of Management and Operational risk sub-categorise*

Models 2, 4, 6, 8, and 9 of Table 8.10 report the impact of the governance score on risk disclosure quality based on CRD II_Scale and its components. It can be concluded that there are an insignificant and positive relationship between *GOV_ Score* and total *CRDI_Quantity*, Business, Operational, Fluctuation, and Management risk sub-categories. Thus, these results support the research hypothesis Ha5 and previous studies. Moreover, concerning the validity of the results, the VIF for each model and The Adj R^2 for each model indicate that there is not any multicollinearity among the tested variables.

Table 8.13. Multivariate Regression Analysis for Risk Disclosure Quality (CRD II_Scale) for Italian firms

Independent Variables (Model)	Total CRD II_Scale		Business Risks-quality		Operational Risks- quality		Management Risks- quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.00004		.01388		.0008**		.0001		.00001	
	(0.40)		(1.10)		(2.97)		(1.05)		(0.21)	
Brd_Gend	.0003**		.0036		.0009**		.0001		.00006	
	(2.46)		(.25)		(2.67)		(1.22)		(0.60)	
F-Lead	.0119**		.0133**		.01341		.0145**		.-.0015	
	(2.44)		(2.42)		(1.07)		(2.92)		(-0.41)	
Risk_COM	.0006		.0006		-.0130		.00036		.004*	
	(.0034)		(0.18)		(-1.45)		(0.10)		(1.69)	
Audit_Q	.0098*		.0022		.044***		.0048		.003	
	(1.69)		(0.34)		(3.00)		(0.82)		(0.74)	
AC_NonEX.	.00009		.0002		-0007		0.0044		.0001	
	(0.47)		(0.97)		(1.51)		(0.02)		(0.77)	
AC-INDP	.00023**		.0002**		.0004**		.0001*		.0001**	
	(2.79)		(2.41)		(2.15)		(1.72)		(2.23)	
GOV_Score		.00003		.00037		.0004		.0001		.00008
		(0.19)		(1.50)		(1.19)		(0.66)		(0.57)
Brd_Size	-.0011*	-.0015	-.0005	-.0014	-.0011	-.0023	-.00014**	-.0005	-.0004	-.0017*
	(-1.86)	(-1.32)	(-.81)	(-0.94)	(-.74)	(-0.99)	(-2.23)	(-0.47)	(-0.96)	(-1.90)
DUAL	.0022	.00732	.0049	.0015	-.0114	.0248	.0144***	.00519	-.003	-.0023
	(0.62)	(0.87)	(1.24)	(0.13)	(-1.24)	(1.45)	(3.90)	(0.59)	(-1.23)	(-0.35)
SIZE	.0075***	-.0047	.001	-.0008	.02866***	.0047	-.0031	.009**	.009***	.0058**
	(3.15)	(1.27)	(0.53)	(0.16)	(4.74)	(0.63)	1.30	(2.38)	(5.04)	(1.97)
LIQ	-.006**	-.0088*	-.00494*	-.0104	-.0015	-.0071	-.004*	-.0143**	-.003*	-.0033
	(-2.54)	(-1.74)	(-1.80)	(-1.51)	(-0.25)	(-0.69)	(-1.86)	(-2.71)	(-1.81)	(-0.83)
Beta	.0164***	.0065	0111**	.0310	.0355***	.0023	.011**	.0129	.011***	.001
	(3.88)	(0.72)	(2.34)	(1.51)	(3.24)	(0.13)	(2.56)	(1.38)	(3.50)	(0.19)
Sal_Growth	0.00129**	0.0012**	0.00316	.0169	0.0047 ***	0.0042***	0.00505***	0.0034	0.00126	0.00320
	(2.91)	(2.54)	(0.63)	(1.38)	(4.28)	(4.20)	(1.09)	(0.01)	(0.35)	(0.01)
ROA	-.0001	-.0012**	-.00005	-0089	-.0007	-.0026**	.00002	0.00351	-.00009	-.001***
	(-0.54)	(-2.11)	(-0.25)	(-1.12)	(-1.51)	(-2.19)	(0.19)	(0.01)	(-0.61)	(-3.11)

LEV	-.059***	-.074***	-.030**	-.063**	.-.1452***	-.107**	-.147	-.578**	-.062***	-.069***
	(-4.61)	(3.14)	(2.10)	(-1.97)	(-4.51)	(-2.22)	(-1.17)	(-2.34)	(-6.09)	(-3.73)
AR_Length	0.3**	0.226*	0.042*	0.03	0.394**	0.149	0.339**	0.231**	0.035	0.796**
	(2.23)	(1.71)	(1.63)	(0.19)	(2.23)	(0.35)	(2.08)	(2.61)	(0.4)	(2.05)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	.058**	.067**	.052*	.1313***	.110*	.0538	.089	.060*	.011	.023
	(2.30)	(2.22)	(1.86)	(3.20)	(1.66))	(.88)	(3.38)	(1.92)	(0.56)	(0.98)
Obs.	658	182	658	182	658	182	658	182	658	182
F-statistics Prob	0.0000	0.0000	0.0000	0.0149	0.0000	0.0000	0.0000	0.0031	0.0000	0.0000
Adj R2	27.27%	21.23%	13%	21.23%	18.45%	58.03%	19.5%	23.87 %	37.09%	55.18%
VIF	1.374	1.706	1.149	1.269	1.183	2.382	1.105	1.313	1.589	2.231

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Table 8.14 reveals that there is a significant and positive impact of *Brd_Indep* on Fluctuation *CRD III_AHP*. These results support hypothesis Ha1 that independent directors direct the management attitude toward disclosing high-quality risk disclosure related to fluctuating risk information. Also, *Brd_Gend* significantly and positively directs the quality of risk disclosures (Model 1 and 3). In addition, concerning the validity of the results, the VIF and Adj R^2 for each model indicate that there is no multicollinearity among the tested variables. Also, the results support the role of female leadership and risk committee on risk disclosure quality, where there are positive relationships between F_Lead, Risk _COM, and *Total CRD III_quality (AHP);* however, these relations are not significant.

Models 2, 4, 6, and 8 of Table 8.14 reports the results of the impact of the governance score on risk disclosure quality based on CRD III_quality and its components. It can be concluded that there is an insignificant and positive relationship between GOV_ Score and Operational and Management risk sub-categories for French firms. Thus, these results support the research hypothesis H1 as well as previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001) .

Table 8.14. Multivariate Regression Analysis for Risk Disclosure Quality (CRD III_quality- AHP) for Italian firms

Independent Variables (Model)	Total CRD III_AHP		Business Risks-quality		Operational Risks-quality		Management Risks-quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.0063		.532		.002		.0008		.001*	
	(0.51)		(.69)		(0.43)		(0.58)		(1.84)	
Brd_Gend	.024*		.489		.015**		.0002		.0009	
	(1.67)		(0.55)		(1.97)		(0.18)		(0.87)	
F-Lead	.267		.100		.452		004		.005	
	(0.48)		(0.30)		(1.55)		(.7)		(0.12)	
Risk _COM	.376		.263		.53		.006		.011	
	(0.97)		(1.11)		(0.25)		(.16)		(0.40)	
Audit_Q	.883		.56		.001		.053		.030	
	(1.33)		(1.42)		(0.00)		(.73)		(0.61)	
AC_NonEX.	.077***		.038**		.024**		.002		.001	
	(3.42)		(2.83)		(2.10)		(0.82)		(.87)	
AC-INDP	.0008		.008		.006		.0005		.0002	
	(0.09)		(1.44)		(1.37)		(.55)		(0.36)	
GOV_Score		-.023		-.004		-.161		-.004		.0003
		(-1.07)		(-0.31)		(-1.37)		(-1.70)		(0.23)
Brd_Size	-.027	.001	-.064	-.0471	0172	.062	-.005	-.021	-.00005	-.0006
	(-0.39)	(0.01)	(-1.51)	(-0.57)	(0.45)	(0.85)	(-.73)	(-1.33)	(-0.01)	(-0.07)
DUAL	-.386	1.17	-.0281	.43	-.301	.837	.-95**	-.143*	-.051*	.024
	(-0.94)	(1.15)	(-0.11)	(0.71)	(-1.38)	(1.55)	(2.08)	(-1.9)	(-1.65)	(0.34)
SIZE	.210	.163	.147	.041	-.103	-.008	-.001	.110**	-.010	.310
	(0.81)	(0.36)	(0.90)	(0.15)	(-0.73)	(-0.04)	-.04	(2.24)	(-0.53)	(0.95)
LIQ	.256	-.660	.357**	-.189	-.188	-.395	.0119	-.050	.0021	-.017
	(.92)	(-1.08)	(2.14)	(-0.52)	(-1.31)	(-1.21)	(0.39)	(-.76)	(0.10)	(-0.40)
Beta	.214	1.35	.192	1.12*	.130	.052	.055	.150	.022	.0400
	(0.45)	(1.24)	(0.66)	(1.74)	(0.51)	(0.09)	(1.03)	(1.27)	(0.60)	(0.51)
Sal_Growth	0.00315	-0.00110	0.00118	0.00408	0.00290	-0.00748	-0.00164	-0.00142	0.00624*	0.00458
	(.61)	(-0.02)	(0.60)	(0.11)	(0.11)	(-0.24)	(-0.29)	(-0.22)	(1.62)	(1.05)
ROA	.00002	.098	.0065	-0.553	-.003	.022	.0010	.011	.0005	.004
	(0.00)	(1.39)	(0.47)	(1.42)	(-0.25)	(0.61)	(0.39)	(1.55)	(0.33)	(0.85)

LEV	-2.04	.458	.854	2.38	-2.72 ***	-2.38	.428**	.613**	-.335***	-.231
	(-1.41)	(0.16)	(0.98)	(1.40)	(-3.64)	(-1.57)	(2,70)	(1.97)	(-3.03)	(-1.12)
AR_Length	.0008**	0.003	.001***	0.164**	.0001	0.002	.004***	0.003	.0004**	0.007**
	(2.37)	(1.91)	(3.16)	(2.24)	(1.33)	(0.36)	(3.97)	(1.77)	(2.66)	(3.16)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	17.62***	4.26	9.37***	3.18	5.89***	.012	1.62***	1.17**	.569**	-.055
	(7.01)	(1.17)	(5.43)	(1.47)	(3.65)	(0.01)	(4.97)	(2.97)	(2.60)	(-0.21)
Obs.	658	182	658	182	658	182	658	182	658	182
F-statistics Prob	0.0098	0.0407	0.0859	0.1309	0.0040	0.0602	0.8229	0.0970	0.2256	0.2142
Adj R2	15.8%	19.3%	16.03%	16.6%	16.7%	30%	19.97%	17.4%	15.2%	15.3%
VIF.	1.87	1.239	1.19	1.20	1.20	1.9	1.25	1.21	1.18	1.18

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

8.4. Multivariate Regression Analysis for the Impact of Ownership Structure on Risk Disclosure within and between Firms in the UK, Germany, France, and Italy

In this section, we present the results of the regression models for the relationship between ownership structure and risk disclosure quantity and quality in the UK, Germany, France, and Italy. Panel A. of Table 8.15 presents the regression analysis results of the relationship between ownership structure and risk disclosure quantity based on *CRDI_Quantity* index for the UK, Germany, France, and Italy. It can be seen that *CON_OWM* in the UK and French firms (Model 1 and 5) is significantly and negatively associated with *CRDI_Quantity* with coefficients of -.165 and -.0007, respectively, and t-value of -1.81 and -2.96, respectively (p-value<0.05), which suggests that firms with high *CON_OWM* seem to do not change their risk disclosure levels and risk components over time.

This result confirms hypothesis Hb1 and agency theory; the need for public accountability through disclosure tends to be less in closely held firms due to low outsider interests and an increase in public firms (Khan et al., 2013).

Also, *FOR_OWN* (Model 2, 4, and 6) is significantly and positively associated with *CRDI_Quantity* for the UK, German, and French firms with coefficients of .0004, 0.003, and .004 and t-value of 2.65, 2.19, and 1.65 (p-value<0.05). Similarly, *INS_OWN* is significantly and positively associated with *CRDI_Quantity* for the UK, German, and French firms with coefficients of .0089, 0.0010, and .0005 and t-value of 2.88, 2.20, and 1.67 (p-value<0.05).

Nevertheless, the *MAN_OWM* for the UK, French, and Italian firms are significant and negative in association with *CRD I_Quantity* with coefficients of -0.001, -0.007, and -42.63, respectively, and t-values of -2.74, -2.56 and -2.04, respectively (p-value <0.05). Conversely, *GOV_OWN* is positively associated with total risk disclosure quantity for French firms with

coefficients of -0.002 and a t-value of -4.93 (p-value<0.05). These results support the research hypotheses Hb3, Hb2, and Hb5 and approve the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012). Also, the VIF values indicate that there is no potential multicollinearity in the empirical model.

Panel B of Table 8.14 indicates that there is a significant association between *CON_OWM* for the UK, German, and French firms (Model 1, 3, and 5) is significantly and negatively associated with *CRD II_Scale* with coefficients of -.218, -.77 and -23.21, respectively, and t-value of -8.26, -8.9, and -2.82, respectively (p-value<0.001).which suggests that firms with high *CON_OWM* are less likely to disclose the high quality of risk information over time. This finding supports the agency theory that *CON_OWN* diminishes agency conflicts by acting as a substitute for other corporate governance mechanisms. The general assembly is likely to motivate management toward engaging in high levels of risk disclosure in order to improve the decisions for shareholders. Similarly, *MAN_OWN* is negatively correlated with *CRD II_Scale* in the UK and Italy, with the coefficients of -36.73 and -42.63, respectively, which support hypothesis Hb5 that firms with a high percentage of management ownership seem to disclose less quality information related to risk issues. In addition, p-value of -2.05 and -2.04 respectively (p-value < 0.05). Conversely, *FOR_OWN* and *INS_OWN* are associated positively with *CRD II_Scale* p-value <0.05, which is in line with hypotheses Hb2 and Hb4.

Panel C. of Table 8.14 indicates that there are a significant association between *CON_OWM* in the UK, French and Italian firms (Models 1 and 5) is significantly and negatively associated with *CRD III_AHP* with coefficients of -.165 and -.0007, respectively, and t-value of -1.81 and --2.96, respectively (p-value<0.05), which suggests that firms with high *CON_OWM* are less likely to disclose the high quality of risk disclosure and change their risk disclosure levels increase over time. Also, *FOR_OWN* in Model 2 of the UK firms is significantly and positively

associated with *CRD III_AHP* with coefficients of .44 and a t-value of 3.73 (p-value<0.001). However, in Italy, FOR_OWN is significantly and negatively associated with *CRD III_AHP* with coefficients of -.0127 and a t-value of -1.93 (p-value <0.1). Furthermore, INS_OWN of the German firms (Model 4) is significantly and positively associated with CRD III_AHP with coefficients of .099 and a t-value of 2.6 (p-value<0.05). Conversely, *MAN_OWN* is negatively associated with *CRD III_AHP* for the UK and French firms with coefficients of -0.273 and -.073 and t-value of -2.01 and -3.67 (p-value<0.05). These results support the research hypotheses Hb1, Hb2, Hb4, and Hb5 and approve the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012). Also, the VIF values indicate that there is not any potential multicollinearity in the empirical model.

Table 8.15. Multivariate Regression Analysis for the effect of Ownership Structure and Risk Disclosure

Panel A. Risk Disclosure Quantity

Independent Variables (Model)	UK		German		France		Italy	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Ownership Structure								
CON_OWM	-.0165*		-.0001		-.0007**		-.00002	
	(-1.81)		(-0.86)		(-2.96)		(-0.35)	
MAN_OWN		-.001**		-.002**		-.007**		-42.63**
		(-2.74)		(-2.14)		(-2.56)		(-2.04)
FOR_OWN		.0004**		.00003		.0004*		.0004*
		(2.65)		(0.19)		(1.65)		(1.91)
GOV_OWN		.0000		.0010		.002***		.186
		(0.06)		(0.97)		(4.93)		(1.03)
INS_OWN		.00089***		.0010***		.0005*		3.36
		(2.88)		(2.20)		(1.67)		(0.06)
Brd_Size	.00089	.0012***	.0043***	.0045***	.0029	.003**	.0006	70.421**
	(0.65)	(2.88)	(4.91)	(5.03)	(1.57)	(2.05)	(1.09)	(2.36)
DUAL	-.003	-.006	-.016*	-.0173	-.122	-.015	.004	13.177
	(-.47)	(-0.95)	(1.72)	(01.7*7)	(-1.02)	(-1.32)	(1.35)	(1.39)
SIZE	.020***	.0211***	.027***	.028***	-.006	-.0048	.0063**	-1.814
	(4.67)	(4.75)	(5.23)	(5.45)	(-0.77)	(-0.59)	(2.87)	(-1.2)
LIQ	.0036**	.0332**	.0005	0.0006	.00034	.0003	-.0079***	0.011
	(2.69)	(2.37)	(0.24)	(0.28)	(0.55)	(0.52)	(-3.76)	(0.502)
Beta	.0022	.002	.008**	.0076**	.0036	.0014	.016***	70.421**
	(0.73)	(0.85)	(2.03)	(1.83)	-0.35)	(0.14)	(3.76)	(2.36)
Sal_Growth	-.0002	-.00024	.00003	.00003	-.00006*	-.00003	0.00120**	13.177
	(-0.92)	(-0.90)	(1.47)	(1.50)	(-1.84)	(-0.62)	(-2.64)	(1.39)
ROA	-.0004**	-.0002	0.00546	.00001	-.0003*	-.0003	-.0002	-1.814
	(-2.31)	(-0.90)	(0.11)	(0.23)	(-1.84)	(-1.52)	(-1.07)	(-1.2)
LEV	-.0026	-.0037	020	.0200	.004	.0024	-.0504***	85.422

	(-0.20)	(-0.28)	(0.94)	(0.90)	(0.12)	(0.07)	(-3.76)	(0)
AR_Length	0.002**	0.061***	0.075***	0.002**	0.002**	0.002***	0.002***	0.006***
	(3.52)	(4.76)	(3.13)	(2.86)	(2.08)	(3.44)	(3.96)	(3.17)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	-752.72***	-618.38***	-360.11***	-363.01	530.63**	738.85***	101.60***	115.95***
	(-7.55)	(-6.84)	(-3.16)	(0.72)	(2.22)	(3.06)	(3.11)	(3.60)
Obs.	1546	1546	915	915	899	899	615	606
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
Adj R2	15.8%	16.64%	22.9%	23.4%	17.5%	10.3%	25.4%	26.25%
VIF	1.18	1.199	1.298	1.305	1.21	1.114	1.34	1.355

Panel B. Risk Disclosure Quality II

Independent Variables (Model)	UK		German		France		Italy	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Ownership Structure								
CON_OWM	-0.218**		-0.77**		-23.21**		-85.422	
	(-8.260)		(8.98)		(-2.82)		(-0.002)	
MAN_OWN		-36.73**		-14.349		-36.89**		-42.63**
		(-2.05)		(-1.42)		(-2.51)		(-2.04)
FOR_OWN		.0003*		.0001***		.0003		.0004
		(1.97)		(0.64)		(0.81)		(1.01)
GOV_OWN		.132		.0413		.134		.186
		(0.86)		(0.53)		(0.66)		(1.03)
INS_OWN		.657**		18.83*		16.71***		3.36**
		(2.01)		(1.81)		(3.28)		(2.06)
Brd_Size	16.74***	68.287**	9.432**	32.502**	29.63***	95.984**	12.11***	70.421**
	(1.677)	(2.68)	(9.25)	(4.21)	(12.76)	(4.08)	(6.22)	(2.36)
DUAL	1.02**	9.35	1.003***	2.082	1.16*	3.515	-.420	13.177
	(.488)	(1.19)	(3.40)	(0.88)	(1.72)	(0.47)	(-0.74)	(1.39)
SIZE	-.110	-1.595	-0.02	-0.553	-.093	-1.327	0.2482	-1.814
	(.072)	(-1.25)	(0.47)	(-1.44)	(-0.97)	(-1.11)		(-1.2)
LIQ	.0118***	0.009	.0022**	0.002	.012***	0.008	.016***	0.011
	(.0019)	(0.556)	(2.20)	(0.82)	(4.85)	(0.484)	(7.09)	(0.502)

Beta	16.74***	68.287**	9.432**	32.502**	29.63***	95.984**	12.11***	70.421**
	(1.677)	(2.68)	(9.25)	(4.21)	(12.76)	(4.08)	-6.22)	(2.36)
Sal_Growth	1.02**	9.35	1.003***	2.082	1.16*	3.515	-.420	13.177
	(.488)	(1.19)	(3.40)	(0.88)	(1.72)	(0.47)	(-0.74)	(1.39)
ROA	-.110	-1.595	-0.02	-0.553	-.093	-1.327	0.2482	-1.814
	(.072)	(-1.25)	(0.47)	(-1.44)	(-0.97)	(-1.11)	(.549)	(-1.2)
LEV	10.79*	0.218**	3.632	0.77**	23.21**	-1.137	6.37	85.422
	(6.247)	(80.260)	(1.16)	(-8.98)	(2.82)	(0)	(0.87)	(0)
AR_Length	.0002**	0.001	.0000	0.005	.0007***	0.001	.0001***	0.137*
	(2.78)	(0.79)	(1.60)	(0.43)	(3.84)	(1.11)	(4.40)	(1.89)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	0207***	.217***	.095**	.939**	.260***	.287***	.0816***	.0777***
	(8.09)	(9.20)	(2.59)	(2.42)	(4.78)	(5.26)	(4.24)	(4.10)
Obs.	1546	1546	915	915	899	899	615	606
F-statistics Prob	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Adj R2	20.1%	40%	13.25%	50%	21.3%	30%	19.03%	30%
VIF	1.002	1.7	1.0013	1.8	1.0021	1.9	1.0019	1.9

Panel C. Risk Disclosure Quality III

Independent Variables (Model)	UK		German		France		Italy	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Ownership Structure								
CON_OWM	-.0171**		-.0039		-.0681***		-.0219**	
	(-1.98)		(-0.39)		(-3.19)		(-2.34)	
MAN_OWN		-.0273**		-.0079		-.073***		-.011
		(-2.01)		(-0.72)		(-3.67)		(-1.52)
FOR_OWN		.044***		.0018		.0023		.0217*
		(3.73)		(0.13)		(0.08)		(1.93)
GOV_OWN		.0213		.073		.113**		.0123
		(1.15)		(0.71)		(2.10)		(0.88)
INS_OWN		.145**		.099**		.067		.020
		(2.07)		(2.60)		(0.88)		(0.67)
Brd_Size	.0855	.102	.315***	.336***	.4677**	.488**	-.102	--.092

	(0.96)	(1.14)	(4.58)	(4.78)	(-2.75)	(2.83)	(-1.45)	(-1.30)
DUAL	.4988	.244	-.949	-.969	-.593	-.9325	-.8195	-.662*
	1.10	(0.54)	(-1.24)	(-1.27)	(0.55)	(0.87)	(-2.01)	(-1.61)
SIZE	1.560***	1.548***	1.99***	2.07***	-.346	-.285	-.1152	-.100
	(5.43)	(5.41)	(4.92)	(5.14)	(-0..47)	(-0.38)	(-0.46)	(-0.40)
LIQ	.2410**	.229**	0077	.099	.0291	.0221	.2744	.299
	(2.78)	(2.64)	(0.41)	(0.51)	(0.53)	(0.40)	(0.96)	(1.04)
Beta	.3021	.376**	.426	.3667	.372	.222	.4172	.582
	(1.50)	(2.68)	(1.31)	(0.82)	(0.04)	(0.24)	(0.83)	(1.14)
Sal_Growth	-.0076	-.009	.0032*	.003	.0009	.002	0.00304	0.00370
	(-0.43)	(-.55)	(1.94)	(1.95)	(0.19)	(0.41)	(0.59)	(0.72)
ROA	-.031**	-.0292**	.0001	.0006	-.029*	-.024	.0046	.0049
	(-2.63)	(-2.46)	(0.04)	(0.18)	(-1.64)	(-1.37)	(0.20)	(0.21)
LEV	.299	.292	1.55	1.43	1.993	1.855	-2.042	-2.016
	(0.35)	(0.35)	(0.89)	(.82)	(0.64)	(0.60)	(-1.35)	(-1.33)
AR_Length	.0008**	0.003	.001	0.001	.0001*	0.001	.0002***	0001***
	(2.77)	(0.79)	(1.32)	(0.06)	(1.61)	(1.18)	(3.84)	(4.42)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	15.83***	16.87***	9.05***	8.566**	1633.7***	19.73***	22.47***	11.81***
	(9.61)	(11.10)	(3.15)	(2.82)	(7.31)	(4.05)	(4.54)	(5.46)
Obs.	1546	1546	915	915	899	899	615	606
F-statistics Prob	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0588	0.0484
Adj R2	14.7%	15.8%	20.90%	21.5%	17.4%	18.3%	15.7%	16.3%
VIF	1.172	1.187	1.264	1.274	1.21	1.22	1.186	1.19

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

8.5. Discussion and summary

This chapter aims to analyse the determinants of the risk disclosure quantity and quality through investigating the relationship between firm-level governance mechanisms, ownership structure, and risk disclosure within the UK, Germany, France, and Italy. The empirical results indicated that there is a significant association between Brd_Indep, Brd_Gend and risk disclosure quantity and quality, which indicates that any increment in independent and female directors will cause other increases in total risk quantity and quality. These results support the first and second research hypotheses Ha1 and Ha2 that firms with a high percentage of independent and female directors may disclose more high-quality risk information.

Consequently, the results provide practical evidence to support the arguments of the agency theory that independent directors are an important requirement of CG to promote the interests of other stakeholders in risk disclosure. Independent directors are more likely to be independent in their opinions. They can give objective and beneficial thoughts, which are more likely to mitigate agency conflicts between principals and agents (Elshandidy & Neri, 2015 Elamer et al., 2019, Elamer, Ntim, and Abdou, 2020; Mcchlery & Hussainey, 2021; Isiaka, 2021; Adelopo et al., 2021), and respond to owners' and other stakeholders' concerns about risk disclosure (stakeholder theory). Furthermore, gender diversity on the board of directors can improve board independence and managerial ability of directors (Cabedo & Tirado, 2004; Elzahar & Hussainey, 2012; Mcchlery & Hussainey, 2021; Isiaka, 2021; Adelopo et al., 2021; Hao & Dong; 2022) on one side, and enhance the relationships with stakeholders, on the other side (Amran et al., 2009; Donaldson & Preston, 1995; Adelopo et al., 2021; Abdallah & Eltamboly, 2022), and gains critical resources such as finance and contracts (resource-dependence theory). This necessitates enhancing corporate legitimacy and reputation by motivating management to disclose adequate levels of risk disclosure (institutional theory and legitimacy theory).

Furthermore, F_Lead is significantly and positively associated with risk disclosure quantity and quality, which confirms hypotheses Ha3 and supports the argument of agency, resource dependence, stakeholders' theories and the previous studies that the controlling-ability of a board of directors requires diversity in knowledge, experience, and gender, which may reduce the agency conflicts, information asymmetry and provide more information about risk preferences of EU mangers and support firms to gain access to the critical resources (Hillman & Dalziel, 2003; Jia, 2019; Elamer, Ntim, and Abdou, 2020).

Similarly, the results reveal that Risk_COM significantly and positively affects risk disclosure quantity and quality within and between EU firms, which supports the research hypothesis Ha4 and the arguments of the agency, resource dependence, and stakeholders' theories that firms with risk committee may give specialised insight in terms of risk disclosure and management, which results in a reduction in information asymmetry and subsequently reduces any risks associated with investors' devaluation of the firm and agency costs (Jensen and Meckling, 1976; Subramanian et al., 2009; Ishak & Yusof, 2020; Jia et al., 2019; Isiaka, 2021; Nahar & Jahan, 2021). Also, helps stakeholders to obtain sufficient information about risk and make better risk management decisions (Karamanou & Vafeas, 2005; Pirson &Turnbull, 2011; Jia et al., 2019; Elamer et al., 2019; Hao & Dong; 2022).

Audit_Q also is significantly and positively associated with risk disclosure quantity and quality, which confirms hypotheses Ha5 and coincides with the explanation of the agency theory and the prior studies (Mokhtar & Mellett, 2013; Abdel-Fattah, 2008; Nahar & Jahan, 2021; Bozzolan & Miihkinen, 2021) that major auditors are more likely to provide the best services in auditing and insurance, which contributes to high-quality disclosure. Also, big audit firms force their clients to comply with accountability standards, require them to adhere to mandatory disclosure rules, and persuade them to disclose additional information on audit forms

voluntarily, and mandatory risk disclosure is positively interlinked and adversely linked with risk disclosure.

There is a significant and positive relationship between GOV_ Score and risk disclosure quantity and quality for EU firms, which supports hypothesis H1 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms. Firms with strong governance are more likely to disclose more and higher quality information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001) .

CON_OWM is significantly and negatively associated with *CRD I_Quantity*, *CRD II_Scale*, and *CRD III_AHP*, which suggests that firms with high *CON_OWM* are less likely to disclose high quantity and quality of risk information over time. These results support the research hypothesis H2a and approve the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012; Elamer et al., 2019; Abdallah & Eltamboly, 2022). These results are also in line with the agency theory perspective, which suggests that the concentrated ownership is likely to motivate management to engage in low levels of risk disclosure in order to keep the internal information about firms' threats secrete.

INS_OWN and FOR_OWN are positively associated with risk disclosure quantity and quality, which support hypotheses Hb2 and Hb4, and appear to be in line with the stakeholder and institutional theory, which suggests that companies with a high percentage of institutional and governmental ownership will actively seek to win government and institutions support as a powerful stakeholder (Freeman, 1984; Freeman & Reed, 1983; Gray et al., 1995; Salem, Ayadi, and K. Hussainey, 2019) by complying with the governance codes, social rules (DiMaggio & Powell, 1983; Scott, 1987) and informative risk disclosure that may help in legitimising their

operations (Branco & Rodrigues, 2006; Pfeffer & Salancik, 1978). These results also support the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020) that institutional owners are similar to other shareholders in motivating and push management toward the high quality and extent of risk disclosure.

Therefore, the main findings of INS_OWN appear to be in line with the stakeholder theory, which suggests that institutional ownership is more similar to other shareholders because the institutional investors are more interested in risk disclosure, particularly risk information (Elamer, Ntim, and Abdou, 2020).

All in all, the empirical results support the research hypotheses H1 and H2 and approve the explanations of the multi-theoretical framework, particularly agency, institutional and resource dependence theory, which also supports the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012; Neifara & Jarboui, 2018; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020; Mbithi, Wang'ombe, and Moloi, 2020; Isiaka, 2021; Nahar & Jahan, 2021; Hao & Dong; 2022), that firm-level governance and ownership structure drive the differences in risk disclosure quantity and quality within the UK, German, French, and Italian firms. Table 8.16 summarises the results of the main hypotheses under each model.

Table 8.16. Summary of hypothesis test results for all risk disclosure indices

Prior studies			Expected Sign	Research hypotheses		Results	
CRD quality		CRD Quantity					
AHP	Scale						
Firm-level governance							
+/-	+/-	+/-	+	Ha1	Independent directors	A	+
+/-	+/-	+/-	+	Ha2	Gender diversity	A	+
?	?	+/-	+	Ha3	Female leadership	A	+
+/-	+/-	+/-	+	Ha4	Risk management committee	A	+
+/-	+/-	+/-	+	Ha5	Audit quality	A	+
+	+	+	+	H1	Governance score	A	+
?	?	?	+	Hb1	Concentrated ownership	A	-
?	?	?	+	Hb2	Management ownership	A	-
+/-	+/-	+/-	+	Hb3	Institutional ownership	A	+
+/-	+/-	+/-	+	Hb4	Foreign ownership	A	+
+/-	+/-	+/-	+	Hb5	Government ownership	R	+

A means that the hypothesis is accepted, R means the hypothesis is rejected with and without a significant relationship, + means positive association, - means negative association, +/- means mixed result, and ? Means that to the best of the researcher's knowledge, the relationship was not studied before.

8.6. Robustness tests

We have conducted a number of additional analyses to determine the robustness of findings. First, to address potential endogeneity concerns, we estimate a lagged CRD–CG structure (e.g., Ntim et al., 2013; Elamer et al., 2019; Salem, Ayadi, and K. Hussainey, 2019; Isiaka, 2021; Nahar & Jahan, 2021). In lagged models, in which all variables are the same as in main models, except that we include a one-year lag between CRD and CG such that the current year's CRD depends on the previous year's firm-level governance and ownership structure. The results (un-tabulated) are generally consistent with the main results presented in the current chapter, implying that this evidence is robust to estimating a lagged CRD-CG nexus.

Moreover, following prior studies (Ntim et al., 2013; Salem, Ayadi, and K. Hussainey, 2019; Elamer, Ntim, and Abdou, 2020), we address potential endogeneities that may be caused by omitted variables by estimating two-stage least squares (2SLS). In the first stage, we conjecture that based on extensive theoretical and empirical literature (Elamer et al., 2021), CG will be

determined by all control variables. We then use the predicted values estimated from a CG model as instruments. In the second stage, we utilise the instrumented variables of CG and rerun the model using Equations 1-3 presented in Chapter 4, as follows:

$$CRD_{it} = \alpha_0 + \hat{\beta}_1 Brd\_Indep_{it} + \hat{\beta}_2 Brd\_Gend_{it} + \hat{\beta}_3 F\_Lead_{it} + \hat{\beta}_4 Risk\_COM_{it} + \hat{\beta}_5 Audit\_Q_{it} + \sum_{i=1}^{n} \beta_i \ CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (6)$$

$$CRD_{it} = \alpha_0 + \hat{\beta}_1 Gov\_Score_{it} + \sum_{i=1}^{n} \beta_i \ CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (7)$$

$$CRD_{it} = \alpha_0 + \hat{\beta}_1 CON\_OWN_{it} + \hat{\beta}_2 MAN\_OWN_{it} + \hat{\beta}_3 FOR\_OWN_{it} + \hat{\beta}_4 GOV\_OWN_{it} + \hat{\beta}_4 INS_{OWNit} + \sum_{i=1}^{n} \beta_i \ CONTROLS_{it} + \delta_{it} + \varepsilon_{it} \quad (8)$$

As stated in Equations 1-3, in Chapter 4, , nothing changes in Equation 6-8, other than that we use the predicted values from the first-stage estimation as instruments for the CG variables. The results (un-tabulated) are qualitatively similar to the main results in this chapter, indicating that the results are robust to potential endogeneity that may result from omitted variables. robust to potential endogeneities that may arise from omitted variables. Also, the slight difference in the magnitude of the governance (CG) variables coefficients is generally consistent with previous evidence that instrumented parts of governance (CG) variables tend to predict risk disclosure more strongly than their un-instrumented parts (Ntim et al., 2012; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020; Mcchlery & Hussainey, 2021).

8.7. Concluding Remarks

This chapter explained the statistical analysis of the relationship between firm-level governance mechanisms, ownership structure, risk disclosure quantity and quality within the UK, Germany, France, and Italy. The empirical results indicated that the independent directors, female leadership, audit quality, risk committee, concentrated ownership, institutional ownership, and overall governance score are the main indicators of the risk disclosure quantity. Also, the results support the thoughts of the agency theory that the independent directors, risk management committee and audit quality represent the focus of CG to promote the interests of other stakeholders in information disclosure.

On the other hand, ownership structure largely explains the differences in risk disclosure quantity and quality within the EU countries. According to the empirical results, there is consensus on the determinants of risk disclosure quantity and quality, the adopted multi-theoretical framework, and the pieces of evidence from prior studies that indicate corporate governance mechanisms and ownership structure are likely to account for the differences in risk disclosure quantity. The next chapter aims to analyse the incentives of risk disclosure incentives across EU countries.

Chapter Nine: Empirical Results on the Determinants of Risk Disclosure Quantity and Quality Across EU Countries: A Cross-Country Analysis

9.1. Overview

The previous chapter addressed the main determinants that contribute to the differences in risk disclosure quantity and quality within and between firms in four countries. As described in the previous chapter, empirical results suggest that the independent directors, female leadership, audit quality, concentrated ownership, institutional ownership, and overall governance score largely explain the differences in risk disclosure quantity and quality within and between firms in four countries. This chapter aims to investigate the main incentives for the quantity and quality of risk disclosures within and between firms across the UK and Germany, France and Italy. In this chapter, we address two major questions. The first question examines how corporate governance can explain the quantity and quality of risk disclosure at a firm level. The second question focuses on country-level analyses and examines whether the quality of national governance can affect the quantity and quality of risk disclosure within and between firms across four EU countries.

This chapter is structured as follows. Section 9.2 discusses the descriptive statistics, correlation matrix and multicollinearity test. Section 9.3 reveals the results of the multivariate regression analysis for risk disclosure quantity across EU countries. Section 9.4 reveals the results of the multivariate regression analysis for risk disclosure quality across EU countries. Section 9.5 discusses the results of the multivariate analysis of the moderation effect of country-level governance. However, section 9.6 summarises the results of the robustness analysis. Finally, Section 9.7 makes concluding remarks.

9.2. Descriptive statistics, correlation matrix, and Multicollinearity Test

9.2.1. Descriptive statistics

This section summarises the descriptive statistics for all variables included in the multivariate analysis across EU countries. Table 9.1 reports that the mean value of risk disclosure quantity among EU countries is 574.18, which coincides with the previous studies that EU countries disclose a considerable volume of risk information in their annual reports (Elshandidy, 2011). Also, the degrees of risk disclosure quality with mean values of 48.22% (risk disclosure quality II) and 65%, respectively (risk disclosure quality III), which indicates that EU firms disclose high-quality risk information to all stakeholders in terms of risk disclosure tone/behaviour.

Table 9.1 presents the statistics of the firm-level governance across EU countries; it can be seen that the average percentage of board diversity in terms of independent directors (*Brd_Indep)* and gender *(Brd_Gend)* are almost 51.64% and 23.63%, respectively, ranging from a minimum of 0 to a maximum of 100%. These results support that EU firms commit to the recommendations of the European corporate governance codes regarding the need for greater diversity in the board of directors' composition. Additionally, there are almost 8% of female leadership in top management (F-Lead). This result is relatively low and does not support the corporate governance recommendations of gender diversity and women empowerment in top management. Risk committee *(Risk_COM)* existence across the EU firms is relatively small, where almost 0.6% of EU firms have risk committees. In contrast, the percentage of independent and non-executive audit committee (AC) members for EU firms are 74.55% and 96.29% of AC members.

Audit_Q suggests that over *84.58%* of EU firms are audited by the big 4 audit firms with a standard deviation of 1.53. Also, the average percentage of *GOV_Score* is 52.6%, ranging from

0 to 98.43. Furthermore, the mean values of ownership structure are likely to be different among the European countries, where the mean values of the CON_OWM, MAN_OWN, FOR_OWN, GOV_OWN and INS_OWN for the EU firms are 63.54%, 16.23%, 9.41%, 1.71% and 6.67%, with maximum values of 100%, 98%, 99%, 84%, and 76%.

On the other hand, Table 9.1 also summarises the descriptive of country-level governance indicators. We can conclude that the mean values of the national governance quality indicators are 1.26, 0.45, 1.36, 1.44, and 1.4. Also, the mean value of NGQ across EU countries is 1.24 ranging from 0.47 to 1.81. Furthermore, BSIZE in EU firms ranges between 2 and 26, with an average of 10 board members, whereas the mean value of DUAL suggests that 26% of the EU firms have duality in CEO and chairman positions. Also, the mean values for the other firm-specific characteristics, such as SIZE, LIQ, Beta, Sal_Growth, ROA, and LEV, are 6.07, 1.159, 1.13, 74.32, 6.92, and 0.19, respectively. Also, the mean value of the length of EU annual reports' pages is 176.18. At the country level, the average values of EU countries' GDP per capita and Inflation are 41393.83 and 1.34. These countries follow different law systems (common law in the UK and code law in Germany, France and Italy) with a mean value of 19.4 and different cultural values (PD, IND, MAS, UA, LTO, and ING) with mean values of 37.19, 70.31, 61.25, 60.41, 58.61, and 42.28.

Table 9.1. Summary of Descriptive statistics for tested variables

Variable	Obs.	Mean	SD	Min	Max
CRDI_Quantity	4,477	725.57	574.18	0	3532.5
CRD II_Scale	4,480	21.75	11.18	0	48.22
CRD III_AHP	4,480	0.26	0.14	0	0.65
Firm-level Governance					
Brd_Indep	4,425	51.64	24.05	0	100
Brd_Gend	4,453	23.63	15.77	0	100
F-Lead	4,480	.08325	.3098	0	1
Risk _COM	4,456	0.73	0.6	0	11
AC-INDP	4,453	74.55	117.65	0	7575
AC_NonEX.	4,462	96.29	10.78	16.6	100
Audit_Q	4,473	0.84	1.53	0	100

GOV_Score	2,175	52.63	22.1	0	98.43
Ownership					
CON_OWM	4,286	63.54	25.41	0	100
MAN_OWN	4,281	16.23	23.6	0	98
FOR_OWN	4,277	9.41	16.86	0	99
GOV_OWN	4,276	1.71	7.53	0	84
INS_OWN	4,294	5.67	8.42	0	76
Country-level governance variables					
VA	4,479	1.26	0.13	0.92	1.44
PS	4,479	0.45	0.28	-0.1	1.41
GE	4,479	1.36	0.41	0.37	1.74
RQ	4,479	1.44	0.4	0.64	1.85
RO	4,479	1.44	0.48	0.25	1.89
COC	4,479	1.44	0.6	-0.03	1.95
NGQ	4,479	1.24	0.35	0.47	1.81
Control Variables					
Brd_Size	4,462	9.37	3.92	2	26
DUAL	4,455	0.26	0.47	0	1
SIZE	4,473	6.07	0.89	1.58	8.84
LIQ	4,442	1.59	19.54	-1220.64	338.98
LEV	4,467	0.19	0.19	0	2.7
Beta	4,382	1.13	0.76	-1.33	7.46
Sal_Growth	4,439	74.32	26.07 26.07	1.47	99.45
ROA	4,343	6.92	35.86	-1216.16	269.11
AR_Length	4,396	176.18	94.25	10	201
GDP per capita	4,478	41393.83	4365.53	30230.23	47959.99
Inflate	4,478	1.34	0.86	-0.1	3
Legal System (LS)	4,479	19.45	34.71	0	1
MAS	4,479	61.25	10.4	43	70
UA	4,479	60.41	21.04	35	86
LTO	4,479	58.61	6.07	51	65

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quality measured using a point scale from 0 to 6, where CRD II_Scale: corporate risk disclosure Index for measuring the risk disclosure quality using (0-6) point scale; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, overall NGQ; the composite score of the country-level governance mechanisms, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, GOV-Score: firm-level governance score. All variable definitions are presented in Table 4.4.

9.2.2. Correlation matrix and Multicollinearity Test

Table 9.2 presents the initial correlation between corporate governance mechanisms, ownership structure, national governance, and the quantity and quality of risk disclosure among the tested variables and predicts the multicollinearity problems that may arise. It can be indicated that risk disclosure quantity and quality are derived from a firm and country's specific characteristics. Table 9.2 reports that there are statistically significant associations between CG attributes, such as *Risk _COM, Audit_Q, and GOV_Score* and risk disclosure quantity and quality (Columns 2, 3, and 4) and at a p-value < 0.05. Also, *GOV_OWM and INS_OWN* are significantly and positively associated with risk. However, MAN_OWN is negatively correlated with risk disclosure quality. At the country level, national governance indicators, e.g., *overall NGQ* is significantly and positively correlated with risk disclosure quality at p-value < 0.05. Also, control variables at the firm and country levels, such as *SIZE,* Brd_Size, *LS, GDP per capita, and ING,* are significantly correlated with *CRD I_Quantity, CRD II_Scale, and CRD III_quality (AHP)* at a p-value < 0.01. However, *Dual, Sal_Growth, AS, VA, and LTO* are negatively associated with risk disclosure quantity and quality. These initial findings support the prior studies' conclusions that firm CG mechanisms explain the variances in risk disclosure within countries (Aguilera et al., 2008; Al-Shammari, 2014; Barakat & Hussainey, 2013; Mokhtar & Mellett, 2013; Neri & Elshandidy, 2015; Ntim et al., 2013). In addition, the initial coefficient of the national governance indicators confirms the arguments of Elamer et al. (2020) and Elamer et al. (2021) that national governance as a macro social-level indicator may create unique challenges regarding disclosure practices.

Conversely, concerning the multicollinearity issue among the tested variables, we concluded that the correlation coefficients of the tested variables with *CRD I_Quantity, CRD II_Scale, and CRD III_quality (AHP)* are relatively low. Consequently, there is not any potential multicollinearity among the tested variables.

Table 9.2. Correlation matrix for risk disclosure quantity and quality across EU countries

	1	2	3	4	5	6	8	9	10	11	12	13	14
CRDI_Quantity	1												
CRD II_Scale	0.657***	1											
CRD III_AHP	0.531***	0.80***	1										
Brd_Indep	0.0361	-0.0099	-0.0037	1									
Brd_Gend	-0.0066	-0.0467	-0.057	-0.0042	1								
F-Lead	0.0269	0.0071	0.0296	0.094**	-0.0341	1							
Risk _COM	0.0762*	0.0657*	0.0726**	0.0252	-0.0189	0.0223							
AC-INDP	0.1154***	0.1566***	0.1262***	0.11***	-0.0511	0.0143	1						
AC_NonEX.	0.0015	-0.0038	-0.0064	0.0248	-0.0278	0.0045	0.0351	1					
Audit_Q	0.0725**	0.0687*	0.0729**	0.002	-0.0178	0.0274	0.0196	-0.0341	1				
GOV_Score	0.0876**	0.0589	0.0462	0.168***	-0.0079	-0.0383	0.0414	0.1104***	-0.0334	1			
CON_OWM	0.2288***	0.1938***	0.1788***	0.0838	-0.0474	0.0068	-0.029	-0.0317	0.0231	0.0441	1		
MAN_OWN	-0.167***	-0.126***	-0.094**	-0.0256	0.0789	0.0127	0.1011***	0.1104***	0.0549	0.118***	0.1437	1	
FOR_OWN	-0.005	0.0864**	0.0771**	0.0052	-0.0673	-0.0287	-0.0845**	-0.1345	-0.0331	-0.147***	-0.105***	-0.643***	1
GOV_OWN	-0.0506	-0.0456	-0.073**	-0.0284	0.0819**	-0.0189	-0.0391	0.0213	-0.0122	0.063	0.0335	-0.346***	0.025
INS_OWN	0.0882**	0.0527	0.0489	0.0222	-0.0892**	0.0432	-0.0493	-0.0155	-0.0117	-0.0015	-0.0048	-0.0956**	-0.099**
Brd_Size	0.2411***	0.1563***	0.0936**	-0.0853**	0.2199***	-0.0575	0.1102***	0.0199	0.0096	0.102***	0.0259	0.1813***	-0.328***
DUAL	-0.0606*	-0.0389	-0.0619	-0.0598	0.111***	-0.0356	-0.0414	0.0929**	-0.0519	0.135***	0.0344	-0.158***	0.099**
SIZE	0.2987***	0.1453***	0.098	0.1681***	0.2106***	-0.0404	0.0164	-0.0951	0.0329	-0.092**	-0.107***	-0.125***	0.166***
LIQ	0.0155	0.0294	0.0436	-0.0418	-0.0689*	0.0125	-0.0756	0.1067***	-0.0097	0.215***	0.147***	0.025	-0.084**
LEV	0.0095	-0.0772	-0.0541	0.0748**	0.0338	0.0466	0.0084	0.0096	-0.0218	-0.0077	-0.0376	-0.0284	-0.0056
Beta	0.0556	0.0454	0.0699	0.0245	0.0267	0.0508	0.0135	0.011	0.0032	0.0691**	0.0206	0.0475	0.0742
Sal_Growth	-0.0687*	-0.0633**	-0.0461	-0.0185	-0.0233	-0.0036	0.0381	0.0152	-0.0112	0.0597	0.0176	0.1168***	-0.1355
ROA	0.0134	0.004	-0.0067	0.0118	0.0107	0.0093	-0.0213	0.0143	-0.0064	0.0172	0.0234	-0.069**	0.0245
AR_Length	0.0777**	-0.003	0.0079	0.0595	0.268***	-0.0689*	0.0106	0.003	0.0033	-0.01	-0.0005	0.0146	0.0057
GDP per capita	0.2847***	0.3239***	0.3543***	-0.0266	-0.244***	0.0074	-0.0611**	-0.0868**	-0.0087	-0.0286	0.0692*	-0.214***	0.164***
LS	0.0659**	0.0687**	0.071**	0.0327	-0.159***	0.0259	0.0347	0.0889**	0.0037	-0.0571	-0.0278	0.2568***	-0.162***

Inflate	0.0469	0.0613**	0.0576	-0.079**	-0.126***	-0.0306	0.0764**	0.0829**	0.0385	0.0938**	0.045	0.2019***	-0.187***
VA	0.310***	0.3191***	0.326***	-0.0069	-0.247***	0.018	-0.181***	-0.0111	-0.0225	-0.165***	-0.0454	-0.156***	0.167***
PS	0.0612**	0.0702**	0.085**	-0.0969**	-0.307***	-0.0225	0.0548	0.0814**	0.0089	-0.0426	0.0136	0.305***	-0.201***
GE	0.378***	0.4186***	0.455***	-0.0141	-0.150***	0.0163	-0.129***	0.0533	-0.0028	-0.075**	-0.0337	-0.0792**	0.072**
RQ	0.276***	0.3018***	0.321***	0.0491	-0.278***	0.0335	0.093***	0.0521	0.0046	-0.078**	-0.0285	0.3051***	-0.171***
RO	0.401***	0.4204***	0.454***	-0.0096	-0.198***	0.028	0.099**	0.1326***	0.0227	0.0594	0.0483	0.4176***	-0.314***
COC	0.372***	0.3814***	0.40***	0.0029	-0.186***	0.0291	0.125***	0.0718**	0.0129	-0.0426	-0.0046	0.384***	-0.247***
NGQ	0.369***	0.3844***	0.411***	-0.0227	-0.261***	0.0215	0.116***	0.078**	0.0134	-0.0374	0.0158	0.375***	-0.248***
MAS	0.115***	0.131***	0.148***	0.0895***	0.305***	0.0139	0.207***	0.0789**	0.0414	0.225***	0.0806**	0.3063***	-0.30***
UA	0.115***	0.112***	0.125***	0.0944***	0.2868***	0.0476	0.232***	0.076**	0.0379	0.183***	0.0675*	0.371***	-0.327***
LTO	-0.085**	-0.093**	-0.100***	-0.118***	0.1912***	-0.0502	-0.147***	-0.168***	-0.0552	-0.214***	-0.104***	-0.448***	0.40***

	15	16	17	18	19	20	22	23	24	25	26	27	28
FOR_OWN	1												
GOV_OWN	0.0493	1											
INS_OWN	0.0741**	-0.125***	1										
Brd_Size	-0.0051	0.1003***	-0.186***	1									
DUAL	-0.0315	0.0177	-0.119***	0.1412***	1								
SIZE	-0.0566	0.0832**	-0.0503	0.607***	0.0156	1							
LIQ	-0.0032	0.0234	0.0065	-0.0441	-0.0183	-0.119***							
LEV	-0.0081	-0.0444	0.0509	0.0533	-0.0792	0.194***	1						
Beta	0.0057	0.0295	0.097***	0.061	0.122***	0.0153	0.0092	1					
Sal_Growth	0.0619*	-0.0089	-0.0214	0.0126	-0.0206	0.078***	0.0068	-0.0355	1				
ROA	0.0208	0.0316	0.0055	-0.0241	0.0369	-0.0146	-0.0082	-0.0098	-0.008	1			
AR_Length	0.0064	0.0008	-0.168***	0.2944***	0.1088***	0.309***	0.0899***	-0.151***	0.0423	-0.0234	1		
GDP per capita	0.0272	-0.175***	0.171***	-0.184***	-0.151***	-0.147***	-0.068***	0.1212***	-0.093***	0.0392	-0.283***	1	
LS	0.0323	-0.110***	0.211***	-0.174***	-0.159***	-0.084***	0.0061	0.105***	0.028	0.04	-0.197***	0.223***	1
Inflate	0.0206	-0.065*	-0.188***	0.1594***	-0.0593	0.0383	-0.116**	-0.081***	-0.0202	-0.014	0.0349***	0.344***	-0.099***
VA	0.0385	-0.210***	0.216***	-0.218***	-0.206***	-0.142**	-0.086***	0.1352***	-0.113***	0.0276	-0.328***	0.752***	0.408***

PS	0.0284	-0.087***	-0.091***	0.0863***	-0.122***	-0.0016	-0.052	-0.0159	-0.0053	-0.0116	-0.087**	0.371***	-0.091***
GE	0.0211	-0.156***	0.186***	-0.206***	-0.063*	-0.153***	-0.092***	0.1296***	-0.141***	0.0251	-0.299***	0.739***	0.0307
RQ	0.0394	-0.238***	0.331***	-0.321***	-0.280***	-0.173***	-0.021***	0.1977***	-0.112***	0.0162	-0.413***	0.771***	0.324***
RO	0.0277	-0.191***	0.270***	-0.270***	-0.121***	-0.175***	-0.075**	0.169***	-0.146***	0.0353	-0.362***	0.805***	0.2394***
COC	0.035	-0.203***	0.272***	-0.272***	-0.155***	-0.164***	-0.075**	0.1632***	-0.133***	0.0297	-0.351***	0.762***	0.2763***
NGQ	0.0388	-0.211***	0.238***	-0.240***	-0.177***	-0.159***	-0.080**	0.1551***	-0.132***	0.0255	-0.360***	0.836***	0.223***
MAS	0.0309	-0.155***	0.192***	-0.166***	-0.388***	-0.0431	0.0938**	0.1053***	0.0397	-0.0144	-0.228***	0.1644***	0.274***
UA	-0.0323	0.208***	-0.418***	0.383***	0.349***	0.1607***	-0.0834**	-0.228***	0.0496	-0.0163	0.4185***	-0.425***	-0.456***
LTO	-0.0194	0.151***	-0.424***	0.384***	0.2661***	0.1519***	-0.111***	-0.223***	0.0375	-0.0199	0.3672***	-0.239***	-0.422***

	29	30	31	32	33	34	36	37	38	39
Inflate	1									
VA	0.4679***	1								
PS	0.6489***	0.2821***	1							
GE	0.2232***	0.7248***	0.105***	1						
RQ	0.2043***	0.8621***	0.192***	0.785***	1					
RO	0.1397***	0.8223***	0.116***	0.929***	0.879***	1				
COC	0.237***	0.8947***	0.109***	0.895***	0.912***	0.959***				
NGQ	0.36***	0.899***	0.369***	0.861***	0.911***	0.943***	1			
MAS	0.2232***	0.302***	0.3402***	-0.088**	0.4524***	0.0133	0.189***	1		
UA	0.2446***	-0.534***	0.0218	-0.378***	-0.798***	-0.553***	-0.553***	-0.673***	1	
LTO	0.5826***	-0.284***	0.2671***	-0.253***	-0.602***	-0.430***	-0.343***	-0.464***	0.930***	1

Notes: This table explains the correlation coefficient of the relationship between risk disclosure quality measured using a point scale from 0 to 6, where *CRD II_Scale: corporate risk disclosure Index for measuring the risk disclosure quality using (0-6) point scale; Brd_Indep: independent board of directors; Brd_Gend: gender diversity of the board of directors; -F-Lead: female leadership; Audit-Q: audit quality, Risk-COM: risk committee existence, overall NGQ; the composite score of the country-level governance mechanisms, CON-OWN: concentrated ownership, MAN-OWN, management ownership, FOR-OWN foreign ownership, GOV-OWN: government ownership, INS-OWN: institutional ownership, GOV-Score: firm-level governance score.*

*, ** indicate *Statistical* significance at 0.1 and 0.05, respectively.

9.3. Multivariate Regression Analysis for Multi-layer Governance and Risk Disclosure

This section explains the results of the fixed regression models, which are used to investigate the incentives of risk disclosures quantity and quality within and between firms across EU countries in three subsections. The first subsection examines the relationship between firm-level governance and risk disclosure quantity and quality; however, the second subsection examines the impact of ownership structure on risk disclosure quantity and quality. Finally, the third subsection examines the relationship between country-level governance on risk disclosure quantity and quality.

9.3.1. Firm-Level Governance and Risk Disclosure

This section explains the incentives of risk disclosure quantity within and between firms across EU countries. Using the fixed effects regression models, Table 9.3 summarises the relationship between Firm-Level Governance and Risk Disclosure quantity and quality within UK, German, French, and Italian firms in four main panels. Panel A. of Table 9.3 reveal that the characteristics of the board of directors' composition, such as *Brd_Indep and Brd_Gend,* significantly and positively affect the extent of risk disclosure based on *CRD I_Quantity* at a coefficient of 0.1026 and 0.860 and t-value of 3.32 and 3.83. Also, firms with a diverse board of directors in terms of independence and gender direct the EU firms' management incentives toward the extent of different subcategories of risk information (e.g. *BR, OR, MR, and FR*) at a p-value <0.05. These results support the research hypotheses Ha1 and Ha2, which argue that board of directors' characteristics drive the management attitude toward risk disclosure, and the extent of risk disclosure increases in firms with more independent and female directors.

On the other hand, the existence of females in top management positions can make differences in the extent of risk disclosure across EU firms, where the results of Model 1 of Table 9.3 indicate that *F-Lead* is significantly and positively associated with *CRD I_Quantity* with a coefficient

of 25.87 and t-value of 2.30. Risk disclosure subcategories are also increased when top management positions are held by females. These findings support hypothesis Ha3 and the arguments of the agency and resource dependence theory that the controlling ability of the board of directors requires diversity in knowledge, experience, and gender, which may reduce the agency conflicts, and information asymmetry and provide more information about risk preferences of EU mangers and support firms to gain access to the critical resources.

Furthermore, the results indicate that there is a significant association between *Risk_COM* and *Total CRD I_Quantity* (model 1) and its components (e.g. business, operational, management. And fluctuation) for The EU firms at the coefficients of 22.17 and t-value of 3.74 (p-value<0.05). Similarly, the results of models 3, 5, 7, and 9 indicate that there is a significant association between *Risk_COM* and the components of *CRD I_Quantity* for The EU firms at p-value<0.05, which supports hypothesis Ha4 that the risk committee in the EU firms are significant factors in explaining the differences in risk disclosure quantity among The EU firms. Also, business, operational, and management. And fluctuation risk disclosure is significantly and positively affected by the existence of a risk committee in the EU firms.

Furthermore, *Audit_Q* significantly and positively affects CRD I_Quantity and the quantity of Business, Management, and Fluctuation Risk Disclosures at the coefficients of 21.90, 33.78, 24.6, and 37.22 and t-value of 1.82, 2.62, 1.98, and 2.45 respectively. These results support hypothesis Ha5 and the arguments of the agency, resource dependence, and stakeholders' theories that firms with risk, a committee may give specialised insight in terms of risk disclosure and management, which results in a reduction in information asymmetry and subsequently reduces any risks associated with investors' devaluation of the firm and agency costs (Jensen and Meckling, 1976; Subramanian et al., 2009; Ishak & Yusof, 2020; Jia et al., 2019). Also, helps stakeholders to obtain sufficient information about risk and make better risk management decisions (Karamanou & Vafeas, 2005; Pirson &Turnbull, 2011; Jia et al., 2019).

Furthermore, there are significant associations between *AC_INDP* and *Total CRD I_Quantity* (model 1) at coefficients of 3.41 and a t-value of 4.92 (p-value<0.05), which suggests that the high percentage of independent audit committee members is a significant factor in explaining the differences in risk disclosure quantity among The EU firms.

Model 2 of Table 9.3 reports the impact of the governance score on risk disclosure quantity. It can be concluded that there is a significant and positive relationship between *GOV_ Score* and total *CRDI_Quantity* with a coefficient of 1.01 and t-value of 2.29 (p-value<0.05). Also, it is significantly and positively associated with Business, Operational, and Management risk sub-categories with coefficients of 7.11, 1.42, and 1.17 and t-value of 4.65, 2.40, and 2.16. Also, the Gov_Score is positively associated with fluctuation risks, but this relationship is not significant.

Thus, these results support the research hypothesis H1 and previous studies. This shows that the impact of corporate governance mechanisms on disclosure behaviours varies depending on the level of governance within firms and countries. Firms with strong governance are more likely to disclose information about uncertainties (Bushman & Smith, 2001; Elshandidy and Neri, 2015; Lim et al., 2007; Sloan, 2001). Moreover, concerning the validity of the results, the VIF for each model are 1.580, 1.67, 1.332, 1.472, 1.508, 1.572, 1.546, 1.552, 1.630, and 1.640, respectively. This indicates that there is not any multicollinearity among the tested variables. Last but not least, The Adj R^2 for each model are36.7%, 40.1%, 24.9%, 32.0%, 33.7%, 36.4%, 35.3%, 37.5%, 38.6%, and 39.04%, respectively, and the VIF for each model indicates that there is not any multicollinearity among the tested variables.

Panel B. of Table 9.3. Investigate the impact of firm-level governance indicators on risk disclosure quality (CRD II_Scale). We found that *Brd_Indep and Brd_Gend* have positive associations with *CRD II_Scale*. These results support the research hypotheses Ha1 and Ha2.

F_Lead, on the other hand, is significantly and positively associated with *CRD II_Scale* with a coefficient of .049 and t-value of 2.30. This result supports the third hypothesis, Ha3, which claims that female leadership may improve the quality of risk disclosure practices. Also, the results indicate that Audit_Q and Risk_COM positively and significantly affect risk disclosure tone/behaviour with a coefficient of 0.002 and 0.002 and t-value of 2.01 and 2.01. These findings support hypotheses, Ha5 and Ha4, which claim that firms with risk committees audited by one of the big four audit firms disclose high-quality information regarding their risk issues. Furthermore, the results show a significant impact of firm and country control variables on total risk quality. The VIF for each model indicates that there is not any multicollinearity among the tested variables.

Similarly, the results of models 3, 5, 7, and 9 indicate that there is a significant association between *AC_INDP* and the components of *CRD II_Scale* (e.g. business, operational, management. and fluctuation) for The EU firms at the coefficients (p-value<0.05), which suggests that the high percentage of independent audit committee members are significant factors in explaining the differences in risk disclosure quality among The EU firms.

On the other hand, Model 2, 6, 8, and 10 of Table 9.3 reports the impact of the governance score on risk disclosure quality. It can be concluded that there are significant relationships between *GOV_ Score*, total *CRD II_Scale, Operational, Management, and Fluctuation risk sub-categories* with a coefficient of .0002, .0002,.0004, and .0004 and t-value of 2.35, 2.33, 3.81, and 2.48 (p-value<0.05).

Panel C. of Table 8.3 summarises that *Brd_Indep and Brd_Gend* are significantly and positively correlated with *CRD III_AHP* with coefficients of .008 and 0.010 and t-values of 2.96 and 2.95, respectively. These results support hypotheses Ha1 and Ha2 that firms with a diverse board of directors in terms of independence and gender are more likely to disclose high-

quality information related to their risk portfolios. Also, Female leadership (F_Lead) is positively associated with 1.94 and a t-value of 2.11, which support hypothesis Ha3 that female in top management position directs the management pressures toward risk disclosure.

Risk_COM and Audit_Q are significantly and positively associated with *CRD III_AHP* with a coefficient of 0.004 and 0.065 and a t-value of 2.02 and 4.66. These results support the research hypothesis Ha4 and Ha5, which argues that risk committee and audit quality affects risk disclosure quality. On the other hand, country-level control variables show significant relationships with *CRD III_AHP*, which supports previous research findings that factors such as GDP per capita, annual reports' pages, culture values, and legal system could impact *CRD III_AHP*. (Barakat & Hussainey, 2013; Elshandidy, 2011; Mokhtar & Mellett, 2013; Ntim et al., 2013; Neifara & Jarboui, 2018; Nahar & Jahan, 2021; Abdallah & Eltamboly, 2022). Similarly, the results of model 7 indicate that Audit_Q is significantly and positively associated with the Management risk quality for EU firms with a coefficient of .010 and a t-value of 4.60, which suggests that firms audited by one of the big four auditors are disclosing high quality of risk disclosure.

On the other hand, Models 2, 6, and 8 of Table 9.3 report that there are significant relationships between *GOV_ Score,* total *CRD II_Scale, Operational, and Management risk sub-categories* with a coefficient of .019, .004, and .003 and t-value of 2.16, 2.47, and 2.45 (p-value<0.05). These results support Hypothesis H1, which argues that the overall firm's governance score drives management attitude toward disclosing high-quality risk information.

All in all, the previous findings confirm hypotheses Ha2, Ha3, and Ha5 that firm-level governance indicators and the overall firm's governance score significantly explain the differences in risk disclosure quantity and quality. Also, these findings coincide with the multi-theoretical framework, which claims that corporate risk disclosures can be used to maintain the

reputation of a company and to convince the public that the company complies with societal (and other stakeholders) expectations (Stakeholders theory), also, support firms to access to the critical resources (resource dependence theory).

Table 9.3. Firm-level governance and risk disclosure quantity and quality

Panel A**.** Firm-level governance and CRD I_Quantity

Independent Variables (Model)	Total CRDI_Quantity		Business Risks-quantity		Operational Risks-quantity		Management Risks-quantity		Fluctuations Risks-quantity	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.1026***		.015**		.298**		.194**		.718**	
	(3.32)		(2.80)		(2.68)		(2.52)		(2.87)	
Brd_Gend	.860***		.05**		1.01**		.912**		.940**	
	(3.83)		(2.71)		(2.33)		(2.43)		(2.43)	
F-Lead	25.87**		22.63*		5.39**		71.73**		47.35	
	(2.30)		(2.64)		(2.05)		(2.71)		(0.46)	
Risk _COM	22.17***		3.19**		.24.45**		29.68**		30.42**	
	(3.74)		(2.52)		(2.40)		(2.32)		(2.01)	
Audit_Q	21.90*		33.78**		.111		24.60*		37.22**	
	(1.82)		(2.64)		(0.02)		(1.98)		(2.45)	
AC-INDP	3.41***		1.36***		4.91***		3.84***		3.345***	
	(4.92)		(3.31)		(5.15)		(4.76)		(4.03)	
AC_NonEX.	.013		.026		0.454		.038		.008	
	(1.13)		(0.75)		(0.56)		(0.56)		(.12)	
GOV_Score		1.01**		.846***		1.42 ***		1.17**		.700
		(2.29)		(3.41)		(2.40)		(2.16)		(1.25)
Brd_Size	20.72***	26.5***	7.11***	12.07***	24.11***	29.42***	-25.82***	32.17***	25.18***	33.44***
	(8.01)	(7.65)	(4.65)	(6.21)	(6.78)	(6.33)	(8.58)	(7.57)	(-8.14)	(7.62)
DUAL	-63.07***	-100.7***	-32.60***	-79.06***	-61.96***	-82.29***	-81.20***	-130.9***	-92.76***	-120.0***
	(03.63)	(-3.89)	(-3.17)	(-5.45)	(-2.60)	(-2.37)	(-4.02)	(-4.13)	(-4.47)	(-3.67)
SIZE	104.05***	191.9***	56.85***	81.34***	128.72***	184.30***	112.69***	172.4***	122.00***	167.21***
	(9.18)	(10.41)	(8.47)	(9.95)	(8.27)	(9.42)	(8.55)	(9.6)	(9.01)	(9.06)
LIQ	.168	4.55***	.0114	.459	.342	8.46***	.064	5.39***	.249	3.75**
	(.48)	(3.05)	(.06)	(0.55)	(0.72)	(4.22)	(0.16)	(2.94)	(0.60)	(1.99)
LEV	-49.3	7.39	-7.22	-42.02	-158.02**	-135.75**	-44.65	15.4	11.89	141.2*
	(-1.25)	(-0.13)	(-.31)	(-1.30)	(-2.90)	(-1.99)	(-0.97)	(0.22)	(0.25)	(1.94)
Beta	16.74***	6.02	1.07	5.071	16.51	5.18	19.10*	3.16	14.05	21.85
	(-13.6)	(.45)	(-0.18)	(.76)	(-1.18)	(-0.29)	(-1.61)	(0.19)	(-1.15)	(1.28)

Sal_Growth	-.005	-.0002	-.0003	-.00021	.0007	-.0003	-.0007	-.0003	-.0005	-.0001
	(-1.16)	(-0.50)	(-1.10)	(-0.84)	(-1.05)	(-0.52)	(-1.27)	(-0.65)	(-0.98)	(-0.08)
ROA	.091	. 150	.011	.163	-.556	.013	-142	.216	-.0421	.201
	(.47)	(.15)	(0.97)	(0.99)	(0.21)	(0.03)	(0.63)	(0.60)	(0.18)	(0.54)
AR_Length	.365***	.819***	.173***	.267***	.497***	1.34***	.391***	.947***	.386***	.957***
	(4.35)	(6.81)	(3.48)	(3.66)	(4.31)	(7.68)	(4.01)	(6.08)	(3.85)	(5.79)
GDP per capita	.002	-.005	.008	-.001	.005	-.005	.0006	-.001	-.00002	-.012*
	(0.66)	(-0.89)	(0.34)	(-0.39)	(0.89)	(-0.06)	(1.24)	(-0.13)	(-0.00)	(-1.64)
Inflate	7.91	-7.3	8.57	12.35	12.12	-15.92	3.65	-10.77	12.66	-11.62
	(0.59)	(-0.33)	(1.08)	(1.00)	(0.66)	(-..54)	(0.23)	(-.40)	(0.79)	(-0.42)
LS	89.77	179.8	28.38	85.43	40.15	107.05	225.799	327.6	91.42	190.8
	(1.04)	(1.02)	(0.54)	(0.87)	(0.34)	(0.46)	(2.25)	(1.52)	(0.89)	(0.86)
UA	51.5	113.6	15.86	58.39	10.06	48.56	160.40*	231.08	42.96	110.47
	(0.72)	(0.78)	(0.36)	(0.72)	(0.10)	(0.25)	(1.94)	(1.30)	(0.50)	(0.60
LTO	103.91	201.6	31.90	91.59	55.25	133.15	243.6	353.5*	110.57	218.03
	(1.22)	(1.16)	(0.61)	(0.13)	(0.47)	(0.57)	(2.45)	(1.66)	(1.08)	(0.99)
MAS	-15.2	.606	-9.52	4.58	-47.09	-43.69	33.20	51.3	-27.05	-12.33
	(-0.48)	(0.01)	(-0.49)	(0.13)	(-1.08)	(-.051)	(0.90)	(0.65)	(-0.71)	(-0.15)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-10707.61	-22466	-3141.361	-10965.76	-3146.746	-11375.06	-30430.88	-43798.71	-10005.52	-22625.93
	(-0.87)	(-0.90)	(-0.42)	(-0.78)	(-0.19)	(-0.34)	(-2.13)	(-1.43)	(-0.68)	(-0.72)
Obs.	3999	2022	3990	2022	3995	2021	3994	2020	3995	2021
F-statistics Prob	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	36.7%	40.1%	24.9%	32.0%	33.7%	36.4%	35.3%	37.5%	38.6%	39.04%
VIF	1.580	1.67	1.332	1.472	1.508	1.572	1.546	1.552	1.630	1.640

Panel B. Firm-level governance and CRD II_Scale

Independent Variables (Model)	Total CRD II_Scale		Business Risks-quality		Operational Risks_quality		Management Risks_quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.0001**		.0005		.001*		.0002		.0003**	
	(2.90)		(0.11)		(1. 85)		(0.30)		(2.59)	
Brd_Gend	.002***		.003		.0004**		0.00354		.0003*	
	(2.99)		(0.40)		(3.87)		(0.03)		(1.93)	
F-Lead	.049**		2.79**		.018		.047**		.086**	
	(2.30)		(2.07)		(0.88)		(2.50)		(2.72)	
Risk _COM	.002**		.419**		.0009		.0011		.001	
	(2.01)		(2.11)		(0.32)		(.39)		(0.22)	
Audit_Q	.002**		.190		.005		.011***		.015*	
	(2.53)		(0.57)		(0.99)		(2.37)		(1.92)	
AC-INDP	.0007***		.057***		.0004**		.005***		.001***	
	(4.29)		(5.32)		(2.95)		(3.58)		(3.94)	
AC_NonEX.	0.00650		.00006		0.00392		.0001		.00001	
	(0.44)		(0.08)		(0.28)		(0.80)		(.62)	
GOV_Score		.0002**		-.004		.0002 **		.0004***		.0004**
		(2.35)		(-0.27)		(2.33)		(3.81)		(2.48)
Brd_Size	.002***	.004***	.082***	.287***	.002***	.003***	.002***	.003***	.005***	.008***
	(4.18)	(5.07)	(2.05)	(5.44)	(3.29)	(3.74)	(4.62)	(3.59)	(5.63)	(5.82)
DUAL	-.0098**	-.032***	.378	-.304***	-.0100**	-.027***	-.001	-.021***	-.022***	-.059***
	(-2.27)	(-4.77)	(1.40)	(-5.77)	(-2.41)	(-4.41)	(-0.44)	(-3.35)	(-3.47)	(-5.74)
SIZE	.008***	.11***	-.138	.042	.010***	.012***	.007	.013***	.015***	.017**
	(3.18)	(3.08)	(-0.78)	(0.19)	(3.88)	(3.52)	(1.13)	(3.59)	(3.74)	(2.93)
LIQ	.0002***	.001***	.002	.036*	.0001	.0003	.0003***	.0009**	.0005***	.0019***
	(3.28)	(3.09)	(.39)	(1.62)	**(2.23)	(1.03)	(4.27)	(2.62)	(3.93)	(3.18)
LEV	-.005	-.021	.067	-2.41**	-.012	-.032**	.005	-.014	-.0018	-.016
	(-0.45)	(-1.40)	(0.11)	(-2.75)	(-1.35)	(-2.34)	(-0.62)	(-0.99)	(-0.13)	(-0.70)
Beta	.002	.003	.194	.244	.003*	.004	.001	.0001	.001	.0073
	(1.09)	(1.04)	-1.22)	(1.19)	(1.62)	(1.25)	(0.56)	(0.03)	(0.50)	(1.35)
Sal_Growth	0.00129	0.00117	0.00511	0.00314	0.0049***	0.00350***	-0.00264	0.00322	0.00648	0.00833
	(1.06)	(1.46)	(0.07)	(0.04)	(4.23)	(4.78)	(-0.02)	(-0.28)	(-0.04)	(0.45)

ROA	-.0006	-.00005	-.0040	-.003	-.00004	-.00007	-.00005	-.00003	-.00007	-.00002
	(-1.37)	(-0.72)	(-1.35)	(-0.75)	(-0.97)	(-1.08)	(-1.27)	(-0.49)	(-1.06)	(-0.19)
AR_Length	.0001***	.0002***	.005***	.007***	.00009***	.0001***	-.006***	.0001***	.0001***	.0003***
	(5.87)	(6.73)	(4.29)	(3.91)	(4.58)	(5.34)	(3.55)	(3.71)	(5.05)	(5.49)
GDP per capita	0.00384	0.00244	.00009	-0.00878	0.00427	0.00243	0.00345	0.00411	0.00545	0.00424
	(3.71)	(1.54)	(1.51)	(-0.10)	(4.28)	(1.68)	(3.85)	(2.68)	(3.58)	(1.82)
Inflate	-.005*	-.006	-.006	-.062	-.009**	-.011**	0.0023	-.004	-.007	-.006
	(-1.76)	(-1.18)	(-0.03)	(-.19)	(-2.81)	(-2.09)	(-0.79)	(-.84)	(-1.50)	(-0.78)
LS	.037*	.073	.378	1.45	.022	.0310	.0518**	.088**	.064**	.153**
	(1.76)	(1.60)	(0.28)	(0.55)	(1.11)	(0.74)	(2.72)	(1.99)	(2.03)	(2.17)
UA	.025	.053	.458	1.29	.015	.021	.036**	.065*	.0339	.1111*
	(1.42)	(1.40)	(0.41)	(0.59)	(0.90)	(0.60)	(2.32)	(1.79)	(1.53)	(1.91)
LTO	.041**	.077*	.264	1.379	.025	.338	.056**	.092**	.072**	.161**
	(1.96)	(1.71)	(0.20)	(0.52)	(1.23)	(0.81)	(2.99)	(2.11)	(2.31)	(2.31)
MAS	.001	.021	-.660	-.344	-.0004	.0007	.012*	.024	.0052	.034
	(0.17)	(0.72)	(-1.33)	(0.35)	(-0.06)	(-.05)	(1.82)	(1.51)	(0.45)	(1.33)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-4.744928	-9.72626	-8.008658	-156.8228	-2.876	-3.92	-7.170**	-12.303**	-8.262**	-20.67**
	(-1.55)	(-1.49)	(-0.04)	(-0.41)	(-0.98)	(-0.66)	(-2.64)	(-1.95)	(-1.84)	(-2.06)
Obs.	4001	2024	4001	2024	4001	2024	4001	2024	4001	2024
F-statistics Prob	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	38.7%	34.4%	68.01%	71.29%	27.9%	25.5%	44.9%	42.6%	49.1%	44.9%
VIF	1.630	1.526	3.125	3.483	1.388	1.343	1.814	1.744	1.966	1.814

Panel C. Firm-level governance and CRD III_quality (AHP)

Independent Variables (Model)	Total CRD III_AHP		Business Risks-quality		Operational Risks-quality		Management Risks-quality		Fluctuations Risks-quality	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Brd_Indep	.008***		.005**		.002***		5.42e		.0020**	
	(2.96)		(2.11)		(3.21)		(0.007)		(2.08)	
Brd_Gend	.010**		.003		.002		.002**		.001*	
	(2.95)		(0.40)		(1.18)		(2.27)		(1.95)	
F-Lead	1.94**		2.79**		.171*		.028		.179*	
	(2.11)		(2.07)		(1.84)		(0.10)		(1.67)	
Risk _COM	.004**		.419**		.002		.447**		.041	
	(2.02)		(2.11)		(0.04)		(2.10)		(1.05)	
Audit_Q	.065***		.057***		.006**		.010***		.009**	
	(4.66)		(5.32)		(2.40)		(4.60)		(4.42)	
AC_NonEX.	.0001		.00006		.00001		.00007		.00005	
	(0.10)		(0.08)		(0.05)		(0.41)		(.28)	
AC-INDP	.463*		-.190		.033		.077**		.073	
	(1.77)		(-0.57)		(0.38)		(2.13)		(1.10)	
GOV_Score		.019**		-.004		.004**		.003**		.0019
		(2.16)		(-0.27)		(2.47)		(2.45)		(1.33)
Brd_Size	.271***	.454***	.082	.287	.049***	.061***	.050***	.075***	.049***	.079***
	(5.20)	(5.07)	(2.05)	(5.44)	(4.64)	(4.31)	(6.15)	(6.33)	(7.12)	(6.98)
DUAL	-.117	-1.29**	.378	-.304	-.075	-.148	-.027	-.0215**	-.052***	-.01653**
	(-0.34)	(-2.48	(1.40)	(-50.77)	(-1.05)	(-1.41)	(-0.49)	(-2.40)	(-3.98)	(-1.95)
SIZE	.676**	1.31***	-.138	.042	.149***	.250***	.061*	.0125**	.066*	.106**
	(2.96)	(4.44)	(-0.78)	(0.19)	(3.18)	(4.22)	(1.71)	(2.47)	(1.90)	(2.23)
LIQ	.016**	.077	.002	.036	.004	.0179	.004***	.0188***	.003***	.0182***
	(2.54)	(2.55)	(.39)	(1.62)	(3.42)	(2.95)	(4.00)	(3.64)	(3.58)	(3.71)
LEV	.345	-3.856***	.067	-2.41	-.311*	-.805***	.065	-.392**	.072	-.321
	(0.453)	(-3.31)	(0.11)	(-2.75)	(-1.90)	(-3.44)	(0.52)	(-1.96)	(0.59)	(-1.70)
Beta	.392	.010	.194	.244	.028	..064	-.060*	.048	.060*	.030
	(1.91)	(0.04)	(1.22)	(1.19)	(0.68)	(1.17)	(1.87)	(1.04)	(1.91)	(0.69)

Sal_growth	0.00129	-0.00929	0.00511	0.00314	-0.0031	0.0054	0.0053	0.0011	0.0098	0.0081
	(0.29)	(-0.10)	(0.07)	(0.04)	(-015)	(-0.29)	(-0.34)	(0.07)	(0.07)	(0.45)
ROA	-.0052	-.00006	-.0040	-.003	-.001*	-.0001	-.0009	-.0002	-.0008	-.0002
	(-1.35)	(0.01)	(-1.35)	(-0.75)	(-1.64)	(-0.32)	(-1.56)	(-0.23)	(-1.50)	(0.18)
AR_Length	.006***	.0132	.005	.007	.0003	.002***	.001***	.002***	.001***	.002**
	(3.61)	(5.02)	(4.29)	(3.91)	(1.11)	(4.27)	(4.30)	(5.50)	(5.01)	(6.53)
GDP per capita	.0002**	.0001	.00009	-0.0087	.00002	.00002	.0004***	.00003*	.0004***	.00001
	(2.56)	(0.98)	(1.51)	(-0.10)	(1.34)	(0.98)	(3.47)	(1.63)	(3.16)	(0.62)
Inflate	-.042	-.006	-.006	-.062	-.032	.0221	-.035	-.092	-.022	-.035
	(-0.16)	(-0.02)	(-0.03)	(-.19)	(-0.95)	(0.25)	(-0.83)	(-1.21)	(-0.53)	(-0.49)
LS	2.13	3.008	.378	1.45	.329	..189	.666**	1.160*	.4007	.910*
	(1.23)	(0.85)	(0.28)	(0.55)	(0.92)	(0.27)	(2.72)	(1.91)	(1.50)	(1.85)
UA	1.339	1.933	.458	1.29	.161	.033	481**	.0866*	.246	.640
	(0.93)	(0.66)	(0.41)	(0.59)	(0.55)	(0.06)	(2.12	(1.72)	(1.12)	(1.34)
LTO	2.42	3.34	.264	1.379	.401	.264	.718**	1.22**	.454*	.971*
	(1.41)	(0.95)	(0.20)	(0.52)	(1.13)	(0.37)	(2.64)	(2.03)	(1.72)	(1.70)
MAS	-.095	.043	-.660	-.344	--.46	-.117	-119	.269	-.034	.11
	(-0.15)	(0.03)	(-1.33)	(0.35)	(-0.35)	(-.45)	(1.18)	(1.51)	(0.36)	(0.55)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-255.89	-370.9	-83.33	-80.048	-36.3	-16.45	-89.24	1449.803	-157.46	-116.8
	(-1.03)	(-0.73)	(-.56)	(-.27)	(-0.71)	(-0.16)	(-2.28)	(0.64)	(-1.82)	(-1.42)
Obs.	4001	2024	4001	2024	4001	2024	4001	2024	4001	2024
F-statistics Prob	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	31.6%	32.1%	%32.22	%30.43	32.6%	33.9%	33.3%	31.5%	43.2%	38.8%
VIF	1.463	1.474	1.477	1.52	1.485	1.512	1.499	1.460	1.761	1.634

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

9.3.2. Ownership Structure across EU Countries and Risk Disclosure

Table 9.4 presents the results of the relationship between ownership structure and risk disclosure quantity and quality in 6 models. Models 1 and 2 in columns 2 and 3 reveal the regression analysis results of the impact of ownership structure on risk disclosure quantity based on the *CRD I_Quantity index*. We can conclude that *CON_OWM* in Model 1 is significantly and negatively correlated with the total *CRDI_Quantity*, which suggests that firms with high *CON_OWM are* less likely to change their risk disclosure levels and risk components over time. More specifically, the *CON_OWM* is significant in association with total risk quantity with coefficients of -2.16 and t-value of -6.18, respectively (p-value<0.05).

These results support the research hypothesis H2a and approve the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012; Abdallah & Eltamboly, 2022). Moreover, these results are in line with the agency theory perspective, which suggests that *CON_OWN* diminishes agency conflicts by acting as a substitute for other corporate governance mechanisms.

Nevertheless, INS_OWM in Model 1 is significantly and positively correlated with the total CRDI_Quantity, which suggests that firms with high INS_OWN are more likely to change their risk disclosure levels and risk components over time. More specifically, INS_OWN is significant in association with total risk quantity with coefficients of 2.06, respectively, and a t-value of 1.73, respectively (p-value<0.05). The main findings of INS_OWN appear to be in line with the research hypothesis Ha2 and the explanation of the stakeholder theory, which suggests that institutional ownership is more similar to other public shareholders because the institutional investors are more interested in risk disclosure, particularly risk information.

Also, *FOR_OWN and GOV_OWN* are positively but insignificantly associated with total risk disclosure quantity. Furthermore, MAN_OWN are negatively associated with total risk

disclosure quantity with coefficients of -2.37 and a t-value of -6.45 (p-value<0.001). Finally, the models' Adj R^2 for models 1 and 2 are 35.7%. Also, the VIF values indicate that there is no potential multicollinearity in the empirical model.

Model 3 and 4 of Table 8.9 also present the results of the relationship between ownership structure and risk disclosure quality based on the *CRD II_Scale* index. The results indicate that *CON_OWM* is significantly and negatively related to the total *CRD II_Scale*, with a coefficient of -.0002 and a t-value of -3.17 (p-value<0.001). Since *MAN_OWN* correlated negatively with *CRD II_Scale*, *FOR_OWN* and *INS_OWN* are significantly positive in relationship with the total *CRD II_Scale*. The results indicate that firms with high *FOR_OWN and INS_OWN* are more likely to disclose high-quality information regarding their risk issues, with coefficients of 0.0001 and 0.002, respectively, and t-values of 1.94 and 1.8, respectively (p-value<0.05).

There are also significant relationships between *SIZE, AC_NonEX, MAS, GDP, DUAL, and Beta*. In addition, LS, with respect to the total risk quality and risk components, has a p-value of 0.05. Last but not least, both models have Adj R^2 values of 37% and 36.7%, respectively, and a VIF value of 1.58, which indicates that there is no potential multicollinearity in the empirical model.

Model 5 and 6 of Table 9.4 summarise the results of the regression analysis for the relationship between ownership structure and risk disclosure quality based on the *CRD III_AHP* index. We found that *CON_OWM* is significantly and negatively associated with *CRD III_AHP* with a coefficient of -.267 and a t-value of -3.79; also, *MAN_OWN* is associated negatively with *CRD III_AHP* with a coefficient of -.023 and a t-value of -3.17 (p-value<0.05). Nevertheless, *FOR_OWN and INS_OWN* significantly and positively affect *CRD III_AHP* with coefficients of 0.024 and 0.0132 and t-values of 2.89 and 2.55, respectively. On the other hand, the country-level control variables show significant relationships with *CRD III_AHP*, which supports

previous research findings that factors such as GDP per capita, annual reports' pages, cultural values, and legal system could impact *CRD III_AHP*. (Barakat & Hussainey, 2013; Elshandidy, 2011; Mokhtar & Mellett, 2013; Ntim et al., 2013).

These results are consistent with hypothesis H2 and the adopted multi-theoretical framework, which suggests that public, foreign, and institutional ownership may exert pressure on management in order to improve the decisions for all stakeholders. They lessen the agency conflicts due to the variety of interests and greater need for more information, particularly concerning risks. Also, these results support the findings of the previous studies (Elamer et al., 2019; Mangena & Tauringana, 2007; Ntim et al., 2013).

Table 9.4. Ownership structure and risk disclosure quantity and quality

Independent Variables (Model)	Quantity		CRD II_Scale		CRD III_quality (AHP)	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
CON_OWM	-2.16***		-.0002***		-.267***	
	(-6.18)		(-3.17)		(-3.79)	
MAN_OWN		-2.37***		-.0001*		-.023***
		(-6.45)		(-1.62)		(-3.17)
FOR_OWN		.051**		.0001*		.024**
		(2.10)		(1.94)		(2.89)
GOV_OWN		2.135		.0002		.0246
		(1.55)		(0.81)		(0.89)
INS_OWN		2.06*		.002*		.0132**
		(1.73)		(1.81)		(2.55)
Brd_Size	23.17***	22.33***	.0036***	.003***	.347***	.332
	(9.33)	(8.25	(5.84)	(5.60)	(6.95)	(6.62)
DUAL	-70.47***	-74.88***	-.009**	-.010**	-.069	-.161
	(3.98)	(-4.22)	(-2.08)	(-2.36)	(-0.19)	(-0.45)
SIZE	98.52***	100.62***	.007**	.007**	.579**	.630**
	(8.89)	(9.06)	(2.58)	(2.84)	(2.60)	(2.82)
LIQ	3.32**	3.04**	.001**	0.01**	.0683**	.065**
	(2.13)	(1.95	(2.59)	(2.60)	(2.17)	(2.08)
LEV	1.77	-.092	-.004	-.004	.356	.323
	(0.04)	(-0.00)	(-0.41)	(-0.42)	(0.41)	(0.37)
Beta	9.20	8.65	.003	.002	.332	.328*
	(0.90)	(0.84)	(1.24)	(1.14)	(1.44)	(1.59)
Sal_Growth	-.0004	-.0005	0.00150	0.0012	-0.0010	-0.0029
	(-0.94)	(-1.15)	(1.22)	(1.04)	(-0.10)	(0.30)
ROA	.022	.069	-.00008*	-.00007*	-.005	-.005
	(0.11)	(0.35)	(-1.66)	(-1.57)	(-1.44)	(-1.31)
AR_Length	.321***	.314***	.0001***	.0001***	.0057***	.005***
	(3.76)	(3.68)	(5.67)	(5.55)	(3.35)	(3.41)
GDP per capita	.0013	.001	0.0039***	0.0029*	.0001**	.0001**

	(0.32)	(0.37)	(3.69)	(-1.78)	(2.10)	(2.17)
Inflate	10.30	11.76	-.006*	-.006*	-.075	-.063
	(0.74)	(0.84)	(-1.84)	(-1.78)	(-0.27)	(-0.23)
LS	119.07	97.73	.049**	.49**	2.99**	2.67*
	(1.44)	(1.18)	(2.07)	(2.02)	(1.80)	(1.60)
UA	77.24	59.93	.035**	.034**	2.059	1.79
	(1.13)	(0.87)	(2.07)	(2.57)	(1.50)	(1.30)
LTO	131.66*	110.09	.534**	.053**	3.25**	2.9947*
	(1.61)	(1.34)	(2.60)	(2.57)	(1.97)	(1.78)
MAS	-2.62	-10.45	.006	.006	.249	.124
	(-0.09)	(-0.34)	(0.85)	(0.80)	(0.41)	(0.20)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-14667.2	-11502.95	-6.44	-6.359	-372.98	-326.76
	(-1.24)	(0.97)	(-0.59)	(-0.14)	(-1.57)	(-1.37)
Obs.	3904	3895	3906	3897	3906	3897
F-statistics Prob	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
Adj R2	35.7%	35.7%	37%	36.7%	30.5%	30.5%
VIF	1.555	1.555	1.58	1.58	1.440	1.439

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

9.3.3. Country-Level governance quality and Risk Disclosure

9.3.3.1. NGQ and Risk Disclosure Quantity

Table 9.5 reports the results of the relationship between country-level governance, as predicted in research hypothesis H3, and risk disclosure quantity. The empirical results recommend that risk disclosure quantity can significantly be explained by the national governance indicators, particularly VA, PS, GE, RQ, and COC. VA, PS, RQ, and COC are positively associated with CRDI_Quantity with coefficient of 89.86, 207.24, 106.7, 1.135, and 198.51 at t-value of 3.54, 3.58, 1.86, 1.87, and 1.81 respectively (p-value < 0.05). Furthermore, the empirical results support the positive role of the national governance quality on risk disclosure quantity. More specific, Model 7 of Table 9.5 indicates that the overall NGQ significantly and positively explain the differences in CRDI_Quantity among different risk categories since NGQ is significant with a coefficient of 319.1 and t-value of 2.12.

These results support hypothesis H3 that countries with stronger national governance indicators are associated with an increase in the level of operational risk disclosures. This also coincides with the institutional theory, which claims that companies operating in countries with improved national governance may provide an additional monitoring level that can alleviate information asymmetries and hence cater as a motivation to engage in greater risk disclosure (Aguilera et al., 2008; Barakat & Hussainey, 2013; Ntim et al., 2013).

Further, the researcher found a significant association between SIZE and AR_Length, which supports the empirical evidence provided by Abraham & Cox (2007), Elzahar & Hussainey (2012), and Oliveira et al. (2011). That other firm-specific corporate governance characteristics have a positive effect on CRDI_Quantity at p-value<0.05.

Table 9.5. National governance indicators and risk disclosure quantity

Independent Variables (Model)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
VA	89.86*** (3.54)						
PS		1.0180 (1.29)					
GE			106.7* (1.86)				
RQ				1.135* (1.87)			
ROL					207.24*** (3.58)		
COC						198.51* (1.81)	
NGQ							319.1** (2.12)
Brd_Size	22.67*** (9.26)	22.4*** (9.18)	22.50*** (9.18)	22.5*** (-9.19)	22.4*** (9.15)	22.49*** 9.18)	-22.4*** (9.16)
DUAL	-69.06*** (-4.18)	-68.53*** (-4.14)	-69.6*** (-4.23)	-70.02*** (-4.23)	-70.3*** (-4.25)	-70.53*** (4.26)	-69.37 (1.19)
SIZE	104.7 (0.49)	105.21*** 9.63)	105.5*** (9.25)	105.3*** (9.63)	105.6*** (9.25)	105.45*** (9.64)	105.4*** (9.65)
LIQ	.1722 (.0019)	1.82 (0.52)	..191 (0.54)	.185 (0.53)	.183 (0.35)	.184 (0.452)	.189 (00.54)
LEV	-52.6 (-1.32)	-56.08 (-1.41)	-55.06 (-1.38)	-54.16 (1.36)	-53.77 (-1.35)	-51.5 (-1.29)	-54.4 (-1.37)
Beta	4.22 (0.42)	4.77*** (3.58)	4.85 (0.45)	4.48 (0.44)	4.48 (0.44)	4.34 (0.43)	4.51 (0.44)
Sal_Growth	-.0005 (.-.120)	-.0005 (-1.07)	-.0005 (-1.41)	-.0005 (01.11)	-.0005 (-1.09)	-.0005 (-1.08)	-.0005 (-1.09)
ROA	.088	-875	.082	.0752	.093	.089	.085

	(.045)	(0.45)	(0.42)	(0.39)	(0.48)	(0.45)	(0.44)
AR_Length	.342***	.356***	.342***	.345***	.343***	.339***	.345***
	(4.07)	(4.23)	(4.07)	(4.09)	(4.08)	(4.02)	(4.10)
GDP per capita	.005	-.004	.004	.0004	.003	.001	-.002
	(1.38)	(-0.94)	(.97)	(1.08)	(0.88)	(0.26)	(-0.45)
Inflate	-.73	18.15	7.42	7.53	9.04	8.36	17,1
	(-.05)	(1.33)	(0.54)	(0.54)	(0.64)	(0.61)	(1.24)
LS	109.9	123.07	127.4	130.5	131.5	111.01	111.7
	(1.33)	(1.49)	(1.54)	(1.57)	(1.58)	(1.34)	(1.45)
UA	97.53	77.4	79.15	79.19	80.06	80.04	78.59
	(1.16)	(1.13)	(1.16)	(1.16)	(1.17)	(1.44)	(1.15)
LTO	118.9	139.8*	143.9	148.9*	149.6*	118.7	121.2
	(1.45)	(1.71)	(-0.25)	(1.81)	(1.80)	(1.44)	(1.47)
MAS	7.73	-7.68	-7.7	-7.40	-9.91	9.81	5.744
	(0.25)	(-0.25)	(-0.25)	(-0.24)	(-0.31)	(0.31)	(0.19)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-15549.0	-14827.7	-15344.5	-15704.1	-15665.5	-14663.4	-14537.8
	(-1.32)	(-1.26)	(-1.30)	(-1.33)	(-1.33)	(-1.24)	(-1.23)
Obs.	4076	4076	4076	4076	4076	4076	4076
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	35.7%	35.7%	35.6%	35.5%	35.5%	35.6%	35.6%
VIF	1.55	1.55	1.55	1.55	1.55	1.55	1.9

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

9.3.3.2. NGQ and Risk Disclosure Quality

Table 9.6 reports the results of the relationship between country-level governance, as predicted in research hypothesis H3, and risk disclosure quality. So far, the empirical results of the regressions analysis support the positive role of the national governance quality and its indicators (e.g. VA, GE, RQ, ROL, and COC) on risk disclosure quality. More specific, Model 7 in Panel A and B of Table 9.6 indicates that the overall NGQ significantly and positively explain the differences in the quality of disclosure about different risk categories since NGQ is significant with coefficients of 0.23 and 1.291 and t-value of 4.99 and 2.55. Also, the indicators of the composite measure of NGQ are also positively and significantly associated with CRD I_Quantity and CRD III_AHP. In Panel A, The coefficient of VA, RQ, ROL, COC, and GE are 0.081, 0.12, 0.076, and.036, and t-value of 2.0, 7.6, 2.77, and 1.65. Also, Panel B. of Table 9.6 shows a positive sign of the relationship between VA, EG, ROL, COC, and CRD III_AHP with a coefficient of 0.171, 0.101, 0.054, and 0.139 and a t-value of 2.89, 4.96, 1.8, and 5.07 respectively.

These results are consistent with hypothesis H3 and the previous literature that better-governed environments in terms of voice and accountability, the role of law, regulatory quality, control of corruption, and government effectiveness strengthen the oversight function of corporate governance mechanisms toward the quality of disclosure. Whilst corporate governance mechanisms in poorly-governed environments take the main role in mitigating the increased agency conflicts in order to gain legitimacy and social acceptance (Elamer et al., 2019; Elamer et al., 2020).

Moreover, we have found significant associations between SIZE, LIQ, ROA, Brd_Size, Inflate, LS, UA, and LTO. This is consistent with the evidence provided by Abraham & Cox (2007), Elzahar & Hussainey (2012), and Oliveira et al. (2011) that other firm-specific corporate

governance characteristics have a positive effect on the CRD II_Scale at a p-value<0.05. Finally, concerning the validity of the results, the values of the multicollinearity test (VIF) for each model are 1.0036, 1.0068, 1.0026, 1.0043, and 1.0047. This indicates that there is no multicollinearity problem among the apparent variables.

Table 9.6. National governance indicators and risk disclosure quality

Panel A. CRD II_Scale

Independent Variables (Model)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
VA	.081** (2)						
PS		.013 (0.76)					
GE			.12*** (7.60)				
RQ				.079** (2.77)			
ROL					.036* (1.65)		
COC	.					08*** (3.89)	
NGQ							.23*** (4.99)
Brd_Size	.003*** (5.43)	.003*** (5.46)	.003*** (5.44)	.003*** (5.44)	.003*** (5.47)	.003*** (5.44)	.003*** (5.46)
DUAL	-.007** (-2.40)	-.009** (-2.36)	-.009** (-2.41)	-.009** (-2.38)	-.009** (-2.37)	-.009** (-2.36)	-.009** (-2.40)
SIZE	.008*** (3.08)	.008*** (3.05)	.008*** (3.05)	.008*** (3.06)	.008*** (3.04)	.008*** (3.06)	.008*** (3.05)
LIQ	.0002*** (3.38)	.0002*** (3.37)	.0002*** (3.25)	.0002*** (3.37)	.0002 *** (3.38)	.0002*** (3.38)	.0002*** (3.36)
LEV	-.0046 (-0.47)	-.004 (-0.47)	-.004 (0.41)	-.004 (-0.46)	-.004 (-.46)	-.005 (-0.45))	.-004 (-0.45)
Beta	.003 (1.23)	.003 (1.23)	.003 (1.20)	.003 (1.22)	.003 (1.22)	.003 (1.23)	.003 (1.22)

Sal_Growth	0.0014	0.0014	0.00145	0.00114	0.0014	0.0014	0.0014
	(1.21)	(1.18)	(1.19)	(1.18)	(1.18)	(1.17)	(1.17)
ROA	-.00007	-.0007	.00006	-.0007	-.0007	-.00006	-.00007
	(1.48)	(01.49)	(-1.42)	(-1.45)	(-1.49)	(-1.46)	(-1.47)
AR_Length	.0001***	.0001***	.0001***	.0001***	.0001***	.0001***	.0001***
	(5.36)	(5.36)	(5.40)	(5.35)	(5.38)	(5.47)	(5.35)
GDP per capita	0.0037***	0.0034****	0.0034***	0.0037***	0.0035***	0.0045***	0.0045***
	(3.51)	(3.37)	(3.30)	(3.36)	(3.28)	(4.33)	(3.86)
Inflate	-.004	-.005	-.003	0.005	-.004	-.004	-.006*
	(-1.29)	(-1.59)	(-1.13)	(-1.46)	(-1.29)	(-1.20)	(-1.79)
LS	.047**	.045**	.004**	.045**	.043**	.050**	.047**
	(2.30)	(2.25)	(2.19)	(2.22)	(2.12)	(2.48)	(2.32)
UA	.032*	.031*	.032*	.32*	.031*	.031*	.032*
	(1.90)	(1.89)	(1.91)	(1.90)	(1.89)	(1.89)	(1.90)
LTO	.051**	.004	.047**	.048**	.046**	.057**	.51**
	(2.54)	(1.47)	(2.37)	(2.41)	(2.25)	(2.80)	(2.65)
MAS	.0037	.004	0.006	.005	.006	-.0001	.003
	(0.50)	(0.60)	(0.48)	(0.76)	(0.89)	(-0.02)	(0.47)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-5.85	--5.86	-5.85	-5.83	-5.75	-6.10	-5.96
	(-2.01)	(-2.02)	(-2.01)	(-2.01)	(-1.79)	(-2.10)	(-2.05)
Obs.	4078	4076	4078	4078	4078	4078	4078
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	37.6%	37.9%	38.0%	37.9%	37.9%	37.6%	37.5%
VIF	1.611	1.61	1.614	1.61	1.61	1.61	1.9

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

Panel B. CRD III_ quality (AHP)

Independent Variables (Model)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
VA	0.1711** (2.89)						
PS		.888 (0.77)					
GE			0.1011** (4.96)				
RQ				0.0124** (2.36)			
ROL					0.054* (1.8)		
COC						0.1329** (5.07)	
NGQ							0.1291** (2.55)
Brd_Size	0.0004** (3.3)	.32*** (6.58)	.321*** (6.56)	.32*** (6.75)	.321*** (6.57)	.322*** (6.57)	.322*** (6.58
DUAL	-.1135 (-0.34)	-.116 (-0.45)	-.129 (-0.39)	-.125 (-0.38)	-.124 (-0.38)	-.124 (-0.38)	-.132 (-0.40)
SIZE	.675*** (3.09)	.680*** (3.11)	.681*** (3.12)	.682*** (3.12)	.686*** (3.14)	.681*** (3.12)	.0681*** (3.12)
LIQ	.018** (2.58)	.018** (2.60)	.018** (2.59)	.018** (2.60)	.182** (2.60)	.018** (2.60)	.018** (2.60)
LEV	.279 (0.35)	-56.08 (-1.41)	.292 (0.37)	.275 (0.34)	2.61 (0.33)	.267 (0.33	.280 (0.35)
Beta	.25 (1.27)	.260 (0.33)	.25 (1.27)	0260 (1.28)	.263 (1.29)	.260 (1.28)	.259 (1.28)
Sal_Growth	-0.0026 (.-.26)	-.26 (-1.29)	-.0005 (-1.41)	-0.00209 (-0.21)	-0.0021 (-0.22)	-0.0021 (-0.22)	-20.00215 (-0.22)
ROA	-.005 (-1.40)	-0.0021 (-0.21)	-0.0020 (-0.21)	-.005 (-1.37)	-.005 (-1.38)	-.005 (-1.39)	-.005 (-1.38)

AR_Length	.005***	.005	.05***	.005***	.005***	.0054***	.005***
	(3.22)	(1.40)	(3.25)	(3.24)	(3.20)	(3.24)	(3.23)
GDP per capita	.0002**	.001*	.0001**	.0001**	.0002**	.0002**	-.0002**
	(2.76)	(1.93)	(2.24)	(2.20)	(2.77)	(2.49)	(2.8)
Inflate	-.10	.035	.068	.029	-.082	.200	-.029
	(-.36)	(0.13)	(0.25)	(0.11)	(-0.29)	(0.07)	(-0.11)
LS	0.0024	2.71*	2.66*	2.68*	2.94*	2.748*	2.80*
	(1.57)	(1.64)	(1.61)	(1.62)	(1.77)	(1.66)	(1.69)
UA	1.81	1.80	1.823	1.81	1.830	1.81	1.82
	(1.33)	(1.32)	(1.33)	(1.33)	(1.34)	(1.33)	(1.34)
LTO	2.83*	3.00*	2.92*	2.94*	3.33**	3.04*	3.12*
	(1.72)	(1.83	(1.78)	(1.79)	(2.01)	(1.84)	(1.90)
MAS	.21	.10	.185	.145	-.830	.091	.058
	(0.35)	(0.217)	(0.30)	(0.24)	(-0.13)	(0.15)	(0.10)
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
intercept	-355.3	-331.0	-322.13	--331.13	-344.66	-334.6	-338.72
	(-1.42)	(-1.40)	(-1.41	(-1.40)	(-1.46)	(-1.42)	(-1.44)
Obs.	4078	4078	4078	4078	4078	4078	4078
F-statistics Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Adj R2	31.0%	31.0%	31.0%	30%	31%	30.4%	31%
VIF	1.44	1.44	1.44	1.44	1.44	1.44	1.44

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

9.4. The Moderation Effect of NGQ

This section summarises the results of the moderation effect of the national governance quality on the relationship between the overall firm's governance score and risk disclosure quantity and quality. The results presented in Table 9.7 show that the moderating effect of NGQ can improve the effectiveness of firm-level governance in overseeing the reporting practices, where the coefficient of *Gov_Score*NGQ* (moderate variable) significantly and positively enhances the impact of corporate governance on the quality of risk disclosures. The results of Models 1, 2, and 3 reveal that *Gov_Score* is significantly and positively correlated with *CRD I_Quantity, CRD II_Scale, and CRD III_AHP* at coefficients of 8.55, 0.002, and .142 and t-value of 3.72, 3.42, and 3.08. Also, NGQ is significantly and positively associated with *CRD I_Quantity, CRD II_Scale, and CRD III_AHP* at coefficients of 219.0, 0.21, and 20.6 and t-value of 1.85, 3.10, and 3.94. These results confirm the previous findings that *NGQ* and firm-level governance score increases the quantity and quality of risk disclosure. Moreover, the quality of national governance indicators improves the impact of GOV_Score on *CRD I_Quantity, CRD II_Scale, and CRD III_AH*, where the coefficient of *Gov_Score*NGQ equals 7.29, 0.001, and 0.123 (t-value of 4.29, 3.95, and 3.58).*

These results provide further evidence that governance attributes at both firm and country levels are important factors that drive the differences in risk disclosure practices across countries. Also, the results support the research hypothesis H4, as well as the practical evidence in the previous studies that firms are operating in countries with highly effective governance indicators, may reduce information asymmetry and increase managerial motivation toward high-quality disclosure (Ball et al., 2003; Leuz et al., 2003; Beyer et al., 2010; Bonetti et al., 2016).

Finally, the value of VIF and Adj R^2 for each model indicates no multicollinearity among the tested variable.

Table 9.7. The moderation effect of NGQ on the relation

Independent Variables	Quantity CRD I	Quality CRD II)	Quality CRD III)
(Model)	Model (1)	Model (2)	Model (3)
NGQ	219.0*	.21** *	20.6***
	(1.85)	(3.10)	(3.94)
GOV_Score	8.55***	0.002***	.142***
	(.3.72)	(3.42)	(3.08)
GOV_Score x NGQ	7.29***	.001***	.123***
	(4.29)	(3.95)	(3.58)
Brd_Size	23.74***	-.003***	.409***
	(6..25)	(4.28)	(5.76)
DUAL	-99.6***	-.32***	-1.31**
	(-3.86)	(-4.80)	(-2.52)
SIZE	161.6***	0142***	1.48***
	(10.99)	(3.70)	(5.00)
LIQ	4.67***	.001***	.080**
	(3.14)	(3.20)	(2.68)
LEV	-16.2	-.023	-3.98***
	(-.028)	(-1.53	(-3.43)
Beta	6.66	.003	.034
	(0.50)	(1.12)	(0.13)
Sal_Growth	0.0001	0.00182	-0.0079
	(-.039)	(1.51)	(-0.08)
ROA	.143	-.00005	.0001
	(.49)	(-0.72)	(0.02)
AR_Length	.941***	.0002***	.014***
	(7.20)	(7.12)	(5.38)
GDP per capita	-.007	0.0043**	.0003**
	(-1.06)	(2.35)	(2.42)
Inflate	11.6	-.004	.047
	(0.52)	(-0.78)	(0.11)
LS	167.3	.075*	3.33
	(0.75)	(1.65)	(0.94)
UA	108.6	.052	1.82
	(0.75)	(1.37)	(0.63)
LTO	185.5	.081*	3.87
	(0.06)	(1.80)	(1.10)
MAS	3.98	.008	-.386
	(0.06)	(0.50)	(-0.30)
Country effect	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
intercept	-20833.5	-9.5722	-368.67
	(-0.84)	(-1.47)	(-0.73)
Obs.	2022	2024	2024
F-statistics Prob	0.0000	0.0000	0.0000
Adj R2	40.7%	35%	32.8%
VIF	1.688	1.54	1.490

Notes: All variable definitions are presented in Table 4.4. ***, **, and * indicate significance for a two-tailed test at the 1%, 5% and 10% levels, respectively.

9.5. Summary and discussion

The results of this chapter indicate that risk disclosure quantity and quality across the EU countries are largely affected by the board of directors' characteristics, ownership structure and national governance quality. Sub-categories of risk disclosure quality index (e.g., business, operational, management, and fluctuation) are similar in the effect of both independent and control variables under fixed effects and 2SLS models.

Taking all previous results of testing Hypothesis H1, H2, and H3 together, the results suggest that the appropriate expectations of the adopted multi-theory framework, which combines the agency, resource dependence, stakeholder, legitimacy, and institutional theories, are highly applicable in a variety of settings as follows.

First, the higher percentage of independent and female directors is significantly and positively associated with risk disclosure quantity and quality, which support hypotheses Ha1 and Ha2, where independence and gender are associated with the oversight power of the board of directors over management, where independent directors are more likely to be independent in their opinions. They can give objective and beneficial thoughts, which are more likely to mitigate agency conflicts between principals and agents (Elshandidy & Neri, 2015; Elamer et al., 2019; Adelopo et al., 2021), and respond to owners' and other stakeholders' concerns about risk disclosure (stakeholder theory).

Furthermore, diversity on boards of directors in terms of gender can improve board independence and managerial ability of directors (Cabedo & Tirado, 2004; Elzahar & Hussainey, 2012) on one side, and enhance the relationships with stakeholders, on the other side (Amran et al., 2009; Donaldson & Preston, 1995; Adelopo et al., 2021; Abdallah & Eltamboly, 2022; Hao & Dong; 2022), and gains critical resources such as finance and contracts (resource-dependence theory). This necessitates enhancing corporate legitimacy and

reputation by motivating management to disclose adequate levels of risk disclosure (institutional theory and legitimacy theory).

Second, the existence of female in leadership position significantly drives the extent and the quality of risk disclosure across EU countries, which supports hypothesis Ha3 and the arguments of the agency and resource dependence theory that the controlling-ability of the board of directors require diversity in knowledge, experience, and gender, which may reduce the agency conflicts, information asymmetry and provide more information about risk preferences of EU mangers and support firms to gain access to the critical resources (Hillman & Dalziel, 2003; Jia, 2019).

Third, *Risk_COM* significantly and positively affects *CRD I_Quantity* across EU countries, which support the research hypothesis Ha5 and the arguments of the agency, resource dependence, and stakeholders' theories that firms with risk committee may give specialised insight in terms of risk disclosure and management, which results in a reduction in information asymmetry and subsequently reduces any risks associated with investors' devaluation of the firm and agency costs (Jensen and Meckling, 1976; Subramanian et al., 2009; Ishak & Yusof, 2020; Jia et al., 2019; Neifara & Jarboui, 2018; Nahar & Jahan, 2021; Bozzolan & Miihkinen, 2021). Also, helps stakeholders to obtain sufficient information about risk and make better risk management decisions (Karamanou & Vafeas, 2005; Pirson &Turnbull, 2011; Neifara & Jarboui, 2018; Jia et al., 2019; Nahar & Jahan, 2021; Bozzolan & Miihkinen, 2021).

Fifth, ownership structure, particularly *CON_OWN*, is negatively associated with risk disclosure quantity, which supports the research hypothesis H2a and approves the empirical results of the prior literature (e.g., Abraham & Cox, 2007; Barako et al., 2006; Elzahar & Hussainey, 2012; Ntim et al., 2012; Elamer et al., 2019; Abdallah & Eltamboly, 2022). These results are also in line with the agency theory perspective, which suggests that it diminishes

agency conflicts by acting as a substitute for other corporate governance mechanisms. In addition, the main findings of INS_OWN appear to be in line with the stakeholder theory, which suggests that institutional ownership is more similar to other public shareholders because the institutional investors are more interested in risk disclosure, particularly risk information (Salem, Ayadi, and K. Hussainey, 2019).

Sixth, national governance quality and its indicators (e.g. VA, GE, RQ, ROL, and COC) have a positive impact on risk disclosure quantity and quality, which supports hypothesis H3 that countries with stronger national governance indicators are associated with high levels of risk disclosure quantity and quality across EU countries. These results also coincide with the previous studies and the institutional theory, which claims that national governance structures could keep owners and minority shareholders safe from being expropriated by the company's managers (Aslan & Kumar, 2014; Yoshikawa et al., 2014; Elamer et al., 2019; Elamer et l., 2021) and tend to put executives and non-executive directors under pressure to implement their responsibilities (Yoshikawa et al., 2014; Aguilera et al., 2008; Barakat & Hussainey, 2013; Ntim et al., 2013). Thus, country-level governance may underline risk disclosure (Barakat & Hussainey, 2013; Essen et al., 2013; Kaufmann et al., 2011). It may offer incentives to engage in greater risk disclosure to gain legitimacy due to societal pressures from companies' external environment and regulations (Aguilera et al., 2008; Barakat & Hussainey, 2013; Chandler & Hwang, 2015; Ntim et al., 2013; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020; Abdallah & Eltamboly, 2022).

Seventh, the moderation effect of NGQ can improve the effectiveness of firm-level governance in overseeing the reporting practices, where the results indicate that the quality of national governance indicators improves the impact *of GOV_Score on CRD I_Quantity, CRD II_Scale, and CRD III_AHP,* where the coefficient of *Gov_Score*NGQ* is positive. These results provide

further evidence that national governance quality might improve the quality of corporate governance structures (La Porta & colleagues, 2000; Ernstberger & Grüning, 2013). Also, the results support the research hypothesis H4, as well as the practical evidence in the previous studies that effective country-level governance indicators, in the view of the agency theory and stakeholder theory, are more likely to restrain the information asymmetry and motivate management toward informative disclosure (Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020).

Also, national governments, in view of neo-institutional theory, bring unique insights into how risk disclosure can be viewed and explained within distinctive regulatory and institutional frameworks where firms may choose to improve their risk disclosure levels to communicate their superior performance to all stakeholders as a strategic move towards the influences of the external dependencies in response to the country-level governance that affects them (Bonetti et al., 2016; Burgstahler et al., 2006; Cumming et al., 2014; DeFond et al., 2007; Pfeffer, 1972; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020).

Over al1, the results confirm that H2, H3, and H4 are consistent with the recommendations of the multi-theoretical framework. Hence, diversity in board compositions (independent and female directors), ownership structure, and an effective governance environment can not only be used to engage in greater managerial monitoring (agency theory) but can also improve relationships with stakeholders (stakeholder theory), and enhance corporate legitimacy and reputation (institutional and legitimacy theories). Table 9.8 summarises the results of the main hypotheses under each model.

Table 9.8. Summary of hypothesis test results for all risk disclosure indices

Prior studies			Expected Sign	Research hypotheses		Results	
CRD quality		CRD Quantity					
AHP	Scale						
Firm-level governance							
?	+/-	+/-	+	Ha1	Independent directors	A	+
?	+/-	+/-	+	Ha2	Gender diversity	A	+
?	?	+/-	+	Ha3	Female leadership	A	+
?	+/-	+/-	+	Ha4	Risk management committee	A	+
?	+/-	+/-	+	Ha5	Audit quality	A	+
+	+	+	+	H1	Governance score	A	+
				H2	Ownership structure:		
?	?	?	+		concentrated ownership	A	-
?	?	?	+		Management ownership	A	-
?	+/-	+/-	+		Institutional ownership	A	+
?	+/-	+/-	+		Foreign ownership	A	+
?	+/-	+/-	+		Government ownership	R	+
Country-level governance							
				H3	National governance indicators		
?	?	+/-	+		Voice and accountability	A	+
?	?	+/-	+		Political Stability and Absence of Violence	R	-
?	?	+/-	+		Government Effectiveness	A	+
?	?	+/-	+		Regulatory Quality	A	+
?	?	+/-	+		Rule of Law	A	+
?	?	+/-	+		Control of Corruption	A	+
+	+	+	+		Overall NGQ	A	+
+	+	+	+	H4	Moderating effect of National governance	A	+

A means that the hypothesis is accepted with a significant relationship, R means the hypothesis is rejected without a significant relationship, + means positive association, - means negative association, +/- means mixed result, and ? Means that to the best of the researcher's knowledge, the relationship was not studied before.

9.6. Robustness Tests

We have conducted a number of additional analyses to determine the robustness of the findings. First, to address potential endogeneity concerns, we estimate a lagged CRD–CG structure (e.g., Ntim et al., 2013; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020; Hao & Dong; 2022). In lagged models, all variables are the same as in main models, except that we include a one-year lag between the CRD and the CG so that the CRD for the current year depends on the firm-level governance structure and ownership structure of the previous year. It can be

observed that the results (un-tabulated) are generally in line with the main results presented in the present chapter. As a consequence, the evidence supports a lagged CRD-CG nexus estimation, which implies that the evidence is robust.

Moreover, following prior studies (Ntim et al., 2013; Elamer, Ntim, and Abdou, 2020), We address possible endogeneities caused by omitted variables by using two-stage least squares (2SLS). As a first step, we hypothesise that all control variables will be responsible for determining CG based on extensive theoretical and empirical literature (Elamer, Ntim, and Abdou, 2020). After estimating the predicted values from the CG model, we use them as instruments. Second, we use the instrumented variables of CG to run the model again using Equations 1-5 presented in Chapter 4. Except that we use the predicted values from the first stage estimation as instruments for the CG variables, nothing changes in Equations 1-5. The results (un-tabulated) are qualitatively similar to those presented in this chapter, indicating that the results are robust to potential endogeneity resulting from omitted variables. It is robust to potential endogeneities caused by omitted variables. There is also a slight difference in the magnitude of the coefficients of the governance variables (CG), which is generally consistent with previous research that has demonstrated that instrumented parts of the governance variables (CG) tend to predict risk disclosure when compared to their un-instrumented parts (Ntim et al., 2012; Elamer, Ntim, and Abdou, 2020; Mcchlery & Hussainey, 2021; Hao & Dong, 2022).

9.7. Concluding Remarks

This chapter explained the statistical analysis of the relationship between firm-level governance mechanisms, ownership structure, national governance, and risk disclosure quantity and quality. The empirical results indicate that board of directors' characteristics, risk committee, audit quality, concentrated ownership, institutional ownership, governance score, and national governance indicators are the main indicators of the risk disclosure quality. Also, the results

support the thoughts of the agency theory about the benefits of the existence of the risk management committee. It represents the focus of CG to promote the interests of other stakeholders in information disclosure. On the other hand, governance pillars scores, particularly ownership structure and national governance indicators, particularly VA, PS, RQ, RO, and COC, largely explain the differences in risk disclosure quality. Furthermore, effective national governance can moderate the relationship between corporate governance and risk disclosure quality.

As shown in the empirical analysis, the determinants of risk disclosure quality are consistent with the framework of multiple theoretical perspectives (agency, resource dependence, stakeholder, legitimacy, and institutional theory) and support, as a whole, the empirical results of the previous empirical analysis of hypotheses H1, H2, H3. In addition, H4 suggests that diversity in the composition of boards (including independent and female directors) and ownership structure significantly explain the differences in risk disclosure. An appropriate governance framework does not only facilitate greater management monitoring (agency theory) but also can be beneficial in strengthening stakeholder relationships (stakeholder theory) and enhancing corporate legitimacy and reputation (institutional and legitimacy theories). The next chapter summarises the empirical findings of the current study and the theoretical and practical implications; the limitations of the current study follow this, and suggestions for future research are provided.

Chapter Ten: Summary, Conclusions, and Implications

10.1. Overview

The current study aims at investigating the determinants of the extent and the quality of corporate risk disclosure within and across the European countries. At the firm and country levels, the EU firms have their own and different approaches to reporting information about risk and uncertainties. Regulators require companies to report their risk factors. European listed companies must prepare their financial statements according to International Financial Reporting Standards (IFRS) which requires them to disclose risks related to financial instruments in a quantitative and qualitative manner. The IASB also recommends that companies provide a Management Commentary, which includes information about risk exposures (IASB, 2010). Companies in the EU are required to provide a description of the risks and uncertainties the company faces in their financial statements, or more specifically, in the management report. Directive 2013/34/EU mandates this, but it also gives managers a lot of freedom in its implementation. The level and detail of risk disclosure is left to the discretion of management, making risk disclosure in the European context often referred to as quasi-voluntary or quasi-mandatory (see for example, Dobler et al., 2011, Mazumder and Hossain, 2018). The current study follows the calls of previous studies (e.g., Dobler, 2008; Linsley and Shrives, 2006; Elshandidy, 2011; Ntim et al., 2013; Elamer et al., 2019; Elamer, Ntim, and Abdou, 2020;) to investigate the extent and behaviour to which firms in the European region respond to their significant uncertainties.

Analysing the European firms' attitude and motivations toward risk disclosure give signals to policymakers within each country about the different types of risks which firms face and how they disclose these risks. Companies with ongoing uncertainty should reveal and clarify how they evaluate their uncertainties in their financial reports. Furthermore, they provide a

sensitivity analysis to measure the impacts of uncertain events on financial, operational, and strategic outlook and their strategy to deal with risks.

The current chapter summarises the conclusion of the study. It reviews the main empirical findings and the theoretical and practical implications. This is followed by the limitations of the current study, and suggestions for future research are provided.

10.2. Research Conclusions

The main objective is to examine how corporate governance quality is related to the quantity and quality of risk disclosure by EU firms, and whether national governance quality (NGQ) reinforces this relationship. To investigate the role of multi-layer corporate governance on risk disclosure within and across the UK, Germany, France, and Italy, a longitudinal analysis was performed In this study, an automated content analysis method is used to measure the quantity and quality of risk disclosure practices. This is based on an automated content analysis of annual reports for 4851 firm-year observations in the United Kingdom, France, Germany, and Italy from 2012 to 2018.

The content analysis of firms' annual reports is conducted on four different levels in order to determine the extent and quality of risk disclosures. First, ‘texts’ are the annual reports of European companies. Then ‘coding units’ comprise the numbering of words, pages or phrases. Third, ‘coding scheme’ refers to categorising coding units and risk classifications. Lastly, the coding mode may be either automated or performed manually. Because the advantage of the automated approach outweighs manual content analysis, the long time-consuming and fewer cost-effective shortcomings of the manual approach, we used an automated coding mode. Also, there are disadvantages to the manual process, such as being time-consuming and costly. As a

part of an empirical study, the amount of risk disclosure index is calculated by analysing annual reports of European countries using automated content analysis using NVivo 12 Pro software (as discussed in Chapter Five), based on the final list of risk words discussed in Chapter Four.

To measure the behaviour/quality of risk disclosure, CFIE software was used to calculate the risk behaviour/tone in the annual reports for the four European countries. Moreover, we developed a weighted risk disclosure index to calculate the score of risk disclosure quality (as discussed in Chapter Five) and to overcome the weaknesses of unweighted indices. The analytic hierarchy process (AHP) is the quantitative method used to weight each risk disclosure item by measuring the relative importance of the index's components by assigning different weights for each component. The AHP is used to address the problems of selections and prioritisation decisions. First, identity and decomposition, which means that the decision problem (weighting of risk disclosure index) has the potential to be restructured into smaller fragments and to be structured hierarchically, in levels, from the more general (main criterion) to the more specific (and measures/sub measures). Secondly, in discrimination and comparative judgments in a pair matrix comparison, the AHP method relies primarily on pair-wise comparisons to determine the priority of each criterion and sub-measure using data collected by an expert group via questionnaires. Thirdly, a convergence stage integrated the decisions of experts' judgments into one category to determine overall priorities. AHP steps are taken to allocate the unequal weights for their components in Chapter Five. Regarding the hierarchy structure of the risk disclosure index. There are disagreements among researchers regarding risk classifications, and the complexity of risk measurement is a function of the accurate risk structure.

According to the second method, each item of risk information is weighed on a scale from (0) to (6) using a scale from (0) to (6) for coding the risk words (as shown in Table 4.4). A score

(0) is assigned for any risk information which has not been disclosed in the annual reports, and a score (6) is assigned for comprehensive risk disclosure in the annual reports. The total scores for the CRD criterion are multiplied by the relative weight for each dimension, and the company's total score is calculated as a percentage ranging from 0 to 100%.

The main findings emerging from the descriptive statistics show a considerable variation in the content of the risk disclosures and the quantity across European countries over the period 2012-2018. Considering the risk disclosure items, the researcher reported that annual reports are more likely to focus on the management and fluctuation of risk items. The UK and Germany are likely to disclose more risk information. However, the percentage of French and Italian firms is the lowest in incorporating the risk information in their annual reports. Furthermore, the extent of risk disclosure is likely to improve gradually over time.

Regarding risk components, management, operational, and fluctuation risks are of the greatest concern to European firms, whereas business risk items represent the least percentage of risk disclosure. In addition, the researcher recommends that risk disclosure largely concentrates on positive, historical, and qualitative information in terms of quality. As for the changes in the risk disclosure quality over the years (2012-2018), there is no clear trend of changes in risk disclosure, particularly in the UK after Brexit. However, some factors may have a significant impact on the quantity and quality of the risk disclosure in view of the prior studies.

Using fixed effects panel and 2SLS regressions to analyse the disclosure of risk disclosures, the empirical results indicate that board of director composition in terms of independence and gender diversity, female leadership, audit quality, risk committee, ownership structure, and governance score are the main determinants of risk disclosure quantity and quality within the

EU firms. These results are consistent with the multi-theoretical framework, as follows. First, the main findings of boards' composition (independence and gender diversity) appear to coincide with resource-dependence theory. In contrast, diversity in board composition may provide different perspectives and knowledge to monitor management incentives and decisions, particularly regarding disclosing information about risks and determining how to manage them. This may catalyse the acquisition of resources, business contracts, or financial support. Second, the diversity of a board of directors may enhance the ability of management to make better decisions, enhance stakeholder representation on the board of directors (Freeman, 1984), and enhance firms' reputation and legitimacy.

Third, female leadership is associated with the oversight power of the board of directors over executive management. These results indicate that female directors' are more likely to address concerns about risk disclosure than owners and other stakeholders (stakeholder theory). They also can force management to disclose high levels of risk information (agency theory). Fourth, an effective risk committee can enhance risk management and internal control of a firm's risk profile through its expertise in the management and disclosure of risks. It assists stakeholders in obtaining sufficient risk information and making effective risk management decisions (resource-dependence theory). In turn, this reduces information asymmetry and agency costs (agency theory) and improves credibility and legitimacy (institutional and legitimacy theory).

Fifth, the main findings of institutional ownership appear to coincide with the stakeholder theory perspective. This indicates that institutional ownership is more similar to other public shareholders because there is high public interest and a significant need for more disclosure, mainly risk information. These results are also in line with the agency theory perspective, which suggests that concentrated ownership diminishes the agency conflicts by acting as a substitute for other corporate governance mechanisms where the concentrated ownership is

likely to motivate management toward engaging in low levels of risk disclosure to maintain the security of firms' information.

Overall, these findings are also consistent with the previous studies that show that corporate governance mechanisms and ownership structure are likely to explain the differences between firms in their risk disclosure volume and behaviour (e.g., Jensen and Meckling, 1976; Pfeffer, 1972; Mbithi, Wang'ombe, and Moloi, 2020; Nahar & Jahan, 2021; Hao & Dong; 2022).

Regarding the incentives of risk disclosure across the European countries, the empirical results indicate that independent directors, board gender diversity, female leadership, risk committee, audit quality, institutional ownership, corporate governance quality, and national governance quality are positively associated with the extent and quality of risk disclosures across the EU countries. In contrast, concentrated ownership and managerial ownership are negatively related to the extent and quality of risk disclosures across the EU countries.

These results support the expectations of the multi-theoretical explanations and the research hypotheses in different ways. First, we found that the higher proportions of independent directors and female directors are significantly and positively related to the quality and quantity of risk disclosures. This supports hypotheses Ha1 and Ha2, in which independence and gender have been found to be associated with the authority of the board of directors over management. This is because independent directors are more likely to be independent in their opinions. There are several ways in which they can contribute to reducing agency conflicts between principals and agents (Adelopo et al., 2021). They can also respond to owners' and other stakeholder concerns regarding risk disclosure (the stakeholder theory). Additionally, diversity in board composition can improve board independence and managerial ability (Elzahar & Hussainey, 2012) on the one hand and enhance relations with stakeholders on the other (Adelopo et al., 2021; Hao & Dong, 2022). It is, therefore, necessary to enhance corporate legitimacy and

reputation by enforcing adequate levels of risk disclosure by the management (institutional theory and legitimacy theory).

In addition, the presence of women in leadership positions has a significant impact on the extent and quality of risk disclosure across EU countries. Consequently, the results support hypothesis Ha3 as well as the agency and resource dependence theory, which suggests that the controlling-ability of boards of directors requires diversity in knowledge, experience, and gender in order to reduce agency conflicts, reduce asymmetry of information, and assist companies in gaining access to critical resources (Hillman & Dalziel, 2003; Jia, 2019).

The third finding of this study is that risk committees significantly and positively affect risk disclosure across EU countries, which supports the research hypothesis Ha5 and the arguments proposed by the agency, resource dependence, and stakeholder theories that risk committees can provide specialized insight into risk disclosure and management. As a result, there is less information asymmetry and, therefore, the risk of investors devaluing the firm as well as agency costs being associated with it . It is also helpful for stakeholders to obtain sufficient risk information and to make better decisions regarding risk management.

The fourth finding is that ownership structure, especially concentrated ownership, has a negative relationship with risk disclosure quantity, supporting the research hypothesis H2a and verifying previous studies (e.g., Abraham & Cox, 2007; Barako et al., 2006; Abdallah & Eltamboly, 2022). Furthermore, these results are consistent with the agency theory perspective, which suggests it reduces agency conflicts by substituting other forms of corporate governance. Also, these findings are consistent with stakeholder theory, which indicates that institutional investors are interested in risk disclosure more than other public shareholders, especially in risk information (Salem, Ayadi, and K. Hussainey, 2019).

Fifth, The quality of national governance positively correlate with risk disclosure quantity and quality across EU countries, which is consistent with hypothesis H3. It is also worth noting that the results are in line with previous studies and institutional theory, which claims that national governance structures could prevent owners and minority shareholders from being expropriated by their managers. As a result, executives and non-executive directors are sometimes under pressure to execute their duties (Yoshikawa et al., 2014; Ntim et al., 2013). As a result, country-level governance may represent a crucial aspect of risk disclosure (Barakat & Hussainey, 2013). Companies may be compelled to disclose more information about their risk to gain legitimacy as a result of societal pressures imposed by their external environments and regulations (Chandler & Hwang, 2015; Ntim et al., 2013; Elamer et al., 2019).

Furthermore, effective national governance can moderate the relationship between corporate governance and risk disclosure quantity. Additionally, the moderating effect of NGQ can improve the effectiveness of firm-level governance in overseeing reporting practices. These findings support the idea that corporate governance structures may benefit from good national governance (La Porta et al., 2000). Furthermore, the results confirm the research hypothesis H4 based on agency theory and stakeholder theory, as well as previous research findings indicating that effective country-level governance indicators would restrain information asymmetry and motivate management to disclose information that is informative.

All in all. The empirical results coincide with the adopted multi-theoretical framework that diversity in the composition of boards (including independent and female directors), ownership structure, and an appropriate governance framework does not only facilitate greater management monitoring (agency theory) but can also be beneficial in strengthening stakeholder relationships (stakeholder theory) and enhancing corporate legitimacy and reputation (institutional and legitimacy theories).

10.3. Theoretical and Practical Implications

10.3.1. Theoretical implications

This study have some distinctive theoretical implications. First, the current study contributes to bridging the gaps in risk disclosure literature, where a few prior studies investigated the multi-level variables on risk disclosure practices. This study addresses the theoretical and practical gaps in the literature by testing the risk disclosure in European countries with different regime legislation systems regarding risk reporting and corporate governance. In particular, the corporate governance concept is relatively new in Germany.

This study shows that distinguishing between the drivers of risk disclosure practices is essential to understanding the differences between and among countries and the incentives associated with risk disclosure practices within countries with robust regulatory systems, such as the United Kingdom, Germany and France. This view is in line with several previous studies, such as Dobler (2008), who postulated that the study of management incentives concerning risk disclosure is one of the significant determinants of the quantity and quality of risk disclosure financial reports.

Second, in most previous studies, manual and automated content analysis have been used to quantify risk disclosure contents. In addition, an unweighted index for risk disclosure was the main method to measure risk reporting in a large number of studies (see for example, Beretta and Bozzolan, 2004; Kurniawanto et al., 2017; Ibrahim & Hussainey, 2019). The current research investigated risk disclosure levels across Germany, the UK, France and Italy by developing an AHP-based weighted risk disclosure index across countries sampled over seven years (2012 to 2018). This research has been the first to use weights for risk disclosure contents in such a large time-series across these four countries.

A third contribution to the literature on risk disclosure, the current study employed a longitudinal sample to study the impact of multi-layer corporate governance policies at the firm and country levels on risk disclosure practices in Europe from 2012 to 2018. To the researcher knowledge, few studies have investigated the effect of multi-layer governance mechanisms on risk-based disclosure in Europe. This second theoretical implication is related to how to integrate simultaneously cross-sectional and time series analysis, as well as correcting for residual dependencies, using either fixed effects panel or 2SLS regressions, which are presented in Chapters Eight and Nine, respectively. Third, the multi-layer indicators notably improve the explanation of the significant variations of risk disclosure quantity and quality within and between firms within or across Germany, the UK, France, and Italy from 2012 to 2018.

The results of this study provide empirical support to the expectations of the adopted multi-theoretical framework, that the effective governance mechanisms contribute to increase monitoring on management decisions (agency theory) and enhance stakeholders' confidence and representation in board of directors (stakeholder theory). Furthermore, it improves firms' legitimacy and reputation (institutional and legitimacy theories) and supports them in obtaining critical resources such as finance and contracts (resource-dependence theory).

10.3.2. Practical implications

This study has important implications for firms, policymakers, and other stakeholders especially in developed countries in regard to the development of firm and national governance. The findings of the study generally indicate that better-governed firms, whether at the firm or national level, are more likely to be committed to increased levels of risk disclosure. The implications of such a finding are significant for different policy makers. It is intended to convey information to standard-setters and regulators about the significance of sound corporate

governance in enhancing the extent and quality of risk disclosures. These results provide additional incentive for regulators to pursue internal governance reforms in conjunction with reforms of the national governance system.

Moreover, the results suggest that policymakers should revise corporate governance codes to increase the representation of women on corporate boards. It is also possible for policymakers to use these results to establish guidelines for setting rules and regulations that will motivate companies to take proactive measures to enhance their risk disclosures in order to satisfy stakeholders' needs and allow them to assess the firm's risk profile. The results of this study contribute to the understanding of the importance of governance in mitigating traditional agency problems, such as information asymmetry, and thus enhancing the efficiency of firms and their legitimacy within society as a whole. This research also provides a clear message to shareholders, in particular institutional shareholders, regarding the importance of corporate governance in general and board structure (e.g., board independence, board gender diversity) in particular as a mechanism to enhance risk disclosure.

Furthermore, this study has several implications for companies as well as professional practitioners. These results provide insights into how corporate governance mechanisms and country-level characteristics influence managers' willingness to disclose risk information. This study also illustrates the importance of risk disclosure as an essential component of the capital market. It also demonstrates the extent to which reporting practices and regulations can be improved.

10.4. Limitations and Suggestions for Future Research

The study has some limitations, either in the firm- or country-level analyses or in its research methodology, which may be addressed in future research. Firstly, this study utilized a quantitative approach based on secondary data. It might be useful to conduct in-depth case

studies and interviews with relevant stakeholders, such as board members, regulators, and investors, to gain a more nuanced and in-depth understanding of the relationship between corporate governance and risk disclosures in the future. Secondly, the current study adopted the AHP method to assign different weights to different components of the risk disclosure index. Thus, future research to examine risk disclosure may apply different techniques such as Delphi or other expert methods could be adequate (Abdallah, 2021). Third, for control variables, the current study accounted for four effects; namely, size, profitability, growth and leverage, liquidity and some of board of directors' characteristics effects. Some other effects have been suggested in disclosure studies, such as dividends, audit firm size and cross listing (e.g., Ntim et al., 2013; Elamer et. al 2019). It could be useful to consider the top management characteristics and other variables, which might decrease the unexplained variations in risk disclosure levels and quality within firms and across countries. Finally, this study examined risk disclosures in non-financial firms from four countries within the European Union. Hence, future research should focus on financial firms or include more countries to provide a deeper analysis. However, this study contributes to the literature by providing new insights into risk disclosure practices and the role of firm governance and country governance structures in shaping firms' disclosure practices. On the other hand, relying on the annual reports isone way for firms to convey information rather than financial releases or filing, and utilising the automated content analysis using NVivo 12 Pro and CFFIE instead of Nudist 8 or Other software could be utilised to capture risk reporting levels are the methodology limitations of the current research.

At the country-level analysis, other countries rather than the selected nations could have different and attractive approaches to risk reporting, so the tested four countries could be extended by involving other countries' in different regions. Furthermore, using other variables to proxy the country's effects could be useful to extend the research design of the current study.

Other variables, such as financing types, economic growth and risk at the country level have a significant impact on the extent of risk disclosure. In other words, the limitation of the research design of the current study is related to focus on four European countries to observe the impact of all country variables on variations in risk disclosure quantity and quality because of different economic and cultural of variables. Extending the current design to include other countries is essential to observe the impact of some other factors (e.g., the sources of finance; political factors) on risk disclosure variations.

Further research could usefully implement different research techniques, adopt different variables at firm and country level, and increase the research sample through including other countries in different region are research opportunities for future research.

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Appendices

Appendix 1: AHP questionnaire

Professor/Doctor/Sir…

The researcher aims to prioritise the risk disclosure criterion by applying Analytical Hierarchy Process (AHP) technique in order to complete the PhD requirements under the title:

'The effects of multi-layer governance on risk disclosures: EU evidence'

In this questionnaire, you are to express your opinion regarding the importance of 4 main attributes of risk disclosure, by comparing them in pairs, according to the following Judgement scale

Table: Scale of relative preferences for pairwise comprise:

1	Equal importance (Attribute A is of equal importance as B)
3	Moderate importance (Attribute A is moderately more important than B)
5	Essential or strong importance (Attribute A is strongly more important than B)
7	Very strong importance (Attribute A is very strongly more than B)
9	Extreme importance (Attribute A is extremely more important than B)
2,4,6,8	Values for inverse comparison

Precisely, from the below table, you can pick the value 1 when both variables are equally important. Or a value from the left scale when the risk attribute organised in the first column is well-thought-out and more significant. Correspondingly, choosing a value from the right scale means that the attribute of the last column is considered more important.

I. Business risks compared to operational, management and fluctuations risks

Attribute	Attributes scale judgment																Attribute
	more important than								equal	less important than							
Business risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Operational risks
Business risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	Management risks
Business risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Fluctuation risks

II. operational risks compared to management and fluctuations risks

Attribute	Attributes scale judgement																	Attribute
	more important than								equal	less important than								
Operational risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Management risks
Operational risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	Fluctuation risks

III. Management risks compared to fluctuation risks

Attribute	Attributes scale judgement																	Attribute
	more important than								equal	less important than								
Management risks	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Fluctuation risks

Glossary of risk categories:

i. **Business Risk**: These types of risks are taken by business enterprises themselves in order to maximise shareholder value and profits. Also, it can refer to the possible losses that arise from the competitive skills that a company has. Business risks include just a few

1. Capital adequacy/insolvency
2. Concentrate/Business portfolio
3. Hedging
4. Liquidity
5. Credit
6. Pricing

ii. **Operational Risk:** This type of risk arises out of operational failures such as mismanagement or technical failures. Operational risk arises from internal and external factors; consequently, it can be classified into Fraud Risk and Model Risk. Fraud risk arises due to the lack of controls, and Model risk arises due to incorrect model application. Consequently, the operational risk may have negative effects on a firm's assets or liabilities. These types of risks include:

1. Information technology
2. Health and safety
3. Sourcing/raw material
4. Social contribution/community support
5. Internal audit and control
6. Derivatives
7. Competition/proprietary/copyright

8. Employee fraud
9. Business ethics/corruption

iii. **Management Risk:** This type of risk arises out of mismanagement or failure of governance mechanisms. It includes:

1. Performance/Fraud management
2. Disclosure of risk governance
3. Research and development
4. Acquisitions, alliances, joint ventures
5. Compensations of executives
6. Disclosure of committee existence

iv. **Fluctuation risk:** is caused on account of changing market prices, interest and currency rates. Based on this, fluctuation risk can be classified into various types such as Market Risk, Credit Risk, Liquidity Risk, interest rate risk, and cash flow Risk.

Thanks for your interest

Appendix 2. Examples of corporate risk disclosures coding rules application

Country	Company	Year	Disclosed Risk statement	Risk disclosure category	Risk disclosure subcategory	Classification/ coding
UK	4imprint Group plc	2012	SPS has manufacturing risks at its Blackpoll premises, which are not risks faced by 4imprint Direct Marketing.	Operational risk	Production development risk	Qualitative/ negative
		2012	The Group believes that factors such as interest rates, inflation, investor sentiment, the availability and cost of credit and the liquidity of the global financial markets can affect the marketing and promotional spending of the customers of the Group.	Fluctuations/business risks	Credit/liquidity/ interest rate risk	Historical/ negative/ quantitative
		2012	As promotional product spending could be considered a discretionary item, in periods of economic downturn, the Group's customers may seek to economise by reducing promotional spending, leading to a decline in demand for the Group's products.	Business/ Fluctuations risk	Hedging/ cash flow risk	Negative/ Quantitative
UK	888 Holdings	2018	888 has taken an RCF from Barclays Bank plc in order to finance its activities. The credit facility contains covenants by the Group regarding the maintenance of certain financial ratios, as well as various regulatory compliance matters.	Business risk	Hedging risk	Qualitative/ monetary/ positive/historical
		2018	888 has made a number of acquisitions in the online gaming and betting space. Acquisitions of gaming companies carry business risks, such as overpaying for what are mainly intangible assets, as	Management risks	Acquisitions, alliances, joint ventures	Quantitative/ negative/ monetary

			well as legal and regulatory risks, including the receipt of necessary regulatory approvals for the transaction and exposure to legacy non-compliance of the seller.			
UK	AA plc	2016	The competitive threat from aggregators has not changed during the year; the launch of our in-house insurer should help to mitigate the risks to our insurance business in due course, reducing the present high impact and likelihood. This is a new Principal Risk. Without reinsurance and best practices in claims handling, the potential impact would be high. We have put in place processes to reduce both the potential impact and the likelihood of this risk occurring.	Management risks	Acquisitions, alliances, joint ventures/ Hedging	Qualitative/ negative/ Non-monetary
		2016	The AA launched a new partnership with Bank of Ireland UK, who will now provide most of the AA's non-insurance related Financial Services products.	Management risk	Investment plans	Positive/ quantitative
Germany	ADVA Optical Networking	2016	The market for innovative connectivity solutions for cloud and mobile services is highly competitive and subject to rapid technological change. Competition in this market is characterised by various factors, such as price, functionality, service, scalability and the ability of systems to meet customers' immediate and future network requirements.	Operational/ Management risk	Information technology/ Research and development	Qualitative/ positive/ non-monetary
		2016	Technological obsolescence, as well as short-term changes in customer demand and manufacturing processes, may trigger significant inventory depreciation. Preventive measures to	Operational/ Management risk	Source/raw material/information technology	Quantitative/ positive

			minimise inventory depreciation include an integrated sales and operations planning process and quarterly reviews of inventory depreciation at item levels involving the finance and operations departments.			
France	Accor Hotels	2017	Acquisition for subsequent resale of a Sofitel in Budapest for €43 million (this hotel was immediately reclassified as held for sale).	Operational risk	Derivatives	Quantitative/ negative/ monetary/ forward-looking
		2017	Decreases over the period mainly comprise the disposal of 4 Mercure and 2 ibis in Poland, representing a net book value of €8 million	Business risk	Pricing	Quantitative/ monetary/ negative
Italy	A2A	2018	The commodity price risk is related to the volatility of energy commodity prices (gas, electricity, fuel oil, coal, etc.) and prices of environmental securities (EUA/ETS emission rights, white certificates, etc.).	Fluctuations risk	Commodity	Quantitative/ monetary/ negative

		2018	As part of the optimisation of the portfolio of greenhouse gas emission allowances (see Directive 2003/87/EC), the A2A Group has stipulated Future contracts to be on the ICE ECX (European Climate Exchange) price. These are considered hedging transactions from an accounting point of view in the event of demonstrable surplus/deficit quotas. The fair value, on December 31, 2018, was 10.2 million euro (1.4 million euro on December 31, 2017).	Business/ Fluctuation risks	Hedging	Quantitative/ monetary/ positive

Appendix 3: Samples of risk disclosure phrases captured by NVivo 12

Country	Company	Year	Disclosed Risk statement	Risk disclosure category	Risk disclosure subcategory
UK	4imprint Group plc	2012	SPS has manufacturing risks at its Blackpoll premises, which are not risks faced by 4imprint Direct Marketing.	Operational risk	Production development risk
		2012	As promotional product spending could be considered a discretionary item, in periods of economic downturn, the Group's customers may seek to economise by reducing promotional spending, leading to a decline in demand for the Group's products.	Business/ Fluctuations risk	Hedging/cash flow risk
UK	888 Holdings	2018	888 has taken an RCF from Barclays Bank plc in order to finance its activities. The credit facility contains covenants by the Group regarding the maintenance of certain financial ratios, as well as various regulatory compliance matters.	Business risk	Hedging risk
		2018	888 has made a number of acquisitions in the online gaming and betting space. Acquisitions of gaming companies carry business risks, such as overpaying for what are mainly intangible assets, as well as legal and regulatory risks, including the receipt of necessary regulatory approvals for the transaction and exposure to legacy non-compliance of the seller.	Management risks	Acquisitions, alliances, joint ventures
Germany	ADVA Optical Networking	2016	The market for innovative connectivity solutions for cloud and mobile services is highly competitive and subject to rapid technological change. Competition in this market is characterised by various factors, such as price, functionality,	Operational/ Management risk	Information technology/ Research and development

			service, scalability and the ability of systems to meet customers' immediate and future network requirements.		
		2016	In 2016, on a net basis, the Group saw significant GBP inflows and USD outflows. To combat fluctuations, the USD net cash flows in part are hedged against EUR using forward exchange agreements, based on the Group's forecasted EUR/ USD exposure for the current year and the next year.	Business/ fluctuation risks	Exchange rate
		2016	Technological obsolescence, as well as short-term changes in customer demand and manufacturing processes, may trigger significant inventory depreciation. Preventive measures to minimise inventory depreciation include an integrated sales and operations planning process and quarterly reviews of inventory depreciation at item levels involving the finance and operations departments.	Operational/ Management risk	Source/raw material/informatio technology
France	Accor Hotels	2017	Acquisition for subsequent resale of a Sofitel in Budapest for €43 million (this hotel was immediately reclassified as held for sale).	Operational risk	Derivatives
		2017	Decreases over the period mainly comprise the disposal of 4 Mercure and 2 ibis in Poland, representing a net book value of €8 million	Business/fluctuation risks	Pricing

Italy	A2A	2018	If a derivative financial instrument is designated as a hedge against exposure to changes in the fair value of an asset or liability attributable to a specific risk, the gain or loss resulting from subsequent changes in the fair value of the hedging instrument is recognised in the Income Statement. The profit or loss deriving from the adjustment to the fair value of the item hedged, for the part attributable to the hedged risk, changes the book value of this item and is recognised in the Income Statement.	Operational risk	Derivatives
		2018	The Group is exposed to price risk, including the currency-related risk, on all of the energy commodities that it handles, namely electricity, natural gas, heat, coal, fuel oil and environmental certificates; the results of production, purchases and sales are similarly affected by fluctuations in the prices of such energy commodities. These fluctuations act both directly and indirectly through formulas and indexing in the pricing structure.	Fluctuation risk	Currency exchange
		2018	As part of the optimisation of the portfolio of greenhouse gas emission allowances (see Directive 2003/87/EC), the A2A Group has stipulated Future contracts to be on the ICE ECX (European Climate Exchange) price. These are considered hedging transactions from an accounting point of view in the event of demonstrable surplus/deficit quotas. The fair value, on December 31, 2018, was 10.2 million euro (1.4 million euro on December 31, 2017).	Business/ Fluctuation risks	Hedging