

The Level of Sustainability Reporting and Its Impact on Firm Performance: The Moderating Role of a Country's Sustainability Reporting Law

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Accounting



Brunel Business School
Management Studies Research
Auditing of Accounts
June 2020

Abstract

This thesis aims at investigating the moderating role of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance. To achieve this, two research questions need to be answered. What is the relationship between the level of sustainability reporting and firm performance? And, Is there an effect of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance?

To answer these research questions, a positivistic research approach was adopted. A secondary data was used for this study, the data was facilitated the Bloomberg database. The sample includes data from 3,000 firms of 80 countries over 10 years (2008–2017), which provides 23,738 observations.

The results show that sustainability reporting disclosure (environmental, social and governance) affects negative a firm's operational performance (ROA). However, when the components of ESG are considered separately it has a positive effect on a firm's operational performance (ROA). On the other hand, sustainability reporting disclosure (ESG) does not affect a firm's financial and market performance (ROE and TQ).

Moreover, the results show that the inclusion of country's sustainability reporting law (SRL) as moderator variable affects negatively the relationship between ESG and a firm's operational performance. However, when the components of ESG are considered separately an SRL has a positive effect on the relationship between E, S and G and firm's operational performance (ROA). On the other hand, the results show that the inclusion of SRL as moderator variable does not affect the relationship between ESG and a firm's financial and market performance.

This study makes a contribution to the knowledge in the area of sustainability reporting, and how the disclosure of ESG affects the performance of firms. Moreover, how the country's sustainability reporting law affect the relationship between ESG and performance. The results of this study have significant implications for policy makers, regulators and government authorities, as they can recognise the effect of the sustainability reporting law on the relationship between ESG and different performance measures (operational, financial and market).

Keywords: Sustainability Reporting, ESG, Environmental Disclosure, CSR, Corporate Social Responsibility, Governance Disclosure.

Acknowledgment

I thank God for helping me and giving me the inspiration, patience and strength to finish this thesis.

This research would not have been completed without the help of many people to whom I owe a great deal of thanks. First of all, I would like to express my deepest appreciation to his excellency Dr Majid bin Ali Alnoaimi, Minister of education in Bahrain for the considerable time and efforts he has devoted to encourage me. I also would like to thanks Prof Abdulla bin Yousif Alhawaj, founding president and chairman of Ahlia university board of trustee; he has always been there for me, encouraging and supporting me.

Further, I would like to express my deepest gratitude to my principle and second supervisors, Dr Elisabetta Barone and Prof Allam Hamdan for their continuous support, guidance and friendly supervision along the way. Prof Allam has been guiding me since the beginning of my Masters (MBA) five years ago and during this long journey. Dr Elisabetta and Dr Allam have provided me with a lot of extraordinary help and encouragement that has made the completion of this thesis possible.

Foremost, I want to thank my wonderful and loving parents, Mohamed and Fawzia for their prayers and encouragement. I would also like to thank my husband Abdulrahman; I would not have made it this far without his patient and encouragement. My husband taught me how to achieve my goals and have always encouraged me to chase my dreams.

Finally, I would like to thank Family and friends, they have been waiting for this moment for a long time; they will be very happy and proud of me.

Thank you all!

Amina Mohamed Buallay

Declaration

I hereby declare that this thesis not contains any material that has been previously submitted, in whole or in part, for a degree in Brunel University or any other university.

I further declare that this thesis is my own work.

I also declare that all ideas, information and conclusions reported in this thesis are entirely my effort, except where otherwise acknowledged.

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Awards

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- Awarded the Second Prize in the “Oapec award for petroleum Studies from an economic perspectives”, Kuwait, 2019.
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First: Publications Associated with the Thesis

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- Buallay, A. (2019). Between cost and value: Investigating the effects of sustainability reporting on a firm’s performance. *Journal of Applied Accounting Research*. **(ABS 2018, 2*; ABDC, C; SJR, Q3)**
- Buallay, A., Hamdan, A. and Barone, E. (2019), "Sustainability reporting and firm’s performance: Comparative study between manufacturing and banking sectors", *International Journal of Productivity and Performance Management*. **(ABS 2018, 1*; ABDC, B; SJR, Q1)**
- Sustainability Reporting and performance of MENA banks: Is there a trade-off?, *Journal:Measuring Business Excellence*. **(ABS 2018, 1*; ABDC, B; SJR, Q2)**
- Evaluating ESG disclosures of Islamic Banks: Evidence from the Organization of Islamic Cooperation Members. *International Journal of Innovation and Sustainable Development*. **(SJR, Q3)**
- Sustainability Reporting and Bank’s Performance: Comparison between Developed and Developing Countries. *World Review of Entrepreneurship, Management and Sustainable Development*. **(ABS 2018, 1*; ABDC, C; SJR, Q2)**
- Sustainability Reporting and Bank Performance After Financial Crisis: Evidence from Developed and Developing Countries. *Competitiveness Review*. **(ABS 2018, 1*; ABDC, C; SJR, Q1)**
- Corporate Social Responsibility Disclosure and Firm’s Performance in Mediterranean Countries: A Stakeholder Perspective. *EuroMed Journal of Business*. **(ABS 2018, 1*; ABDC, C; SJR, Q2)**

- Integrated Reporting and Performance: A Cross-Country Comparison of GCC Islamic and Conventional Banks. *Journal of Islamic Marketing*. (ABDC, C; SJR, Q2)

Second: Publications Associated with the Main Theme of the Thesis (Sustainability Reporting)

Published:

- Buallay, A., & Al-Ajmi, J. (2019). The role of audit committee attributes in corporate sustainability reporting: Evidence from banks in the Gulf Cooperation Council. *Journal of Applied Accounting Research*. (ABS 2018, 2*; ABDC, C; SJR, Q3)
- Buallay, A. M., & Aldhaen, E. S. (2018, October). The relationship between audit committee characteristics and the level of sustainability report disclosure. In *Conference on e-Business, e-Services and e-Society* (pp. 492-503). Springer, Cham. (SJR, Q2)

Under Review:

- Increasing Female Participation on Boards: Effects on Sustainability Reporting. *International Journal of Finance and Economics*. (ABS 2018, 3*; SJR, Q2)

Third: Other Publications during the PhD Journey

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- Buallay, A. (2019). Corporate governance, Sharia'ah governance and performance: A cross-country comparison in MENA region. *International Journal of Islamic and Middle Eastern Finance and Management*, 12(2), 216-235. (ABS 2018, 1*; ABDC, C; SJR, Q2)
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- Efficiency in GCC Banking: The Role of Intellectual Capital. *European Business Review*. **(ABS 2018, 2*; ABDC, B; SJR, Q2)**

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- Buallay, A., Hamdan, A., Zureigat, Q., & Al-Hayale, T. (2019, May). The Contribution of Independent Board of Directors to the Firm's Intellectual Capital. In *ECIIC 2019 10th European Conference on Intangibles and Intellectual Capital* (p. 49). Academic Conferences and publishing limited.
- Buallay, A., Hamdan, A., Zureigat, Q., & Al-Hayale, T. (2019, May). The Role of Intellectual Capital in Value Creation. In *ECIIC 2019 10th European Conference on Intangibles and Intellectual Capital* (p. 42). Academic Conferences and publishing limited.

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List of Abbreviations

E	Environmental Disclosure
ESG	Environmental, Social and Governance Disclosure
FL	Financial Leverage
G	Governance Disclosure
GDP	Gross Domestic Product
GOV	Public Governance
GRI	Global Reporting Initiative
IIRC	International Integrated Reporting Council Committee
ROA	Return on Assets
ROE	Return on Equity
S	Social Disclosure
SRL	Sustainability Reporting Law
TA	Total Assets
TQ	Tobin's Q
UN	United Nations
UNEP	United Nations Environmental Program
WGI	Worldwide Governance Indicators

Chapter One: Introduction

"Greater transparency is an unstoppable force. It is the product of growing demands from everybody with an interest in any corporation". (Tapscott & Ticoll, 2003)

Chapter 1: Introduction

Chapter Introduction

The main theme of this thesis is to examine the moderating role of a country's sustainability reporting law (SRL) on the relationship between the level of sustainability reporting and firm performance.

This chapter's first sections provide background for the study and discuss the problem statement. The next section introduces the study aims and objectives followed by the study questions. The later sections provides a brief about the related literature review and the methodology. The chapter's final section outlines the structure of the thesis.

1.1 Background

The disclosure of sustainability reports¹ is now familiar practice among firms worldwide, and it has become a significant factor for businesses (Amin-Chaudhry, 2016; Crane & Glozer, 2016). The expansion of sustainability disclosure is due to the increase in stakeholder interest in companies' environmental, social and governance performance (Dhaliwal et al., 2014). This stakeholder pressure motivates firms to go beyond their annual financial reports and disclose non-financial information such as social, environmental and governance issues for their stakeholders (Newcomb et al., 2015). Today, there is a focus on other non-financial measures as evidence builds that integrating financial and non-financial information offers a better understanding of a firm's sustainability efforts (Atkins & Maroun, 2015).

¹ The terms "sustainability reporting", "sustainability disclosure", "environmental, social, and governance (ESG) reporting" and "ESG disclosure" are used interchangeably in this thesis to represent reports with different level of focus on environmental, social or corporate governance practices.

The story of sustainability reporting started during the 1950s, when the term corporate social responsibility (CSR) was identified and focused on the “social dimension”. In the 1980s, stakeholders became more aware of the second phase, the “environmental dimension”. Ten years later, in the early 1990s, sustainability reporting covering the social, environmental and economic dimensions was the focus.

However, the importance of sustainability reporting increased during the financial crisis in 2008, when publicly listed firms lost more than 60% of their stock market value (Reinhart & Rogoff, 2009).

After this crisis, the European Commission initiated many activities to enhance the quality of business reporting to meet the needs of different stakeholder groups (CFA Institute, 2016). Additionally, the United Nations (UN) Global Compact in April 2019 created an initiative calling firms to align their sustainability strategies with 10 principles in four different areas – human rights, labour rights, the environment, and anticorruption – and to take action to attain societal goals (United Nations Global Compact).

One of the more prominent UN-backed initiatives on ESG is called Fiduciary Duty in the 21st Century, which states that firms do better when they support their host societies (UN Principles for Responsible Investment). As a result of these recent changes, firms are expected to act socially by paying more attention to their social responsibilities to society as a way to generate more profit.

Several initiatives have been introduced to provide guidelines to make sustainability reporting more transparent. The most recent and comprehensive initiative is the Global Reporting Initiative (GRI), which includes all three dimensions of sustainability – social, environmental and economic (Toppinen & Korhonen-Kurki, 2013). This initiative is considered a guideline to sustainability reporting.

Responding to the GRI initiative, the Prince of Wales Accounting for Sustainability Project and the GRI announced the formation of the International Integrated Reporting Council

Committee (IIRC). The integrated reporting framework brings together economic, environmental, social and governance information (IIRC Website, 2019).

Firms responded to these initiatives and undertook many efforts to disclose sustainability reports to attract new stakeholders and rebuild market trust, which was affected by the financial crisis (Perez-Batres et al., 2010). It has been asserted that listed firms that did not go bankrupt in the financial crisis and have continued to make a profit are those that have focused on corporate social responsibility, environmental issues and corporate governance (Earhart et al., 2009).

Businesses' awareness of the effect of their activities on the society and the environment has been increasing, and the United Nations Environmental Program UNEP Finance Initiative showed that sustainability issues are important for a firm's value (Deringer, 2005). Socially responsible firms work more conscientiously to support the society and the environment in which they operate, and they go over and above what is required by regulators or by environmental organizations.

This new way of thinking has led companies to have a broader perspective, beyond profit making, and to start putting efforts into implementing sustainability strategies and providing investors with non-financial data reports capturing other dimensions that are not mentioned in regular financial reports (Bassen & Kovács, 2008).

As sustainability reporting has increased, countries worldwide have launched reforms to enhance the quality of sustainability reporting. These actions have come in response to bankruptcies caused by the financial crisis. A number of countries have instituted laws mandating the disclosure of sustainability information because they recognized the importance of this information to all stakeholders. However, while sustainability reporting is required and regulated in some countries, it is voluntary and unregulated in others (Junior et al., 2014). Thus, it can be seen that the concept of ESG disclosure has become a subject of intense focus in the corporate world.

1.2 The Research Problem

The pace of growth of ESG disclosure increased markedly when research started to show that sustainability reporting is linked to improved business performance. Numerous empirical studies have investigated the relationship between a firm's ESG disclosure and its financial performance. Despite this, many researchers claim that results of this research are ambiguous, inconclusive, or contradictory (Brooks & Oikonomou, 2018). On the one hand, many researchers have found a significant positive relationship between ESG integration and firm performance (Deng & Cheng, 2019; Aouadi & Marsat, 2018; Zhao et al., 2018; Velte, 2017; Lins et al., 2017). On the other hand, other scholars have identified a negative relationship (Duque-Grisales & Aguilera-Caracue, 2019; Landi & Sciarelli, 2019) or an insignificant relationship (Atan et al., 2018) between the two.

Two debates have resulted from this conflict. The first is the "cost of capital" reduction perspective, which argues that disclosing ESG increases costs and has economic consequences, resulting in lower market values. Friedman (1962) argued that the fundamental purpose of a firm is to increase financial profitability, and any other non-financial disclosure will reduce profitability. Mackey et al. (2007) contend that shareholders expect a firm to increase its financial disclosure without referring to its social actions, which should be performed by charities and non-profit firms. Furthermore, Marsat and Williams (2014) claim that disclosing sustainable actions increases costs and comes with economic consequences. The second debate is the "value creation" perspective, by contrast, argues that ESG disclosure is a tool to generate competitive advantages and improve financial performance. Hahn and Kühnen (2013) states that SR increasing the firm's transparency, improving its reputation, motivating its employees and supporting its control processes. Herzig and Schaltegger (2006) added two further benefits: gaining a competitive advantage and enabling comparison with competitors. Moreover, previous literature (i.e., Lindgreen et al., 2009) had stated that sustainability reporting enabled firms to increase revenues and reduce costs.

Due to the above debates, Benlemlih et al. (2018) state that ESG disclosure and its effect on firm performance is vary because of the variation in the country's institutional and regulatory setting. They call for future research to test the link between disclosure and performance in a multi-country setting with controls for the differences in institutional and regulatory disclosure environments. Beside this, Brooks and Oikonomou (2018) state that earlier studies are unable to confirm the relationship between sustainability reporting and firm performance, and there is still much to study about this relationship. They suggest adding moderating and mediating variables that may play crucial roles in understanding this relationship and helping managers to make decisions related to sustainability policies, practices and disclosure. Therefore, from this perspective and responding to the call of both Benlemlih et al. (2018) and Brooks and Oikonomou (2018), a country's sustainability reporting law can be used as a moderating variable to fill this gap.

1.3 Research Aim and Objectives

Based on the above gap, this thesis aimed at investigating the moderating role of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance. To achieve this, the thesis sets several objectives:

1. To critically review the current literature on the relationship between the level of sustainability reporting and firm performance.
2. To identify relevant factors that affects the relationship between the level of sustainability reporting and firm performance.
3. To analyse the relationship between the level of sustainability reporting and firm performance.
4. To develop a conceptual framework on the relationship between the level of sustainability reporting and firm performance.

1.4 Research Questions

To investigating the moderating role of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance two questions need to be answering.

1. What is the relationship between the level of sustainability reporting and firm performance?
2. Is there an effect of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance?

1.5 Literature Review

Many definitions of firm sustainability found in the literature, in this thesis firm sustainability is redefined as

Meeting the social, environmental and economic needs of the present without compromising the ability of future generations and assuring these needs are met through the adoption of corporate governance practices.

This definition consists of three dimensions of firm sustainability other than the economic – namely, environmental, social and governance. Corporate environmental sustainability refers to a firm's activities associated with protection of natural resources and efforts to preserve the environment (Hart, 1995). The second dimension of firm sustainability is social sustainability, which refers to long-term efforts that affect the welfare of the society (Elkington, 1997). The third dimension is economic sustainability, which refers to a firm's maintaining a long-term presence in the market (Baumgartner and Ebner, 2010) by enhancing its financial performance (Bansal, 2005). The fourth dimension in firm sustainability is governance, which refers to the firm's implementing principles to assist the stakeholders in monitoring controls, solving conflicts of interest and enforcing transparency (Buallay et al., 2017).

In the last few years, there has been a growing interest in sustainability disclosure. From a historical perspective, the sustainability disclosure practice has passed through four

phases. The first phase began during the 1950s, when the term corporate social responsibility (CSR) was identified and focused on the “social dimension”. In the 1980s, stakeholders became more aware of the second phase, the “environmental dimension”. Ten years later, in the early 1990s, sustainability reporting covering the social, environmental and economic dimensions was the focus. Then in 2010, the Prince of Wales Accounting for Sustainability Project and the GRI announced the formation of the International Integrated Reporting Council Committee (IIRC). The integrated reporting framework brings together economic, environmental, social and governance information (IIRC Website, 2019).

There are numerous studies investigating this relationship between sustainability reporting and firm performance. Some found a positive relationship between sustainability reporting and financial performance (e.g., Pava and Krausz, 1996; Preston and O’Bannon, 1997; Waddock and Grave, 1997; Simpson and Kohers, 2002; Ngwakwe, 2008; Callan and Thomas, 2009; Rettab et al., 2009; Castaldo et al., 2009; Samy et al., 2010; Uwuigbe and Egbide, 2012). Carter et al. (2000) and Jo and Harjoto (2011) stated that disclosing information about environmental practices improved financial performance. Margolis and Walsh (2003) found that disclosing social information about the firm enhanced its financial performance. Finally, Gompers et al. (2003; 2010) found that governance disclosure improved financial performance.

Other studies have found a negative relationship between sustainability reporting and financial performance (e.g., McGuire et al., 1988; Patten, 1991; Riahi-Belkaoui, 1992; Sarkis and Cordeiro, 2001). Still other studies have seen no relationship or a non-significant relationship (e.g., Levy, 1995; Buys et al., 2011). Smith et al. (2007) found an inverse relationship between environmental disclosure and firm performance. Balabanis et al. (1998) found a negative relationship between social disclosure and firm performance, and Rose (2016) found that governance disclosure has a negative impact on return on assets and return on equity. Hassan Che Haat et al. (2008), however, found that governance disclosure does not significantly affect market performance.

The previous studies on the relationship between sustainability reporting and firm performance have returned mixed results even in the same region. This may be due to the variability in the sustainability reporting laws in each country. Sustainability reporting may be mandatory – a legal requirement to deliver this information – or voluntary, where the extent and nature of reporting may vary substantially between firms.

The main challenge in disclosing sustainability information is the lack of mandatory disclosure laws, which exposes a gap between what firms do and what is disclosed. Today, government regulation plays an important role in the disclosure of sustainability reports. Laws mandating sustainability reports mitigate debates about the credibility of these reports (Birkey et al., 2016; Dhaliwal et al., 2014; Ruhnke and Gabriel, 2013). Issues with sustainability reporting are confirmed by many authors (Birkey et al., 2016). They have argued that unregulated and voluntary disclosure of sustainability is a core challenge to the stakeholders, as they cannot determine whether the sustainability information is complete and credible as recommended by the GRI (GRI, 2016).

A country's sustainability reporting laws opens the door for doubt about the value of sustainability reporting, as it is not restricted by governmental oversight (Gürtürk & Hahn, 2016). Therefore, this thesis aims to investigate the moderating role of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance.

1.6 Methodology

This chapter is structured based on the research methods by Saunders et al., (2016). A positivistic research philosophy was adopted for this study, as it allowed us to gather and analyse secondary quantitative data and to test the research hypotheses. After choosing the research philosophy, the next step is to determine whether deductive or inductive approach should be used. Deductive approach tends to flow from generic to specific. The next step is to choose the research strategy. For this thesis "Archival Strategy" is chosen. This strategy derives information from existing data and archive documents "secondary data". After choosing the research strategy, the next step is to determine the research

method. Mono-method is chosen for this thesis. This type of method takes place when the researcher goes about collecting either qualitative data or quantitative data based on the decisions made in the previous stages. As quantitative data already chosen, the next step is to determine the research time and horizons. In this thesis we used pooled data (a mixture of time series data and cross-section data). Therefore, Longitudinal time horizons is chosen. The final section is the research techniques and procedures; this section illustrates the mathematical models, the sample selection and the reliability and validity of the models, variables and data. The first mathematical model is constructed to investigate the effects of sustainability disclosure, the second mathematical model is constructed to investigate the effect of sustainability reporting law on the relationship between sustainability report disclosure and firm performance. The data used in this thesis were collected from the Bloomberg database and included all firms in the Bloomberg database that disclosed ESG information and had data available from 1 Jan 2008 to 31 Dec 2017. The sample consist of 3000 diverse listed firms from 80 different countries ends up with 23,738 observations. The final step in the research techniques and procedures is assessing the reliability and validity of the data and models. we adopt three kinds of diagnostic tests to assess the validity and reliability; data diagnostics: normality (skewness, kurtosis and Jarque–Bera tests), variables diagnostics: stationarity (augmented Dickey–Fuller test) and collinearity (variance inflation factor test), and models diagnostics: autocorrelation (Durbin–Watson) and heteroscedasticity (Breusch–Pagan and Koenker tests).

1.7 Structure of the Thesis

The thesis is structured in seven chapters, including chapter one.

Chapter two explores the literature underlying the foundation of the research. The components that it uncovers include: the definitions of firm sustainability, firm sustainability dimensions, the history and development of sustainability reporting, benefits and costs of disclosing sustainability reports, the relationship between sustainability reporting and firm performance, the relationship between sustainability

reporting and different performance measures, the Relationship between sustainability disclosure measures and firm performance, sustainability reporting across sectors, the relationship between sustainability reporting and firm performance in different regions, and finally the Sustainability Reporting Laws in different countries.

Chapter three discusses all relevant theories (theories supporting and against sustainability reporting) and the conceptual framework that built based on the literature.

Chapter four provides information about the data methods and analysis approach. It first discusses the research philosophy followed by the research approach. The third section discussed the research strategy. The fourth section identify the research choice. The fifth section determines the research time horizons. The final section is the research techniques and procedures; this section illustrates the mathematical models, the sample selection and the reliability and validity of the models, variables and data.

Chapter 5 is the findings chapter. This chapter first provides a descriptive analysis. This descriptive analysis is divided by year, sector, region and the level of disclosure. Second, one-way ANOVA is used to describe the variables pre and post SRL and to differentiate between variables in terms of adoption of GRI. The final section in this chapter is hypothesis testing. In this section, we test the hypotheses developed in Chapter 3. The first main hypothesis aims to tests the effect of sustainability disclosure on a firm's operational, financial and market performance, while the second main hypothesis aims to tests the moderating role of a country's SRL in the relationship between sustainability report disclosure and a firm's operational, financial and market performance.

Chapter 6 provides an interpretation of the overall findings. This chapter first discusses the results for the thesis's first main hypothesis. The first section addresses the relationship between ESG and a firm's operational performance, the second section between ESG and financial performance and the third section between ESG and market performance. Then this chapter discusses the results for the second main hypothesis. The fourth section discusses the effects of SRL on the relationship between ESG and a firm's operational performance, while the fifth section addresses financial performance, and the

sixth section market performance. Finally, this chapter presents the final developed framework.

Chapter 7 is the concluding chapter. This chapter first provides a conclusion to this thesis's aim and the findings. The second section presents its contributions. The third section offers recommendations, and the fourth section outlines the limitations of this thesis. The final section suggests future research.

Chapter Two: Literature Review

Chapter 2: Literature Review

Chapter Introduction

This chapter first reviews the previous literature on the definitions of firm sustainability and, based on these, we redefine the concept of sustainability to align it with our thesis aim. Second, the chapter discusses the four sustainability dimensions – environmental, social, economic and governance – and how these dimensions are interdependent. The third section discusses sustainability reporting history and development; we divide the development of sustainability reporting into four phases. The fourth section reviews the cost and benefits of disclosing sustainability reports and is followed by a section about the relationship between sustainability reporting and firm performance, which explains positive, negative and neutral relationships. The relationships between sustainability reporting and different performance measures (operational, financial and market) are then reviewed, followed by a discussion of the relationships between each of the separate sustainability disclosure areas – environmental, social and governance – and firm performance. Sustainability reporting across sectors is then discussed; seven sectors are reviewed: agriculture and food industries, energy, manufacturing, banks and financial services, retail, telecommunication and information technology, and tourism. This section is followed by a discussion of the relationship between sustainability reporting and firm performance in different regions. The final section addresses the sustainability reporting laws in various countries.

2.1 Definitions of Firm Sustainability

The term “firm sustainability” signifies sustainable development. Various terms found in the literature refer to firm sustainability (Signitzer & Prexl, 2007). As shown in Figure 2.1, Signitzer and Prexl (2007) mentioned many related terms.



Figure 2.1: Firm Sustainability Terms (Signitzer & Prexl, 2007, p.4)

In fact, firm sustainability can be seen from different perspectives. Many disciplines study sustainability, including accounting (Braam and Peeters, 2018; Schaltegger & Wagner, 2017; Diebecker and Sommer, 2017; Lee and Schaltegger, 2018; Imoniana et al., 2018; Adams and Whelan, 2009), economics (Epstein, 2018; Aquilani et al., 2018; Hobbs and Schneller, 2012; Nakai et al., 2013), management (Schaltegger and Wagner, 2017; Epstein, 2018; Baumgartner and Rauter, 2017; Hahn et al., 2014; Porter and Siggelkow, 2008), marketing (Taoketao et al., 2018; Pedersen et al., 2018) and law (Hörisch et al., 2017; Heinämäki, 2009; Keay, 2008).

In an attempt to covers different aspects of sustainability from different disciplines, researchers have suggested broad definitions for the term. The most widespread definition is “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p. 8). However, several researchers have found this definition too broad to represent the precise topics often studied in the context of sustainability. Thus, the concept has also been defined in narrow ways to more precisely fit specific contexts. For example, Pfeffer (2010) defined sustainability as “efforts to conserve natural resources and avoid waste in company

operations". Similarly, Goldsmith and Goldsmith (2011) defined sustainability as "consumption choices that impact the environment and take into account the earth's finite resources". These definitions limit sustainability to only its environmental dimension. Other sustainability definitions have concentrated only on the social dimension. For example, Biart (2002) defined sustainability as "efforts to identify the challenges that may hinder society's function and development in the long run". As can be seen, these narrow definitions expound a limited view of sustainability, centring on a single dimension and missing the greater effects of sustainability. Sustainability should be defined broadly, although not so broadly as to lack specificity and become ambiguous.

Eweje & Perry in their book defined firm sustainability as "meaning the incorporation of social, environmental and economic" (Eweje & Perry, 2011, p. 125). This definition focuses on the economic dimension in addition to the social and environmental impacts.

However, to ensure that those three sustainability dimensions (social, environmental and economic) are incorporated into corporate strategy, governance practices should be implemented (Corallo et al., 2018). Therefore, in this thesis, firm sustainability is redefined as

Meeting the social, environmental and economic needs of the present without compromising the ability of future generations and assuring these needs are met through the adoption of corporate governance practices.

This definition consists of three dimensions of firm sustainability other than the economic – namely, environmental, social and governance. The next section reviews each of these dimensions of firm sustainability and the interdependence between them.

2.2 Firm Sustainability Dimensions

2.2.1 Environmental Dimension

Morelli (2011) associates the word “environmental” with human impact on natural systems and defines the term “environmental sustainability” by building on the most popular definition of sustainable development (i.e., “meeting the needs of the current generation without compromising the ability of future generations to meet their needs”) by proposing the general definition “meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them”.

Corporate environmental sustainability refers to a firm’s activities associated with protection of natural resources and efforts to preserve the environment (Hart, 1995). These efforts include reducing environmental effects and minimizing resource consumption (Gibson, 2001) through engaging in green practices, solving pollution problem and reducing resource depletion (Henion and Kinnear, 1976; Kardash, 1974).

Many theories related to corporate environmental sustainability are found in the literature. Resource-based theory states that firms work on environmental activities to develop their resources, which then provide them with greater benefits. Under institutional theory, firms work on environmental activities to meet industrial regulations, government regulations and customer requirements. Finally, stakeholder theory posits that firms engage in environmental practices to meet stakeholders’ needs. To do this, firms must report on environmental activities to inform their stakeholders about the environmental impact of their operations and about how they solve problems associated with environmental issues through measures such as eco-friendly, recyclable, and substitute materials; biodegradable packages; remanufacturing; recycling; and taking back products at the end of their life cycle.

2.2.2 Social Dimension

The second dimension of firm sustainability is social sustainability, which refers to long-term efforts that affect the welfare of the society (Elkington, 1997). These efforts include but are not limited to undertaking charitable activities (Chow and Chen, 2012); reducing social inequality (Alhaddi, 2015); protecting human rights (Reichert, 2011); and engaging in employee care in areas such as employee health, labour practices, employee training, skills development, workplace injury and illness, and workplace discrimination (Chow and Chen, 2012). These social activities reduce the adverse social impact of the firm's operations on society and solve problems associated with social issues.

The main goal of social sustainability is to preserve positive social values for people and society (Dempsey et al., 2011). Many theories related to social sustainability are found in the literature. Resource-based theory argues that firms work on social responsibility activities to develop their resources, which then provide them with greater benefits. According to institutional theory, firms work on social activities to meet coercive and mimetic pressures, including stakeholder pressures.

2.2.3 Economic Dimension

The third dimension is economic sustainability, which refers to a firm's maintaining a long-term presence in the market (Baumgartner and Ebner, 2010) by enhancing its financial performance (Bansal, 2005). Economic sustainability is defined by Basiago (1998) as implying "a system of production that satisfies present consumption levels without compromising future needs". More specifically, economic sustainability was defined by Hicks (1946) as "the amount one can consume during a period and still be as well off at the end of the period". The economic sustainability of a firm is essential to its viability (Simpson and Radford, 2012; Steurer et al., 2005), and it focuses on a firm's ability to provide support for future generations (Sheth et al., 2011).

Several economists developed support the need for economic sustainability:

- Economic theory: Adam Smith saw the economic system as a product of labour and its organization (Downs, 1957). He argued that the labour of each country generates its wealth.
- Neoclassical economics: Alfred Marshall stated that the strength of a person's motives can be measured by the quantity of money he is able to pay to secure a desired satisfaction (Marshall, 1920).
- The theory of economic policy: Lionel Robbins defined economics as "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses" (Robbins, 1932, p. 15).

Economic sustainability is associated with labour in economic theory, with investors in neoclassical economics and with society in the theory of economic policy.

2.2.4 Governance Dimension

The fourth dimension in firm sustainability is governance, which refers to the firm's implementing principles to assist the stakeholders in monitoring controls, solving conflicts of interest and enforcing transparency (Buallay et al., 2017). Good corporate governance ensures that rules, regulations and laws, particularly those associated with economic, environmental and social issues, are followed and that corrective action is implemented to maintain the firm's long-term sustainability.

Griffin et al. (2014) argue that well-governed assist the management in using the resources efficiently and improve performance, hence increasing the stakeholders' trust in the firm's profitability, continuity and sustainability. Therefore, corporate governance is a crucial dimension of sustainability, as it assures a firm's sustainability (Brown & Caylor, 2006).

The goal of governance is to offer a method for internally controlling the firm to meet the stakeholders needs. Together, institutional and stakeholder theories state that firms develop governance to align environmental and social goals with economic goals, track performance against goals, and convert goals into actions to meet stakeholder expectations.

By adopting governance practices, firms can sustain themselves over the long term, as these governance practices assure that their operations are on the right track; can anticipate and resolve governance-related problems, such as implementing anti-corruption, anti-extortion and antibribery initiatives; and can integrate sustainability into management decisions. Therefore, governance improves a firm's reputation and builds or maintains community trust, which indeed enables firms to continue and sustain themselves.

2.2.5 Interdependence of Sustainability Dimensions

Sustainability consists of four dimensions, one considered to be financial (economic) and three considered to be non-financial (environmental, social and governance). As shown in Figure 2.2, the interaction among the three non-financial dimensions is necessary to achieve the fourth, financial dimension of sustainability. However, research has often focused on one dimension of sustainability at a time (e.g., Newman et al., 2014; Xie et al., 2015), ignoring their interconnection (Van der Byl and Slawinski, 2015). Multiple dimensions of sustainability enable stakeholders to evaluate sustainability from different perspectives (e.g., Bhinge et al., 2015). Many sustainability studies consider social and environmental dimensions together. However, the effect of the governance dimension interacting with social and environmental dimensions is not sufficiently studied (Buallay, 2019; Bolton and Mattila, 2015; Pelozo et al., 2013). Overall, without considering the governance dimension, assurance of social and environmental sustainability offer some ambiguous results (Buallay, 2018).

Researchers (e.g., Uwuigbe & Egbide, 2012) argue that the combination of environmental, social and governance efforts jointly achieve goals of economic sustainability and competitive advantage. Therefore, in this thesis the four dimensions of sustainability are considered.

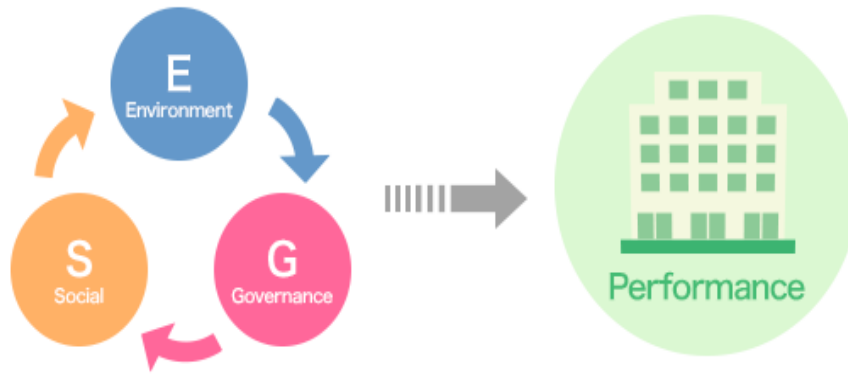


Figure 2.2: Interdependence of Sustainability Dimensions (Japan Credit Rating Agency)

In this thesis, these four dimensions are considered from an accounting perspective (disclosure). The next sections focus on sustainability reporting history and development.

2.3 Sustainability Reporting: History and Development

In the last few years, there has been a growing interest in sustainability disclosure on the part of different stakeholders, academics and business. Sustainability reporting is defined by the GRI as “the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development” (GRI, 2006, p. 3).

From a historical perspective, the sustainability disclosure practice has passed through four phases (Figure 2.3). The first phase began during the 1950s, when the term corporate social responsibility (CSR) was identified and focused on the “social dimension”. In the 1980s, stakeholders became more aware of the second phase, the “environmental dimension”. Ten years later, in the early 1990s, sustainability reporting covering the social, environmental and economic dimensions was the focus. Then in 2010, the Prince of Wales Accounting for Sustainability Project and the GRI announced the formation of the International Integrated Reporting Council Committee (IIRC). The integrated reporting framework brings together economic, environmental, social and governance information (IIRC Website, 2019).

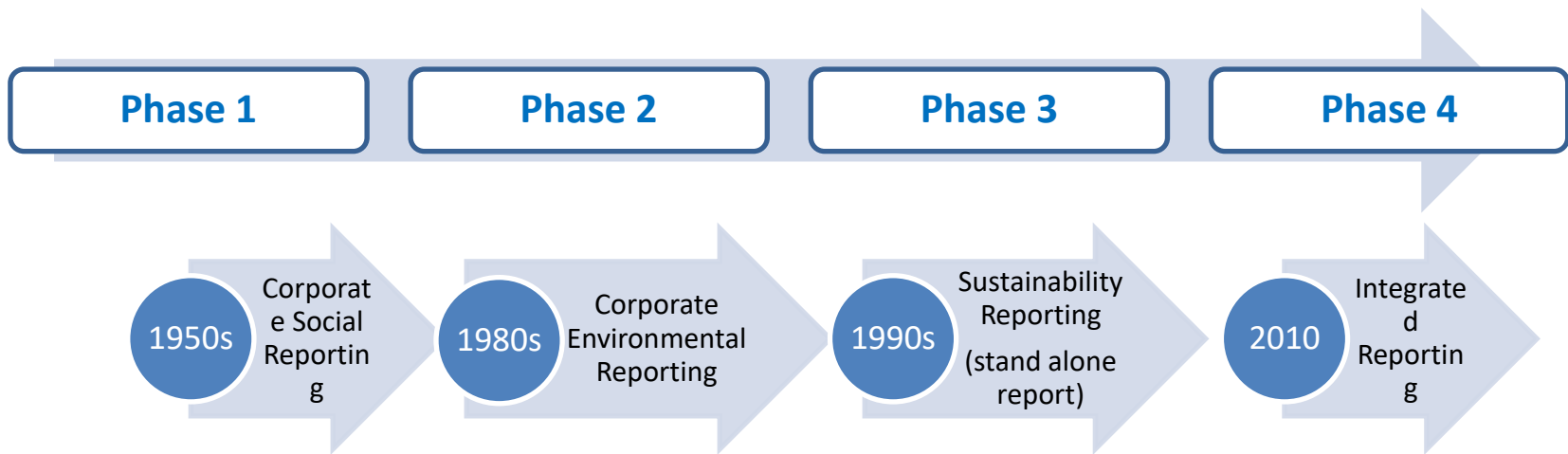


Figure 2.3: Summary of Sustainability Disclosure Phases

Phase 1: Corporate Social Responsibility Reporting

There has been a debate about the term corporate social responsibility (CSR). The concept of CSR started when Friedman (1962) defined CSR as using a firm's resources to increase its profits without deception or fraud (p. 133). Similarly, Carroll (1979) stated that "CSR involves the conduct of a business so that it is economically profitable, law are foremost conditions when discussing the corporation's ethics and the extent to which it supports the society in which it exists with contributions of money, time and talent" (p. 608).

However, Carroll's definition has been criticised as it does not differentiate between firms that are socially responsible and irresponsible firms. Responding to these criticisms, Carroll in 1991 developed a framework called the "pyramid of social responsibility". The framework covers four corporate responsibilities: economic, legal, ethical and philanthropic, which are illustrated in Figure 2.4.

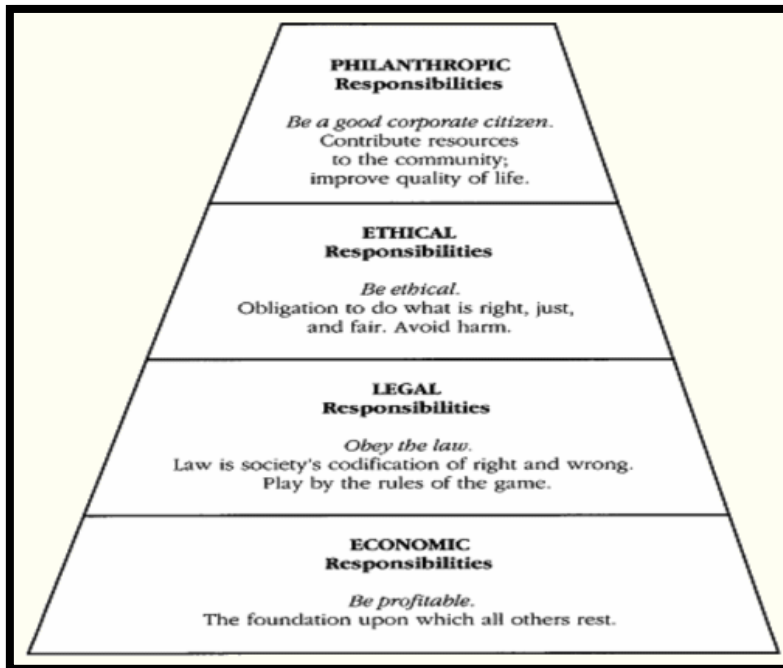


Figure2.4: Pyramid of Social Responsibility (Carroll, 1991)

The foundation of the pyramid is economic responsibilities: being profitable is a core responsibility of a firm. The second layer of the pyramid is the legal responsibilities, which recognizes the importance of firms' complying with the laws if they are to continue to operate. The third layer of the pyramid is ethical responsibilities – operating ethically by doing what is right and fair. The top layer of the pyramid, philanthropic responsibilities, indicates that firms should contribute some of their resources to the community (Carroll, 1991, pp. 40-43).

Once CSR had been defined and recognised, CSR reporting began. Its history is very much tied to the development of CSR standards. Table 2.1 summarises how CSR reporting was developed over time.

Phase 2: Environmental Reporting

By the beginning of the 1980s, the concept of sustainability had expanded its focus from social reporting to include environmental reporting (Kolk & Van, 2010). This resulted from the growth of environmental challenges firms faced, such as pollution, land degradation and oil spills (Deegan, 2014).

With a rise in stakeholder awareness about firms' impact on the environment, some firms began to disclose environmental issues in their reports. Voluntary reporting of environmental issues in an annual report has allowed firms to disclose favourable information about their environmental activities and to ignore unfavourable disclosures that could affect stakeholders' decisions (Deloitte & Van-Staden, 2011). Therefore, firms disclosed environmental activities as a legitimate tactic to affect the decisions of their stakeholders (Brown & Deegan, 1998; Deegan & Gordon, 1996).

Table 2.1: Summary of the Development of CSR Reporting Standards (Maguire, 2011)

Year	CSR Reporting Standards
1976	The Organisation for Economic Co-operation and Development (OECD) releases the OECD Guidelines for Multinational Enterprises as a set of voluntary standards and principles for responsible business.
1977	The Sullivan Principles are created to help US companies apply economic pressure on South Africa to end apartheid.
1977	The French government requires disclosure of labour and employment-related information for companies with more than 300 employees.
1984	An explosion/gas leak at a Union Carbide chemical plant in Bhopal, India, kills more than 3,000 people in the surrounding community.
1989	The Exxon Valdez crashes into Bligh Reef off the coast of Alaska, spilling close to 11 million gallons of oil into Prince William Sound.
1990s	Royal Dutch Shell's operations in the Niger Delta lead to conflict between the Nigerian government and local communities and allegations of human rights abuses.
1990s	A series of labour abuses are revealed in the Nike supply chain, including child labour (in Cambodia and Pakistan), hazardous working conditions (in China and Vietnam), and poor wages (in Indonesia).
1997	The Global Reporting Initiative (GRI) is formed by Ceres and the TELUS Institute, two Boston-based non-profit organizations. The GRI releases its Sustainability Reporting Guidelines in 2000.
2000	The United Nations Global Compact (GC) is launched by UN Secretary General Kofi Annan.
2000	The Carbon Disclosure Project is created to encourage companies to disclose their greenhouse gas emissions.
2001	The Enron scandal reveals widespread accounting fraud; thousands of employees lose their jobs and pensions as the company files for bankruptcy.
2001	The French government mandates CSR reporting for all listed companies through the New Economic Regulations Act.
2003	Accountability releases its AA1000 Assurance Standard.
2004	The Johannesburg Stock Exchange creates its first Socially Responsible Investment Index.
2006	The International Finance Corporation begins using its Policy and Performance Standards on Social and Environmental Sustainability for all project financing.
2008	Sweden and Denmark announce legislation to mandate CSR reporting.
2010	An explosion at BP's Deepwater Horizon drilling rig spills more than 200 million gallons of oil into the Gulf of Mexico.
2010	The GRI and GC sign a memorandum of understanding in which the two initiatives agree to align their efforts to promote CSR.
2010	The International Organization for Standardization releases its first CSR standard, ISO 26000.

Phase 3: Sustainability Reporting

By the 1990s, firms began to disclose all three dimensions of sustainability: the social, environmental and economic. A framework called the triple-bottom-line (TBL) was developed by Elkington (Elkington, 1994). The TBL includes social and environmental performance with financial elements. More recently, the practice of reporting on the social, environmental and economic performance of a corporation has become known as sustainability reporting (Bebbington et al. 2014; ; Hahn & Kühnen, 2013; Lodhia & Hess, 2014; Manetti & Bellucci, 2016). The disclosure of sustainability reports was initially voluntary (Milne & Gray, 2013). As sustainability challenges grew, there was more demand for sustainability reporting from different stakeholders, such as shareholders, regulators and civil society. Therefore, the 1990s saw the evolution of stand-alone sustainability reports (Kolk, 1999). However, the type and quality of sustainability information and how it was governed and measured were issues (Hohnen, 2012).

The problem with voluntary disclosure of sustainability reports is expressed by Milne and Gray (2007, p.194): “corporate ‘sustainability’ reports are typically attempts by businesses to provide some sort of a (largely favourable) account for (some of) their impacts on the environment and society”.

Several initiatives have been introduced with the aim of providing guidelines to enhance the transparency of sustainability reporting. The most recent and comprehensive initiative is the GRI, which includes all three dimensions of sustainability – social, environmental and economic (Toppinen & Korhonen-Kurki, 2013). This initiative is considered a guideline for sustainability reporting.

The Global Reporting Initiative has passed through several stages since the standards were first introduced (Figure 2.5). The GRI was established as a project in 1997 by the Coalition for Environmentally Responsible Economies (CERES), a non-profit organization in Boston. The main goal was to develop unified guidelines for voluntary sustainability reports. The vision of the CERES is “to improve corporate accountability by ensuring that

all stakeholders – communities, environmentalists, labor, religious groups, shareholders, investment managers – have access to standardized, comparable, and consistent environmental information akin to corporate financial reporting” (Laird, 2010).

In 2000, GRI introduced the first version of its sustainability reporting guidelines. Two years later, in 2002, the second generation of the sustainability reporting guidelines was launched. In 2006, GRI introduced its first taxonomy for the third-generation guidelines. In 2013, the fourth-generation guidelines were introduced, offering reporting principles. In October 2016, GRI introduced the first global standards for sustainability reporting. The aim of this guideline, developed by the Global Sustainability Standards Board, is to enable all firms to report on their economic, environmental and social impacts and to report how they contribute towards sustainable development. These standards are extracted from the fourth-generation sustainability reporting guidelines.

The GRI Standards consist of four main sections: universal, economic, environmental, and social standards. Each standard has sub-standards and guidelines. Table 2.2 lists the GRI Standards.

Figure 2.5: The Development of the Global Reporting Initiative

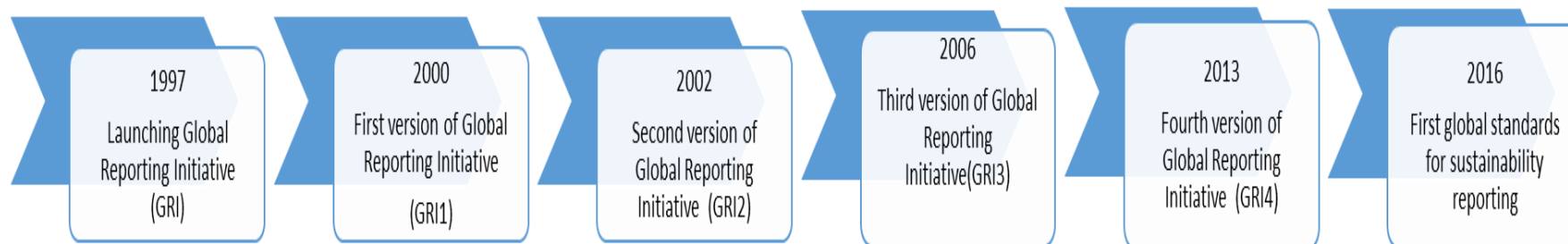


Table 2.2: The GRI Standards (GRI, 2016)

GRI 100: Universal Standards		GRI 400: Social	
GRI 101	Foundation 2016	GRI 401	Employment
GRI 102	General Disclosures 2016	GRI 402	Labour/Management Relations
GRI 103	Management Approach 2016	GRI 403	Occupational Health and Safety
GRI 200: Economic		GRI 404	Training and Education
GRI 201	Economic Performance	GRI 405	Diversity and Equal Opportunity
GRI 202	Market Presence	GRI 406	Non-discrimination
GRI 203	Indirect Economic Impacts	GRI 407	Freedom of Association and Collective Bargaining
GRI 204	Procurement Practices	GRI 408	Child Labour
GRI 205	Anti-corruption	GRI 409	Forced or Compulsory Labour
GRI 206	Anti-competitive Behaviour	GRI 410	Security Practices
GRI 300: Environmental		GRI 411	Rights of Indigenous Peoples
GRI 301	Materials	GRI 412	Human Rights Assessment
GRI 302	Energy	GRI 413	Local Communities
GRI 303	Water	GRI 414	Supplier Social Assessment
GRI 304	Biodiversity	GRI 415	Public Policy
GRI 305	Emissions	GRI 416	Customer Health Safety
GRI 306	Effluents and Waste	GRI 417	Marketing and Labelling
GRI 307	Environmental Compliance	GRI 418	Customer Privacy
GRI 308	Supplier Environmental Assessment	GRI 419	Socioeconomic Compliance

Phase 4: Integrated Reporting

In 2004, The Prince's Accounting for Sustainability Project was formed, one of its aims being addressing the disconnect in sustainability reports between social, economic and environmental impacts by what it referred to as "connected reporting" (Hopwood, 2010).

IR in the South African context has its origin in the governance principles relating to integrated thinking as contained in the King Code of Governance Principles for South Africa of 2009 (King III) (Steyn, 2014). Following the incorporation of the King III requirements in the JSE listings requirements, listed companies are required to issue an integrated report for the financial years commencing on or after 1 March, 2010, on an apply or explain basis.

Following the inclusion of the concept of IR in the King III principles, the Integrated Reporting Committee (IRC) was formed under the chairmanship of Professor Mervyn E. King SC, now also the chairperson of the IIRC.

The IIRC was formed in 2010 by leaders from the GRI, The Prince's Accounting for Sustainability Project, the International Federation of Accountants (IFAC). The International Accounting Standards Board (IASB), United Nations Environment Programme (UNEP) Finance Initiative, UN Global Compact, the Carbon Disclosure Standards Board (CDSB), the International Organisation of Securities Commissions (IOSC) and the World Business Council for Sustainable Development (WBCSD) soon followed. On 25 January, 2011, the IRC published guidelines on IR, the first in the world, as recommended by King III in the discussion paper, titled "Framework for Integrated Reporting and the Integrated Report".

The IIRC published the international Consultation Draft titled, "Towards Integrated Reporting: Communicating Value in the 21st Century", on 12 September, 2011, and following that the first Consultation Draft of the International Integrated Reporting Framework was published. After extensive consultation and public commentary, the final version was published in December 2013. In this framework, the integrated report is defined as a concise communication about how an organisation's strategy, governance,

performance and prospects, in the context of its external environment, create value over the short-, medium- and long-term (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f). The purpose of the integrated report is described as to disclose and explain the organisation's ability to create value in the short-, medium- and long-term.

The vehicle through which such value is created is described by as the business model, and the organisation's ability to create such value over time depends on an understanding of the connectivity between its business model and a wide range of internal and external factors (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f).

The framework defines IR, as a process founded on integrated thinking that results in a periodic integrated report by an organisation about value creation over time and related communications pertaining to aspects of value creation (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f) The framework describes integrated thinking as an organisation's active consideration of the relationships between its various operating and functional units and the capitals (financial, manufactured, intellectual, human, social and natural) the organisation uses or affects (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f). The fundamental concepts of the integrated report, therefore, centre on the following:

- the various capitals (financial, manufactured, intellectual, human, social and relationship and natural) that an organisation uses and affects;
- the business model; and
- the creation of value over time (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f).

The content of the integrated report is informed by the principles of strategic focus and future orientation, connectivity of information, stakeholder responsiveness, materiality and conciseness, reliability, completeness and consistency and comparability (IIRC, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f)

The aim of the IIRC has been described as the following: "To create a globally accepted integrated reporting framework which brings together financial, environmental, social

and governance information in a clear, concise, consistent and comparable format” (IIRC Website, 2019).

Atkins and Maroun (2015) states that the integrated report framework is an improvement on the annual financial report. The greater focus on non-financial measures (environmental, social and governance) offers a better understanding of a firm’s sustainability.

However, despite the understanding of organisational sustainability, a recent study by Buallay (2019) questioned whether disclosing sustainability information and other business-related information added more value to a firm or brought additional costs. Does disclosing sustainability information resolve the problems with balancing favourable and unfavourable disclosures about a firm’s performance? The next two sections explain in detail the benefits and costs of disclosing sustainability reports and the relationship between sustainability reporting and firm performance.

2.4 Benefits and Costs of Disclosing Sustainability Reports

2.4.1 Benefits of Disclosing Sustainability Reports

Hahn and Kühnen (2013) provide a list of benefits that firms can generate by disclosing sustainability information, including increasing the firm’s transparency, improving its reputation, motivating its employees and supporting its control processes. Herzig and Schaltegger (2006) added two further benefits: gaining a competitive advantage and enabling comparison with competitors. Moreover, previous literature (i.e., Lindgreen et al., 2009) had stated that sustainability reporting enabled firms to increase revenues and reduce costs.

2.4.2 Costs of Disclosing Sustainability Reports

Two types of costs are associated with preparing sustainability reports: financial and non-financial. According to Kolk (2004), non-financial costs come from

- increased pressure comes from stakeholders,
- commitments to report to stakeholders and

- environmental protection.

In fact, most firms still choose not to disclose sustainability reports because there is no mandated regulation, and they need to train and recruit new accountants to understand and prepare such reports. Firms think that these additional costs may not exceed the benefits in the short term.

2.4.3 Benefits vs. Costs of Preparing Sustainability Reports

Two debates appear about sustainability disclosure. The cost of capital perspective argues that reporting ESG increases costs and has economic consequences, resulting in reduced firm market value. The value creation perspective, by contrast, argues that ESG disclosure is a tool to generate competitive advantages and improve financial performance. Table 2.3 differentiates these two perspectives on sustainability reporting.

Table 2.3: Sustainability Reporting Perspectives

Cost Capital Reduction Perspective	Value Creation Perspective
<p>Friedman (1962) stated that the main purpose of a firm is to increase the wealth of its stakeholders, and any other non-financial objectives will make the firm less effective.</p> <p>Porter (1991) assumed that sustainable firms are expected to have more costs in relation to future regulations.</p> <p>Mackey et al. (2007) and Zivin & Small (2005) argued that investors expect a firm to increase its wealth without a sustainability policy and that sustainability policies should be developed by non-profit organizations.</p> <p>El Ghouli et al. (2011), found that the lower the cost of capital, the higher the sustainable reporting score.</p> <p>Marsat & Williams (2014) supported Aupperle et al., (1985), who argued that investing in ESG increases costs and has economic consequences, resulting in lower market values.</p>	<p>Porter (1991) argued that firms putting established regulations before competitors are leaders in best practices, which promotes the firm’s wealth and eventually the wealth of its stakeholders.</p> <p>ESG is a tool to generate competitive advantages and to improve financial performance (Alexander and Buchholz, 1978; Porter and van derLinde, 1995; McWilliams et al., 2006; Porter and Kramer, 2006).</p> <p>Sharfman and Fernando 2008 claimed that the disclosure of non-accounting information serves as an indicator of how the firm controls business risks. Therefore, higher ESG scores mean lower business risks.</p> <p>Eccles et al. (2012) stated that sustainability in a firm leads to superior performance.</p> <p>Many studies have supported the ESG value creation theory (Luo and Bhattacharya, 2009; El Ghouli et al., 2011; Goss and Roberts, 2011; Eccles et al., 2014;; Kaspereit and Lopatta, 2016).</p>

As Table 2.3 shows, reporting on ESG has some costs (which are discussed under the cost capital reduction perspective), but the firm expects to be compensated by positive performance effects (which are discussed under the value creation perspective). Given the presence of two opposing perspectives, we aim to investigate the effect of sustainability report disclosure on performance in order to answer the question “Is sustainability reporting disclosure a cost or a benefit?” Therefore, the next section presents literature on the relationship between sustainability reporting and firm performance.

2.5 The Relationship between Sustainability Reporting and Firm performance

The section reviews the literature on the relationship between sustainability reporting and firm performance. There are numerous studies investigating this relationship. In 1972, the first two research studies were published by (Bragdon and Marlin, 1972) and (Moskowitz, 1972). Since then, thousands of empirical studies have investigated the relationship between a firm's sustainability reporting and its financial performance. However, these studies have generated mixed results.

Some found a positive relationship between sustainability reporting and financial performance (e.g., Pava and Krausz, 1996; Preston and O'Bannon, 1997; Waddock and Grave, 1997; Simpson and Kohers, 2002; Ngwakwe, 2008; Callan and Thomas, 2009; Rettab et al., 2009; Castaldo et al., 2009; Samy et al., 2010; Uwuigbe and Egbide, 2012). Carter et al. (2000) and Jo and Harjoto (2011) stated that disclosing information about environmental practices improved financial performance. Margolis and Walsh (2003) found that disclosing social information about the firm enhanced its financial performance. ,Finally Gompers et al. (2003; 2010) found that governance disclosure improved financial performance.

Other studies have found a negative relationship between sustainability reporting and financial performance (e.g., McGuire et al., 1988; Patten, 1991; Riahi-Belkaoui, 1992; Sarkis and Cordeiro, 2001). Still other studies have seen no relationship or a non-significant relationship (e.g., Levy, 1995; Buys et al., 2011). Smith et al. (2007) found an inverse relationship between environmental disclosure and firm performance. Balabanis et al. (1998) found a negative relationship between social disclosure and firm performance, and Rose (2016) found that governance disclosure has a negative impact on return on assets and return on equity. Hassan Che Haat et al. (2008), however, found that governance disclosure does not significantly affect market performance.

The next sections discuss possible explanations for these positive, negative and neutral relationships observed between sustainability reporting and firm performance.

2.5.1 Explanations for a Positive Relationship between Sustainability Reporting and Firm Performance

Research that indicates a positive relationship between sustainability reporting and performance clearly supports the argument that satisfying the needs of stakeholders raises firm performance by strengthening relationships with stakeholders, boosting employee motivation and loyalty, promoting the firm's reputation, distinguishing the firm's products, enhancing its legitimacy and reducing its transaction costs (Castaldo et al., 2009).

Many explanations for a positive relationship between sustainability reporting and firm performance can be found in the literature:

- Sustainability reporting can be viewed as an investment that brings financial benefits (Castaldo et al., 2009).
- Sustainability reporting produced competitive advantage for firms (Lee et al., 2013).
- Minimal costs of sustainability reporting resulted in greater benefits to firms (Waddock and Graves, 1997).
- Firms with higher profits have more resources to fund sustainability reporting (Preston and O'Bannon, 1997). By contrast, firms with lower profit have fewer resources to fund sustainability reporting (Campbell, 2007).

2.5.2 Explanations for a Negative Relationship between Sustainability Reporting and Firm Performance

Various other studies provide explanations for a negative relationship between sustainability reporting and firm performance:

- Expenditures on sustainability reporting are unnecessary and put the firm at a competitive disadvantage (Lee et al., 2013).

- Sustainability reporting may have a negative impact on intangible assets, such as stakeholder satisfaction and employee loyalty, which are not reflected in terms of accounting-based performance (Lee et al., 2013).
- Managers try to increase their personal compensation by decreasing expenditures on sustainability. This is called “managerial opportunism” (Preston and O’Bannon, 1997).

2.5.3 Explanations for a Neutral Relationship between Sustainability Reporting and Firm Performance

The explanations for a neutral relationship between sustainability reporting and firm performance are as follows:

- No relationship exists between sustainability reporting and firm performance because there are too many intervening variables (Ullman, 1985).
- There was misspecification in the study model or missing variables (Lee et al., 2013).

As seen above, mixed results can be found in the literature about the relationship between sustainability reporting and firm performance. To explore these findings in more detail, firm performance was split into three main performance measures: operational performance, financial performance and market performance. The next sections discuss the relationship between sustainability reporting and these different performance measures.

2.6 The Relationship between Sustainability Reporting and Different Performance Measures

When measuring firm performance, scholars usually face three options: use accounting-based measures, market-based measures or a combination of both. Many scholars have preferred to use accounting-based measures of performance, which are a firm’s return on assets (ROA) and return on equity (ROE). Other scholars, however, have selected market-based measures (i.e., Tobin’s Q) (Wagner, 2010).

Accounting-based measures are less complex, since they reflect what actually happens in a firm (López et al., 2007), and they are better at forecasting sustainability performance (McGuire et al., 1988). Market-based measures suffer from information asymmetry between managers and shareholders (Cordeiro and Sarkis, 1997) and assume that shareholders are the main stakeholder group (Orlitzky et al., 2003). Given the criticisms of accounting-based measures, some studies have used a combination of accounting- and market-based measures (e.g., Callan and Thomas, 2009). Thus, to overcome the criticism of both measures in this thesis, accounting-based and market-based measures are used.

2.6.1 The Relationship between Sustainability Reporting and Operational Performance

Many empirical studies have tried to investigate the relationship between ESG disclosure and operational performance using ROA (Nishitani and Kokubu, 2012; Jayachandran et al., 2013). Some of them found that ESG was positively associated with ROA (Fatemi et al., 2015; Malik et al., 2015). However, other studies found a negative relationship between ESG and operational performance (i.e., Lyon et al., 2013). A number of studies have found a non-significant association between ESG and ROA (Renneboog et al., 2008).

2.6.2 The Relationship between Sustainability Reporting and Financial Performance

The question of what is the relationship between sustainability reporting and firm financial performance has been the subject of contentious debate (Fatemi et al., 2017). According to neoclassical theory, the early studies that investigated the relationship between ESG and financial performance found an inverse relationship (e.g., Vance, 1975; Wright & Ferris, 1997). Kim and Lyon (2014) observed that the negative relationship between ESG and financial performance continued to exist (Fisher-Vanden & Thorburn, 2011; Jacobs et al., 2010; Lyon et al., 2013). Such evidence suggests that shareholders perceive that disclosure of ESG is a costly investment. On the other hand, recent studies have found that ESG is positively associated with financial performance (Fatemi et al., 2015; Malik, 2015). This positive relationship is supported by stakeholder theory (Freeman, 1999), which argues that disclosing sustainability information better satisfies the needs of other stakeholders (e.g., debtors, employees, customers and regulators). A

number of studies have found a non-significant association between ESG and financial performance (e.g. Horvathova, 2010).

2.6.3 The Relationship between Sustainability Reporting and Market Performance

The stock price or market value of a firm is seen as the most objective way of rating a firm. When we move to firm valuation, we find studies that have linked ESG with differences in valuation (as measured by Tobin's Q). For example, Buallay (2019) found that ESG disclosure has a positive impact on market performance, although Marsat and Williams (2011) documented a negative impact of ESG on market performance. The finding of a negative relationship between sustainability disclosure and market value was later supported by Baboukardos and Rimmel (2016).

As detailed above, studies of the relationship between sustainability reporting and firm performance (operational, financial and market) have returned mixed results. Similarly, the most recent studies in this topic have shown positive, negative and neutral results (Tables 2.4). To narrow the large circle of conflicting results; the next sections discuss the relationship between different sustainability disclosure measures and firm performance.

Table 2.4: Recent Studies of the Relationship between Sustainability Reporting and Performance

Author(s)	Country(s)	Year(s)	Performance	Main Result
Duque-Grisales & Aguilera-Caracue (2019)	Brazil, Chile, Colombia, Mexico and Peru	2011–2015	Operational (ROA)	The results suggest that the relationship between the ESG score and ROA is statistically significantly negative.
Deng & Cheng (2019)	China	2011–2019	Operational (ROA)	There is a positive correlation between an enterprise’s ESG indices and its performance
Aouadi & Marsat (2018)	worldwide	2002–2011	Operational (ROA)	The interaction term between ESG and ROA is positive and highly significant.
Zhao et al. (2018)	China	2008–2012	Operational (ROA)	The results show that good ESG can indeed improve operational performance
Velte (2017)	Germany	2010–2014	Operational (ROA)	ESG has a positive impact on ROA.
Lins et al. (2017)	US	2007–2013	Operational (ROA)	Some excess operating performance for high-ESG firms is observed.
Aouadi & Marsat (2018)	worldwide	2002–2011	Financial (ROE)	The interaction term between ESG and ROE is positive and highly significant.
Zhao et al. (2018)	China	2008–2012	Financial (ROE)	The results show that good ESG can indeed improve financial performance.
Atan et al. (2018)	Malaysia	2010–2013	Financial (ROE)	ESG is statistically insignificant in influencing the ROE.
Garcia et al. (2019)	Brazil, Russia, India, China and South Africa	2010–2012	Market (TQ)	Market capitalization is the main predictor of ESG performance.
Aybars et al. (2019)		2006–2016	Market (TQ)	Tobin’s Q (TQ) seemed to affect ESG score rather than the ESG score influencing Tobin’s Q.
Nekhili et al. (2019)	France	2007–2017	Market (TQ)	Investors react positively to ESG performance.
Balasubramanian (2019)	India	2014–2018	Market (TQ)	The study found that ESG score did have an effect on the firm’s performance.
Landi & Sciarelli (2019)	Italy	2007–2015	Market (TQ)	The authors found a negative and statistically significant impact in terms of market performance.
Miralles-Quirós et al. (2019)	31 countries	2010–2015	Market (TQ)	There exists a positive and significant relationship of banks’ environmental and corporate governance performance with Tobin’s Q. On the other hand, there exists a negative and significant correlation of banks’ social performance with Tobin’s Q.
Aouadi & Marsat (2018)	worldwide	2002–2011	Market (TQ)	ESG is associated with greater firm value.
Atan et al. (2018)	Malaysia	2010–2013	Market (TQ)	ESG is statistically insignificant in influencing the Tobin’s Q.
Fatemi et al. (2017)	US	2006–2011	Market (TQ)	The results indicate that ESG strengths significantly increase firm value (Tobin’s Q).
Velte (2017)	Germany	2010–2014	Market (TQ)	ESG has no impact on Tobin’s Q.

2.7 The Relationship between Sustainability Disclosure Measures and Firm Performance

Environmental, social and governance components are the three factors reported on in sustainability disclosure. The literature on ESG within firms indicates that it can provide competitive advantage (Rettab et al., 2009; Perrini et al., 2009; Samy et al., 2010; Uwuigbe and Egbide, 2012). However, each of these sustainability disclosure measures may have a different effect on firm performance.

The next sections discuss the relationship between each component of sustainability disclosure and firm performance.

2.7.1 The Relationship between Environmental Disclosure and Firm Performance

Corporate environmental sustainability refers to a firm's activities associated with the protection of natural resources and efforts to preserve the environment (Hart, 1995).

Firms try to reduce costs and increase benefits without harming the eco-system and to develop their resources while meeting stakeholder's needs. They are required to inform their stakeholders about the environmental impact of their operations and how they solve problems associated with environmental issues such as eco-friendly, recyclable, and substitute materials; bio-degradable packaging; remanufacturing; recycling and taking back products at the end of their life cycle.

Carter et al. (2000) and Jo and Harjoto (2011) stated disclosing information about environmental practices improved financial performance. By contrast, Smith et al. (2007) found an inverse relationship between environmental disclosure and firm performance. Given the conflicting results, in this thesis we investigate the effect of environmental disclosure on firm performance.

2.7.2 The Relationship between Social Disclosure and Firm Performance

Social sustainability refers to a long-term effort that affects the welfare of society (Elkington, 1997). These efforts include but are not limited to engaging in charitable activities (Chow and Chen, 2012); reducing social inequality (Alhaddi, 2015); protecting

human rights (Reichert, 2011); engaging in employee care in areas such as employee health, labour practices, employee training, and skills development; reducing workplace injury and illness rates; and preventing workplace discrimination (Chow and Chen, 2012). To meet stakeholder's needs, firms are required to report to their stakeholders on the social impact of their operations and how those operations have positive social value for people and society (Dempsey et al., 2011).

Margolis and Walsh (2003) found that disclosing social information enhanced firms' financial performance. However, Balabanis et al. (1998) saw a negative relationship between social disclosure and firm performance. Given these conflicting results, in this thesis we investigate the effect of social disclosure on firm performance.

2.7.3 The Relationship between Governance Disclosure and Firm Performance

Governance refers to implementing principles to assist stakeholders in monitoring controls, solving conflicts of interest and enforcing transparency (Buallay et al., 2017). Good corporate governance ensures that rules, regulations and laws, particularly those associated with economic, environmental and social issues, are followed, and corrective action is implemented to enhance the firm's long-term sustainability.

Firms report on governance issues to improve the firm's reputation and build or maintain community trust. They also anticipate and resolve governance-related problems, such as implementing anti-corruption, anti-extortion and anti-bribery initiatives; integrating sustainability into management decisions; and safeguarding reputations.

Gompers et al. (2003; 2010) found that governance disclosure improved a firm's financial performance, whereas Rose (2016) found that governance disclosure has a negative impact on ROA and ROE. Hassan Che Haat et al. (2008) found that governance disclosure is not significant for market performance. Because results are not uniform, in this thesis we investigate the effect of governance disclosure on firm performance.

As discussed previously, studies of the relationship between sustainability reporting and firm performance (operational, financial and market) have produced mixed results; this could be due to a firm's nature. Barnett (2007) and Soana (2011) claimed that ESG

characteristics vary across industries, making it difficult to generalize results when a study is conducted across several industries at once. They confirmed that the number of sectoral studies discussing the relationship between sustainability reporting and firm performance is insufficient. Therefore, the next section in this chapter discusses sustainability reporting across sectors.

2.8 Sustainability Reporting Across Sectors

Cross-sector research used to address social issues provides multidisciplinary and different conceptual frameworks (Selsky & Parker, 2005). As this thesis addresses sustainability disclosure, which covers multidisciplinary issues (environmental, social and governance), this thesis consolidates recent literature from primary, secondary and tertiary sectors to jointly address challenges such as economic development, social activities, and environmental sustainability (Selsky & Parker, 2005). Multidisciplinary literature may assist management, researchers and regulators in addressing the issue of sustainability reporting. Sectors differ greatly in purpose and size, which gives results ranging from local to international scope, short term to long term, and voluntary to fully mandated. This review explains that when researchers from different sectors focus on the same issue (i.e., sustainability reporting), they are likely to think about it differently. The general issues of sustainability reporting have been widely addressed in previous studies (Therivel, 2006; Pojasek, 2007), but there is still a clear lack of cross-sector research on this topic.

2.8.1 Sustainability Reporting in Primary Sectors

A primary sector is an industry involved in the extraction and collection of natural resources (Kenessey, 1987). Primary sectors are concerned with the extraction of raw materials. In this section, two sectors are considered: the agriculture and food industries sector and the energy sector.

Sustainability Reporting in Agriculture and Food Industries Sector

The United Nations issued a report announcing that the world population is expected to reach 9.6 billion by 2050 (“World population projected to reach 9.6 billion by 2050”,

2013). This dramatic increase in the world's population will put pressure on the agricultural and food sector to produce sufficient food to meet the needs of humans. Therefore, sustainability is a more significant issue than before (Accenture, 2012). The issue of sustainability in the agriculture and food sector has become a growing concern globally (Wurth, 2014). In particular, 81% of consumers are demanding more attention to sustainability in the agriculture and food sector (BASF, 2014; Wurth, 2014). Because of this, various firms in this sector have started to adopt sustainable practices and to disclose them in sustainability reports (Ihlen et al., 2011; Kolk, 2004). The focus on sustainability reporting is rapidly growing for agri-food firms (Aigner et al., 2003; Rankin et al., 2011). The agriculture and food sector is complex because its business activities are directly associated with many business partners such as farmers, food manufacturers, retailers and suppliers (Carolan, 2016; KPMG International Cooperative, 2013). The issue of sustainability reporting is rapidly increasing due to the large environmental and social impacts (Rankin et al., 2011) and the legal requirements for reporting on sustainability (Golob & Bartlett, 2007), such as the GRI (Accenture, 2012; Detre & Gunderson, 2011).

Identifying the value of sustainability reporting to a firm can be difficult. While some research suggests strong sustainability reporting leads to increased sales (Sen & Bhattacharya, 2001), other research indicates it is difficult to quantify the relationship between sustainability reporting and performance (Feldman & Vasquez-Parraga, 2013). Despite the value of sustainability reporting to a firm, the diverse nature of the agriculture and food sector creates unique challenges and opportunities associated with sustainability reporting (Rankin et al., 2011). Regardless of the increased concern from consumers about agricultural and food sustainability (Wurth, 2014), there is limited research on the role of sustainability reporting in enhancing business performance in the agriculture and food sector. For these reasons, the relationship between sustainability reporting and the performance of firms in the agriculture and food sector is investigated in this thesis.

Sustainability Reporting in Energy Sector

Sustainability efforts in the energy sector are focused on mining for energy sources with less environmental impact and, on the social level, ensuring access to reliable and affordable energy supplies. The disclosure of sustainability reports in this sector has expanded worldwide (del Mar et al., 2014). Stakeholders are concerned by the climate performance of the energy firms and the accuracy of the information they report. Therefore, firms disclose sustainability information to demonstrate their climate performance to stakeholders (Hrasky, 2012). The percentage of S&P 500 firms that publish sustainability reports increased from 20% in 2011 to 82% in 2016 (Governance & Accountability Institute, 2018). Sustainability reports should be transparent in reporting environmental performance. Such transparency is important to enable stakeholders to assess the firm's performance and make investment decisions (GRI, 2016). However, the lack of transparency has widely been criticized (e.g., Boiral, 2013). A few studies have questioned the level of sustainability reporting in the energy sector (Boiral and Henri, 2017). Notwithstanding, the effect of sustainability reporting on performance in the energy sector has not been investigated sufficiently, and what studies have been done have found mixed results (positive, negative and neutral results). Therefore, the relationship between sustainability reporting and energy sector performance is investigated in later chapters.

2.8.2 Sustainability Reporting in Secondary Sectors

The secondary sector of the economy includes industries that manufacture a finished, usable product or that are involved in construction (Kenessey, 1987). This sector supports both the primary and tertiary sectors.

Sustainability Reporting in Manufacturing Sector

The manufacturing sector is about the process of converting raw material into final goods and services. In this sector, the main determinant of competitive advantage from sustainability is environmental impact (Gutowski et al., 2009), involving advantages such as less waste, less energy consumption in the manufacturing process, and reduced transportation (Mani et al., 2014). This drives a number of environmental issues, such as

the use of dangerous chemicals and non-recyclable resources (Allwood et al., 2006). The second category of competitive advantages from sustainability are associated with social impact; most studies in the manufacturing sector concerning social impact concentrate on work environment and employee health (Huang et al., 2013).

There is a growing debate regarding sustainability issues in the manufacturing sector. Regardless of the development of sustainability committees, sustainability policies, and sustainability reports, questions continue about how manufacturers should develop, implement and report their sustainability activities. There are various reasons why it is hard to develop, implement, and report on sustainability in the manufacturing sector. First, the manufacturing industry consists of number of divisions, such as sportswear, luxury goods and electronics, and the challenges associated with the concept of sustainability within these divisions differ, hence there is no “one size fits all” solution for sustainable manufacturing (Van Marrewijk, 2003; Searcy and Buslovich, 2014). Second, the logistics process in the manufacturing sector is extremely complex (Fletcher and Grose, 2012). It consists of thousands of suppliers, distributors and retailers, which challenges the monitoring of and reporting on sustainability. Third, the manufacturing sector is changing quickly and firms need to regularly change their business model to incorporate sustainability strategies (Allwood et al., 2006; Farrer and Fraser, 2009; Fletcher and Grose, 2012).

Regardless of these challenges, many manufactures have implemented and reported on sustainability efforts (Caniato et al., 2012). Many manufacturers communicate their sustainability progress by reporting on their environmental, social and governance performance. While the disclosure of sustainability reporting is growing, there is currently little literature that investigates the effect of sustainability reporting on performance in this sector. Fauzi and Idris (2009) found a positive relationship between corporate social responsibility (CSR) and manufacturer financial performance, whereas Lin et al. (2009) concluded that CSR investments do not have a strong positive effect on profits. Given the

conflicting results, there is a need to investigate how sustainability reporting affects manufacturers' performance.

2.8.3 Sustainability Reporting in Tertiary Sectors

The tertiary sector or service sector is the third of the three main economic sectors (Kenessey, 1987). This sector produces services instead of end products. The banks and financial services, retail, telecommunication and information technology, and tourism sectors are counted within the tertiary sector.

Sustainability Reporting in Banks and Financial Services Sector

The banking and financial services sector is responding more slowly than other sectors to sustainability challenges (Jeucken, 2004). Jeucken and Bouma (1999) stated that banks are behind other sectors in examining the impact of sustainability reporting on their performance. Empirical research by Tomorrow (1993) found that bank disclosures did not focus on environmental impact. In the same vein, Earhart et al. (2009) found that the financial sector was still behind other sectors in terms of managing environmental and social impacts. Thompson (1998) noted that managers of banks and the financial sector have started to recognise that their activities have an effect on and are affected by the environment.

After the financial crisis in 2008, some banks were able to survive and even continue to grow, while others collapsed (Earhart et al., 2009). Banks that survived and grew were banks that operated sustainably and focused on the social, environmental and governance practices (Earhart et al., 2009). Thus, to survive, banks must focus on environmental and social value as well as financial value (Capella, 2002). Considering the great impact of banks and financial institutions on the economy, it is important for banks to develop sustainably (Capella, 2002).

Despite all the attention by researchers to sustainability, there are few studies focused on sustainability reporting in the banking and financial services sector (e.g. Chih et al., 2010). Chih et al. (2010) examined the determinants of CSR in financial institutions. Branco and Rodrigues (2008) examined the CSR disclosures of banks in Portugal. de La

Cuesta-González et al. (2006) examined the CSR of Spanish financial institutions. However, Branco and Rodrigues (2008), argued that little attention has been paid to studies about sustainability reporting in both banking and financial services. Therefore, in this thesis the relationship between sustainability reporting and bank performance is considered.

Sustainability Reporting in Retail Sector

The retail sector is an international economic powerhouse that is expected to increase to US\$28 trillion by 2019 (BusinessWire, 2016). The retail sector represents 31% of the world's gross domestic product (GDP), which means that the retail sector has fundamental economic power and substantial environmental impacts. These include impacts from retailing operations (Brancoli et al., 2017; Bradley, 2016; Zaatari et al., 2016) and from the production of retailed goods (Cimini and Moresi, 2018). There are various studies about the environmental impacts of individual retailers (Brancoli et al., 2017; Mylona et al., 2017). However, studies investigating the relationship between sustainability reporting and performance in this sector are rare. Delai and Takahashi (2013) clarify that research on retail sustainability is lacking, especially research on sustainability reporting. Therefore, this thesis investigates the relationship between sustainability reporting and retail performance.

Sustainability Reporting in Telecommunication and Information Technology Sector

The e-waste production of the telecommunication and information technology sector is estimated at between 20 and 50 million tons every year. Schwarxer et al. (2005) stated that e-waste increased 3–5% per year. Firms in this sector face many sustainability challenges. These include environmental challenges (for example, e-waste disposal may pollute groundwater or the environment), social challenges (for example, electronic equipment can be redistributed to social communities), governance challenges (for example, companies have legal responsibility to recycle electronics that are returned to them at the end of their life cycle; Nnorom & Oshibanjo, 2008) and economic challenges (for example, the use of email bills saves costs; Rainie & Horrigan, 2005). These sustainability issues need to be addressed with stakeholders. Sustainability reporting may

help telecommunication and information technology firms to communicate with their stakeholders about economic, environmental and social issues which enable those firms to be sustainable for the long term (Pojasek, 2007). Therefore, sustainability reporting is crucial for firms in this sector to retain their stakeholders, which indeed affects the performance of these firms. Hence, there is a need to investigate the relationship between sustainability reporting and firm performance in this sector.

Sustainability Reporting in Tourism Sector

Research on sustainability in the tourism industry is growing rapidly. A wide variety of sustainability issues are addressed within this industry. Jauhari (2014) studied a number of sustainability issues in the tourism sector such as green hotels, sustainable tourism, energy consumption and the role of technological innovation in achieving sustainability. Bonilla-Priego et al. (2014) developed an index to measure sustainability reporting in this sector, including social, environmental and economic dimensions. However, the effects of these dimensions on tourism sector performance are not well studied. Therefore, examining the relationship between sustainability reporting and performance in the tourism sector is a new contribution to the literature.

As discussed in the previous sections, studies of the relationship between sustainability reporting and firm performance have produced mixed results. This may be due to the firm's nature or it may be because of the country's nature. Therefore, the relationship between sustainability reporting and firm performance in different regions is discussed in the next section.

2.9 Relationship between Sustainability Reporting and Firm Performance in Different Regions

In this section, we grouped the studies that investigate the relationship between sustainability reporting and firm performance by three regions: Asia, Europe, and America and Australia.

2.9.1 Relationship between Sustainability Reporting and Firm Performance in Asia

Fauzi and Idris (2009) studied this relationship in Indonesia and found a positive relationship between CSR and financial performance. Lin et al. (2009) investigated the influence of CSR on operational performance (measured by ROA) in Taiwan. They found a strong positive effect on profits. Zhang et al. (2013) investigated the relationship in Shanghai and determined that social responsibility has a positive impact on financial performance. Ahamed et al. (2014) studied the relationship in Malaysia using operational and financial measures (ROA and ROE). They found that social responsibility has a positive impact on financial performance. Chelawat and Trivedi (2016) examined the relationship in India and identified a positive relationship with financial performance. Wahab et al. (2017) investigated the link between the level of CSR disclosures and operational and market performance (as measured by ROA and Tobin's Q) in Malaysia; they found a positive relationship. Zhao et al. (2018) evaluated the relation between ESG application and financial performance in China and determined there was a positive relationship.

2.9.2 Relationship between Sustainability Reporting and Firm Performance in Europe

Achim & Borlea (2015) conducted a study in Romania to investigate the relationships between ESG and operational, financial and market performance (ROA, ROE and Tobin's Q). They identified positive significant relationships with operational and market performance only. Ortas & Moneva (2010) investigated the relationship between CSR and financial performance in Europe, identifying a positive correlation between the two. Karagiorgos (2010) examined the relationship in Greece and he found a positive significant relationship. Ferrero-Ferrero et al. (2016) explored the effect of ESG on financial performance for firms listed in Europe; they found a nonlinear relationship between ESG and financial performance.

2.9.3 Relationship between Sustainability Reporting and Firm Performance in America and Australia

Brine et al. (2007) investigated the relationship in Australia between CSR and financial and operational performance (ROE and ROA). Their results were not statistically significant. Mahoney and Roberts (2007) investigated the relationship between CSR and

financial performance in Canada; they found no significant correlation. Nau and Breuer (2014) investigated the relationship in the US and determined that financial performance is not equally affected by environmental (E), social (S) and governance (G) factors separately. The G score had a significant positive effect on financial performance while E and S scores showed negative relationships with financial performance. Miralles-Quirós et al. (2018) investigated the relationship in Central America; they stated that Brazilian investors favoured CSR activities as a value-enhancing tool rather than seeing it as a cost for shareholders.

As is clear from the above sections, studies of the relationship between sustainability reporting and firm performance (operational, financial and market measures) have returned mixed results even in the same region. This may be due to the variability in the sustainability reporting laws in each country. Sustainability reporting may be mandatory – a legal requirement to deliver this information – or voluntary, where the extent and nature of reporting may vary substantially between firms. The next section, therefore, discusses sustainability reporting laws.

2.10 Sustainability Reporting Laws

The expansion of the disclosure of sustainability reports by firms is driven by many factors:

- stakeholder pressure (del Mar Alonso-Almeida et al., 2014);
- firm value creation (Hughen et al., 2014) and
- government regulation (Perego et al., 2016).

However, the main challenge in disclosing sustainability information is governing the disclosure of the three sustainability dimensions (economic, environmental and social). Another challenge to disclosing sustainability reports is the lack of mandatory disclosure laws, which exposes a gap between what firms do and what is disclosed (Clarkson et al., 2011). The two challenges are interrelated.

Today, government regulation plays an important role in the disclosure of sustainability reports. Laws mandating sustainability reports mitigate debates about the credibility of these reports (Birkey et al., 2016; Dhaliwal et al., 2014; Ruhnke and Gabriel, 2013). Issues with sustainability reporting are confirmed by many authors (Birkey et al., 2016). They have argued that unregulated and voluntary disclosure of sustainability is a core challenge to the stakeholders, as they cannot determine whether the sustainability information is complete and credible as recommended by the GRI (GRI, 2016).

As sustainability reporting grows worldwide, there is a need for laws to regulate these disclosures (Cohen & Simnett, 2015). However, there are many countries which have no laws with regard to sustainability disclosure. A country's lack of sustainability reporting laws opens the door for doubt about the value of sustainability reporting, as it is not restricted by governmental oversight (Gürtürk & Hahn, 2016).

Many countries have already recognized the importance of sustainability reporting regulations. The story of sustainability reporting regulations started during the 1960s and 1970s, in both the United States and Europe. Sustainability information was disclosed voluntarily with the aim of making stakeholders aware of their responsibility to society and the environment. The Netherlands and France were the first countries to attempt to voluntarily report on social responsibility. At the same time, Germany, Austria and Switzerland were the first countries to attempt to voluntarily report on environmental responsibility.

Meanwhile, firms began to integrate ESG data into their reporting (Ioannou and Serafeim, 2015). These data were demanded not only by the shareholders but also by other stakeholders. An increasing number of countries around the world began to mandate the disclosure of ESG information, either through governments introducing laws and regulations or through stock exchange listing requirements.

Since 2012, Denmark, South Africa, China, Malaysia, Brazil, Hong Kong and India have mandated sustainability reporting.

In 2013, Carrots & Sticks² in its report identified 44 countries that encourage the disclosure of sustainability reports. In 2016, the report showed 64 countries encouraging disclosure. Table 2.5 details strong growth in sustainability reporting regulations from 2013 to 2016. This growth means that countries have started to recognize the importance of regulating and encouraging sustainability reporting.

Table 2.5: Trends in Sustainability Reporting (Carrots & Sticks, 2016)

Sustainability Reporting	2006	2010	2013	2016
Countries	19	32	44	64

In the same vein, in 2016 the GRI published a report about laws mandating sustainability reporting worldwide. This report showed that 58 countries worldwide had a law mandating sustainability disclosure (Table 2.6).

² This website contains a database of mandatory and voluntary instruments that either require or encourage organizations to report sustainability-related information.

Table 2.6: Countries with Mandatory Sustainability Reporting Laws

Asia	Australia and Oceania	Central America and the Caribbean	Europe		Mena	North America	South America	Sub-Saharan Africa
Bangladesh	Australia	US	Austria	Luxembourg	Turkey	Canada	Brazil	Nigeria
China			Belgium	Malta			Bolivia	South Africa
Hong Kong			Bulgaria	Netherlands			Chile	Zimbabwe
India			Croatia	Norway			Colombia	
Japan			Czech Republic	Poland			Ecuador	
Maldives			Denmark	Portugal				
Malaysia			Estonia	Republic of Cyprus				
Pakistan			Finland	Romania				
Philippines			France	Russia				
Singapore			Germany	Slovakia				
Taiwan			Greece	Slovenia				
Thailand			Hungary	Spain				
South Korea			Iceland	Sweden				
Vietnam			Ireland	Switzerland				
			Italy	UK				
			Latvia					
			Lithuania					

As shown in Table 2.6, many countries have launched laws to assure disclosure of sustainability reporting. The last Carrots & Sticks report (2016) assessed the developments in sustainability reporting worldwide (mandatory or voluntary). The report showed that there has been an increase in regulations with regard to sustainability reporting. The report also indicated that mandatory sustainability reporting worldwide is dominant, but the growth in voluntary reporting is also strong. Therefore, in this section the question is raised as to whether sustainability reporting laws affect the relationship between sustainability reporting disclosure and performance.

In traditional financial reporting, past researchers found that disclosure laws have a positive impact on firm value. La Porta et al. (2000) argued that mandatory disclosure increases firm value by improving return on assets. However, other researchers have found negative impacts of mandatory disclosure on firm value due to increases in costs.

The impact of sustainability disclosure regulations on firm value is not clear and is complicated by the fact that the audience for sustainability disclosures is not only shareholders but also other stakeholders such as employees, suppliers and governments. On the one hand, past literature has found that the availability of more ESG information leads to more efficient operations (Schlenker & Scorse, 2012). Thus, disclosure regulations may be forcing firms to adopt many practices that decrease the environmental and social effects of their operations. Sustainability disclosure laws may reveal the commitment of the firms to sustainability to various parties (government, employees and society).

On the other hand, ESG disclosure laws may reduce firm value by bringing additional costs. Forcing firms to increase sustainability disclosure through laws increases the demands from other stakeholders to expand social and environmental practices. For example, civil organizations might demand the purchase of more costly machines to ensure that these machines will not have a negative impact on employees.

Chapter Conclusion

This chapter first reviews the previous literature on the definitions of firm sustainability and, based on these, we redefine the concept of sustainability to align it with our thesis aim as

Meeting the social, environmental and economic needs of the present without compromising the ability of future generations and assuring these needs are met through the adoption of corporate governance practices.

Second, the chapter discusses the four sustainability dimensions – environmental, social, economic and governance – and how these dimensions are interdependent. The third section discusses sustainability reporting history and development; we divide the development of sustainability reporting into four phases. The first phase began during the 1950s, when the term corporate social responsibility (CSR) was identified and focused on the “social dimension”. In the 1980s, stakeholders became more aware of the second phase, the “environmental dimension”. Ten years later, in the early 1990s, sustainability reporting covering the social, environmental and economic dimensions was the focus. Then in 2010, the Prince of Wales Accounting for Sustainability Project and the GRI announced the formation of the International Integrated Reporting Council Committee (IIRC). The integrated reporting framework brings together economic, environmental, social and governance information (IIRC Website, 2019).

The fourth section reviews the cost and benefits of disclosing sustainability reports and is followed by a section about the relationship between sustainability reporting and firm performance, which explains positive, negative and neutral relationships. The relationships between sustainability reporting and different performance measures (operational, financial and market) are then reviewed, followed by a discussion of the relationships between each of the separate sustainability disclosure areas – environmental, social and governance – and firm performance. The previous studies on the relationship between sustainability reporting and firm performance have returned mixed results.

Sustainability reporting across sectors is then discussed; seven sectors are reviewed: agriculture and food industries, energy, manufacturing, banks and financial services, retail, telecommunication and information technology, and tourism. This section is followed by a discussion of the relationship between sustainability reporting and firm performance in

different regions. The previous studies on the relationship between sustainability reporting and firm performance have returned mixed results even in the same region. This may be due to the variability in the sustainability reporting laws in each country. Sustainability reporting may be mandatory – a legal requirement to deliver this information – or voluntary, where the extent and nature of reporting may vary substantially between firms. Finally, the final section addresses the sustainability reporting laws in various countries.

Chapter Three:

Relevant Theories and Conceptual Framework

Chapter 3: Relevant Theories and Conceptual Framework

Chapter Introduction:

This chapter first reviews theories associated with sustainability disclosure. These theories have been split into two parts: theories supporting sustainability reporting and theories against sustainability reporting. The second section is the development of the conceptual frameworks. To build our conceptual framework, several stages were applied. The first stage is to identify perspectives of sustainability reporting. The second stage is to assign the suitable theory to each perspective. The third stage is to choose the proper theories. The fourth stage is to assign proper variables that could be explained by each theory. The third section is the developed conceptual framework where the study variables are discussed. Finally, hypotheses are developed with to achieve the study aim.

3.1 Relevant Theories

This section provides the theoretical framework leading to the linking of sustainability disclosure (environmental, social and governance) and performance.

In this section and based on the purpose of this study, many theoretical explanations are discussed. These theories are categorised into two groups: theories supporting the positive impact of sustainability reporting on firm performance and theories defending the negative impact of sustainability reporting on firm performance (Table 3.1).

3.1.1 Theories Supporting Sustainability Reporting

First, *agency theory* describes the relationship between a principal (shareholders) and the agent (management) (Holmstrom, 1979; Holmstrom & Milgrom, 1987; Jensen and Meckling, 1976). This theory states that managers are agents to maximize shareholder wealth (Quinn and Jones, 1995). It suggests that principal–agent problems can appear from nonalignment of interests between principals and agents (Jensen and Meckling, 1976). Managers focused on the need for maximizing profit own stock in the firm and/or receive compensation in reward for strong financial performance. The shareholders/principals, however, are focused on reducing risk and costs while increasing financial returns. Therefore, agency theory puts forward the concept that managers are agents for shareholders, and maximizing the profitability of the firm is motivating the shareholders to reward the management.

Watts and Zimmerman (1990) assume that agency costs include transactions, and information costs exist. These costs are incurred due to sustainability disclosures, as this disclosure is used as a tool to communicate with stakeholders, thus reducing the information asymmetry between shareholders and management. Thus, agency theory outlines that sustainability reporting reduces agency costs and decreases the problem of information asymmetries, as many of these risks are disclosed in sustainability reports. Therefore, reducing agency costs might increase financial performance.

Second, *stakeholder theory* expounds on why firms worldwide disclose their sustainability activity (Hörisch et al., 2014). Freeman (2010) defined a stakeholder as “any group or individual who can affect or is affected by the achievement of an organization’s objectives” (Freeman 1984: 46). In defining stakeholder, Freeman (2010) considers both internal and external parties that affect and are affected by the firm (Sarkis, Ginzalez-Torre and Adenso-Diaz, 2010). External parties often create pressures on firms to lower negative impacts and improve positive ones (Sarkis et al., 2010). According to Keynes (1936), stakeholders are categorized into three major groups:

- External stakeholders: governments, suppliers, competitors and customers.
- Internal stakeholders: boards of directors, employees, subsidiaries and parent company.
- Shareholders: all individuals or firms who are investing in shares and other securities of the firm.

Freeman (1994) poses two essential questions to understand the core of stakeholder theory: 1) What is the main aim of the firm? and 2) What is the management responsibility to stakeholders? The first question addresses the value firms creates. The second question relate to management’s communication with stakeholders.

Stakeholder theory basically depends on the assumption that firms need to manage their relationship with their stakeholders in order to survive. Deegan and Blomquist (2006) clarify that according to stakeholder theory, reporting on specific types of information can be used to attract or maintain particular groups of stakeholders. For example, if a powerful individual or group is interested in a firm’s social or environmental activities, then disclosing information about social or environmental performance is essential to attract or maintain them.

In fact, firms face challenges in meeting the expectations of various stakeholders. More attention is paid to investors (Verbeeten et al., 2016), as they are the main contributors to the firm's survival. In the context of sustainability, the issue is to consider the needs of all stakeholders (shareholders, investors, employees, community and so on) while reporting on sustainability. This is supported by the normative section of stakeholder theory. A normative theory states that firms not only increase stockholders' financial returns but also must give equal consideration to the needs of other stakeholders to gain the optimal balance among them (Hasnas, 1998). In fact, any firm has explicit costs and implicit costs. The firm that attempts to decrease its implicit costs by being socially irresponsible will certainly incur additional explicit costs.

Therefore, managers should satisfy the needs of all stakeholders, not just investors or shareholders (Melé, 2008). Thus, sustainability reporting will satisfy stakeholders' needs. For example, if employees are satisfied, they will work more effectively; satisfied customers will purchase more, and satisfied suppliers will provide discounts.

Third, *accountability theory* is used to explain how governmental authority affects a firm's behaviour. Hence, sustainability disclosure results from government control based on political strategy and agendas (Bramwell, 2011). Accountability is defined as "the duty to provide an account or reckoning of those actions for which one is held responsible" (Gray et al., 1996, p. 38). Accountability is also defined in this way: "people in society have a right to be informed about certain facets of the corporation's operations" (Deegan, 2000, p. 348).

In the context of sustainability, accountability can offer recognition of how stakeholders see a firm as responsible for its environmental impact along with its financial impact (Milne & Gray, 2007; Gray et al., 1997; Gray et al., 1995). This theory challenges voluntary sustainability reporting and supports mandatory sustainability reports (Comyns et al. 2013; Gillet-Monjarret, 2015; Wong & Millington, 2014; Simnett et al., 2009). As argued by Gray (2007), the lack of mandatory laws associated with sustainability reporting is seen as a barrier to improving the quality of that reporting. Whenever sustainability reporting is a voluntary practice, firms will not take serious actions related to accountability. Laws mandating sustainability reports are viewed as a basic element in assuring the credibility and reliability of the disclosures (Faisal et al., 2012; Haider & Kokubu, 2015; Zadek & Raynard, 2004;

Manetti, 2011). The lack of such laws affects stakeholders' trust in the accuracy and transparency of the information disclosed (Alon & Vidovic, 2015; Deegan et al., 2006; Gillet-Monjarret, 2015; Manetti & Becatti, 2009). A mandatory law on sustainability reporting serves as a communication tool to improve the transparency and reliability of information. Simnett et al. (2009) state that assurance of sustainability information increases stakeholder confidence and trust in the level of a firm's commitment to sustainability disclosure.

Fourth, in *legitimacy theory*, a firm chooses to disclose sustainability information to fulfil its social contract with society (Fernando & Lawrence, 2014; Hahn & Lülfs, 2014). Thus, a firm seeks to maintain or increase legitimacy by operating in a manner that satisfactorily addresses societal norms and expectations (Hahn & Lülfs, 2014; Faisal et al., 2012).

To acquire legitimacy, firms should do the "right things" or not be engaged in doing the "wrong things" (Buhr, 1998, p. 165). Legitimacy theory depends on the idea that for a firm to operate in society it relies on a social contract between the firm and its stakeholders in the society where it operates (Deegan, 2014; Deegan & Blomquist, 2006; Guthrie & Parker, 1989). The social contract is based on implicit and explicit stakeholder expectations about how a firm should operate (Deegan, 2006). Deegan (2006, p. 278) describes the explicit stakeholder expectations for the social contract as the "legal requirements", while the "non-legislated societal expectations" are implicit.

To achieve legitimacy, it is crucial for a firm to identify its problems and implement procedures to resolve them prior to communicating with its stakeholders. A firm progresses to legitimacy through different levels. Tilling (2004) proposed four stages of legitimacy that firms may progress through: establishing, maintaining, extending and defending. Establishing and maintaining firm legitimacy are powerful drives for management to report on social and environmental performance (Deegan & Rankin, 1996; Kuruppu & Milne, 2011; Milne & Patten, 2002). Therefore, according to legitimacy theory, disclosure on sustainability can help in establishing and maintaining stakeholder expectations, which will return better financial results.

Fifth, as a complement to accountability theory, *signalling theory* suggests that firms try to signal positive behaviour through sustainability disclosure (Verrecchia, 2001). In other words, firms that want to signal that they are "good corporate citizens" will disclose more

information about their social practices given that competitors follow their practices and increase their own disclosure according to the law. Similarly, if sustainability disclosure is enforced by law, the society will perceive the importance of ESG issues. Firms could make more data available to signal their commitment to transparency and their willingness to be responsible and accountable and to conform to societal norms and expectations. In fact, past studies document that firms with higher ESG disclosure enjoy benefits in terms of brand and reputation or access to finance (e.g., Luo & Bhattacharya, 2006; Cheng et al., 2014), which indeed enhances their financial performance.

Sixth, *resource-based theory* assumes that a firm may outperform its competitors by developing its valuable and rare resources (Barney, 1991). This theory looks at sustainability reporting as a source of competitive advantage; for example, firms can innovate by disclosing different sustainability issues to attract their stakeholders. Thus, firms innovating through sustainability reporting will have better financial performance.

The seventh theory is *political-economy theory*. Gray et al. (1996, p. 47) define firm sustainability as “the social, political and economic framework within which human life takes place”. Political-economy theory discusses the power conflicts that occur between society, politics, and economics. In the accounting context, Guthrie and Parker (1990) argued that accounting reports serve as social, political and economic documents. They act as a tool for building, sustaining and legitimizing economic and political issues which contribute to a firm's interests. Sustainability reporting has the power to convey social, political and economic meanings for multiple groups of stakeholders.

According to this theory, firms decide what information to disclose in their sustainability reports, which contributes to the firm's interests and therefore leads to better performance.

Finally, *positive accounting theory* is based on the choice of the accounting policies used by the firm (Watts & Zimmerman, 1986). This theory has three sub-theories: bonus plan, debt covenant and political cost. The bonus plan and debt covenant sub-theories support the disclosure of sustainability reports, however, the political cost sub-theory does not. Thus, the latter will be discussed in the next section.

Bonus plan: This sub-theory is almost linked to agency theory; managers are willing to choose particular accounting practices to report higher income to increase their bonus. Therefore,

managers will disclose sustainability information to raise the incentive level (Banwarie, 2011).

Debt covenant: Firms with high debt–equity ratios will use sustainability reporting to appease shareholders and creditors and to avoid their monitoring.

3.1.2 Theories Against Sustainability Reporting

First, *shareholder expense theory* suggests that sustainability practices will lead to putting social benefits before shareholders' benefits. This means that sustainability practices such as social responsibility activities are perceived to be beneficial to the society at the expense of investors and shareholders. Thus, firms should not be engaged in sustainability activities unless they have excess returns. Manchiraju and Rajgopal (2017) showed that forcing firms to invest in sustainability activities leads to a drop in their returns.

Second, *slack resource theory* defines slack resources as any free resources the firm may use to adopt practices other than its core business function. This theory states that firms with high financial performance may have a surplus of monetary or non-monetary slack resources which can be allocated to environmental and social issues, such as environmental protection and stakeholder relationships (McGuire et al., 1988; Waddock & Graves, 1997). Therefore, only financially strong firms are able to adopt sustainability practices (Awan, 2015; Soana, 2011). Under this theory, if a firm is not doing well financially, sustainability practice implementation will have an adverse effect on its financial performance.

Third, *trade-off theory* suggests that sustainability practices create additional expenses that reduce profitability (Aupperle et al., 1985). Firms that spend on sustainability activities will have lower profits (Balabanis et al., 1998; Friedman, 2007).

Finally, *positive accounting theory*, as discussed in Section 3.1.1, has three sub-theories: bonus plan, debt covenant and political cost. The bonus plan and debt covenant sub-theories support sustainability reporting, while the political cost sub-theory does not. This sub-theory states that more profits may create political issues; thus, profitable firms try to reduce their profits to avoid political exposure. In this situation, managers might decide not to disclose sustainability activities to reduce profit that creates a political issue (Belkoui & Karpik, 1989).

Table 3.1 summarises the theories found in the literature review.

Table 3.1: Summary of Theories

Theories Supporting Sustainability Reporting	Theories against Sustainability Reporting
Stakeholder Theory	Shareholder expense theory
Agency theory	Slack resource theory
Legitimacy theory	Trade-off theory
Accountability theory	Positive accounting theory: political cost
Signalling theory	
Resource-based theory	
Political-economy theory	
Positive accounting theory: bonus plan	
Positive accounting theory: debt covenant	

3.2 Conceptual Framework Development

The accounting discipline is influenced by many other disciplines, such as social sciences, economics, finance, management and politics, which then opens the door for the adoption of theories from other disciplines for use in accounting research (Al-Adeem, 2010; Riahi-Belkaoui, 2004). Accounting concepts, accounting theories, accounting standards and accounting frameworks that are used to understand or anticipate accounting behaviours may have roots in one or more other disciplines (Al-Adeem, 2010; Riahi-Belkaoui, 2004). Fernando and Lawrence (2014) observed that theories are not in competition; rather, they are complementary, and integrating them may provide a better understanding for some phenomena. There is an increased acceptance of multiplicity in academic research, including accounting (Beattie, 2014; Bisman & Highfield, 2012). Therefore, the conceptual framework in this thesis is built based on the different theories to develop a better understanding of the relationship between sustainability reporting and firm performance.

The conceptual framework was built in several stages. The first stage is to identify perspectives on sustainability reporting. The second stage is to assign the suitable theory to each perspective. The third stage is to choose the theories. The fourth stage is to identify the variables that could be explained by each theory.

Stage 1: Different Perspectives on Sustainability Reporting

As shown in Figure 3.1, the disclosure of sustainability reporting can be viewed from different perspectives – that of stakeholders, society, government or country.

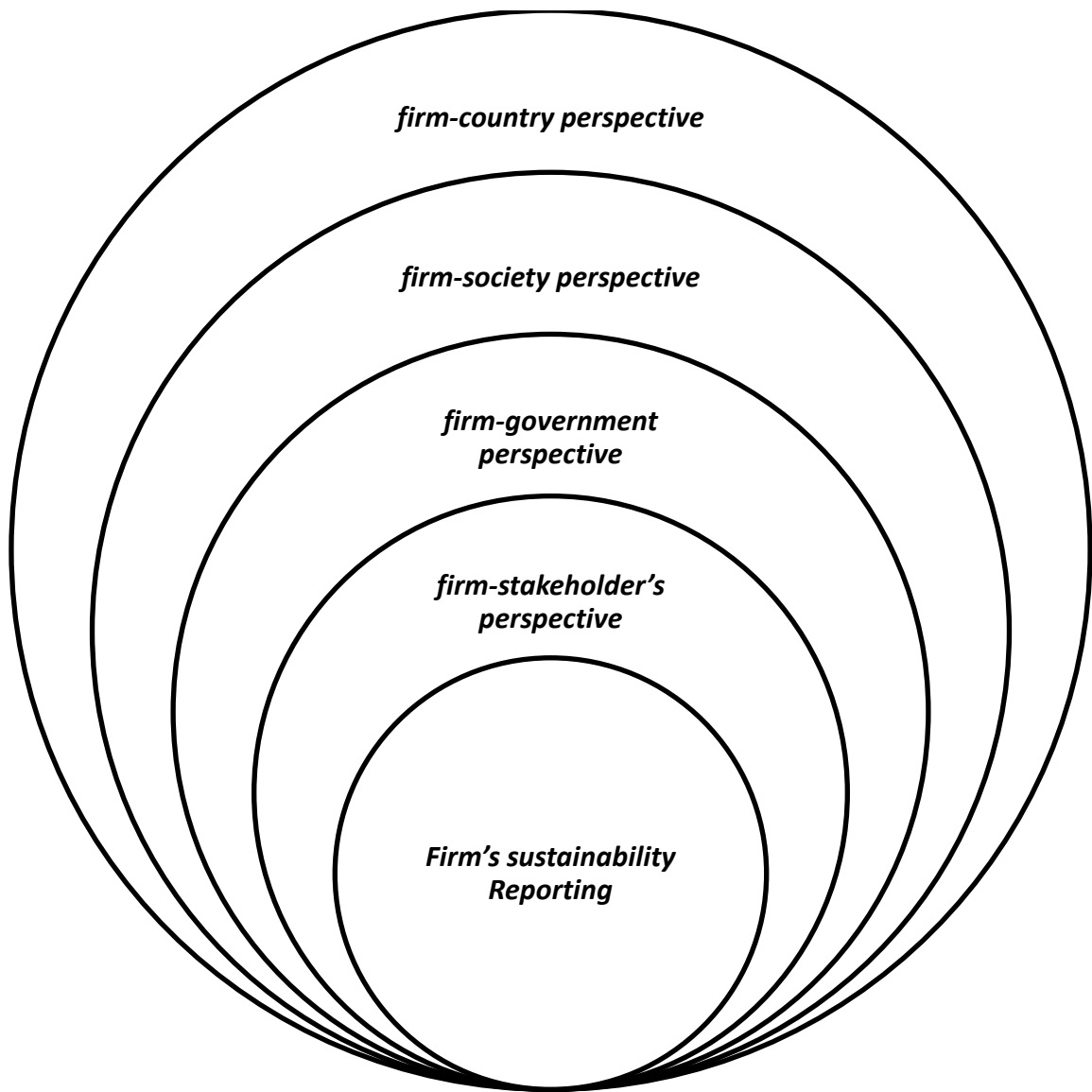


Figure 3.1: Different Perspectives on Sustainability Reporting

Stage 2: Assign Theories to Perspective

From the ***firm-stakeholder's perspective***, *stakeholder theory* is a way to communicate with different stakeholders. Stakeholder theory has a central place in explaining the sustainability reporting of a firm. The need for a firm to balance the needs of stakeholders while maintaining the viability of the business is of the utmost importance under stakeholder theory (Ballou et al., 2012; Hahn & Kühnen, 2013; Parmar et al., 2010). Atkins and Maroun (2018) state that to make an impact and promote change, the stakeholders' attention must be captured.

From the ***firm-government perspective***, *accountability theory* explains how governmental authority affects a firm's sustainability disclosure.

From the ***firm-society perspective***, a firm chooses to disclose sustainability information to fulfil the social contract with society; therefore, *legitimacy theory* is the most suitable theory to meet the expectations of society.

From the ***firm-country perspective***, *political-economy theory* states that a firm's reports serve as social, political and economic documents. Sustainability reporting acts as a tool for building, sustaining and legitimizing economic and political issues, which contributes to the firm's interests.

Table 3.2: Summary Linking Perspectives to Theories

Perspective	Theory	Explanation
Firm-stakeholder	Stakeholder theory	Stakeholder theory states that firms need to manage their relationship with their stakeholders to survive. Disclosing sustainability information can be used to attract or retain particular groups of stakeholders that will produce better financial results.
Firm-government	Accountability theory	Accountability theory explains how governmental authority affects a firm's behaviour. Disclosure of sustainability information is used as a tool to enhance the clarity and reliability of information offered to stakeholders.
Firm-society	Legitimacy theory	Legitimacy theory states that a firm chooses to disclose sustainability information to fulfil the social contract with society. Therefore, this disclosure might help in establishing and maintaining stakeholder expectations, which will bring better financial results.
Firm-country	Political-economy theory	Political-economy theory states that a firm's reports serve as social, political and economic documents for the country. Sustainability reporting acts as a tool for building, sustaining and legitimizing economic and political issues, which contributes to the firm's interests.

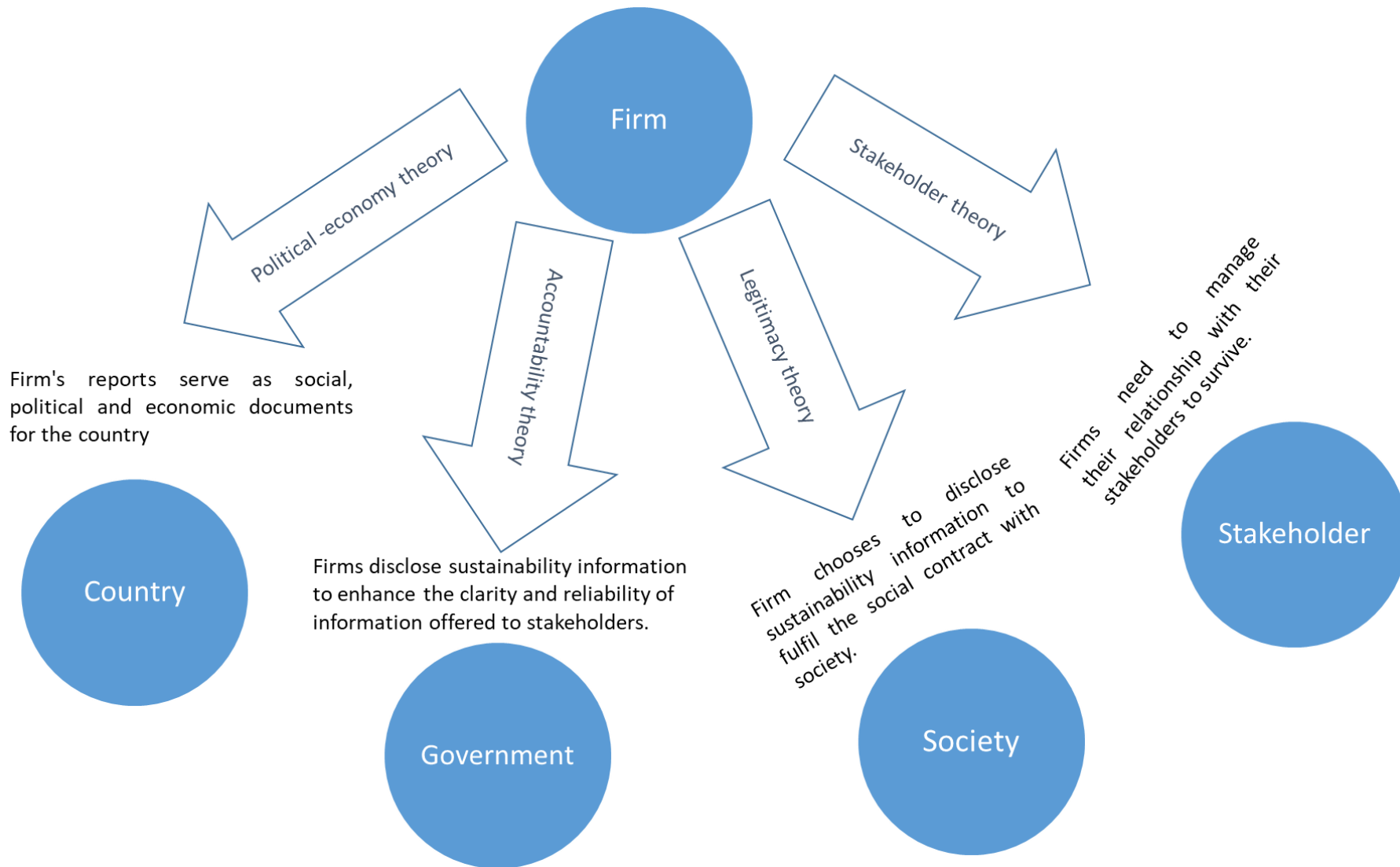


Figure 3.2: Linking Perspectives to Theories

Stage 3: Choosing the Theories

Recently, a new trend in accounting studies uses integrated theories to address the sustainability reporting topic (Lokuwaduge & Heenetigala, 2017). Researchers recognized a clear link between stakeholder and legitimacy theories (Amran et al., 2015; Soobaroyen & Mahadeo, 2016). Both theories look at the firm from a social viewpoint: legitimacy theory focuses on a whole society, whereas stakeholder theory differentiates between legitimate interests of different groups within the society (Woodward et al., 1996). Therefore, legitimacy theory and stakeholder theory complement each other.

According to both theories, the disclosure of sustainability reports legitimizes the role of the firm with different groups of stakeholders (Deegan, 2002), and a firm has to show that it meets the societal standards of legitimacy and relevance to be approved of (Lopes & Rodrigues, 2007).

However, linking the two theories above still leaves a gap when a firm's behaviour does not match the country's expectation. At a macro level, legitimacy is defined in this way: "the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). Thus, values and standards may have different characteristics depending on cultural and environmental issues in the setting in which they are applied. Even societal perceptions and stakeholder pressure may be determined by those issues and changed over time, affecting the choice of a specific sustainability reporting model (Belal & Owen, 2015).

To close this gap, O'Donovan (2002) suggests that firms have to evaluate and align their social values with those of the country in which they operate. This is the main linking point between these two theories and political-economy theory. Firms need to legitimate their role within society. This is a broad concept that includes a set of agents with different expectations, values and requirements. When fulfilling their legitimation needs, firms should, at the same time, fulfil stakeholder needs. Hence, the first model is built based on the integration of legitimacy theory and stakeholder theory within a specific political-economy setting in order to investigate the relationship between sustainability reporting and firm's performance (Figure 3.3).

However, the disclosure of sustainability report needs to be legitimized through mandatory law (Magness, 2006; Shehata, 2014). Accountability theory can offer recognition of how stakeholders see a firm as responsible for its environmental impact along with its financial impact (Milne & Gray, 2007; Gray et al., 1997; Gray et al., 1995). A law mandating sustainability reports is viewed as a basic element in assuring the credibility and reliability of the disclosures (Haider & Kokubu, 2015). Simnett et al. (2009) states that assurance of sustainability information increases stakeholder confidence and trust in the level of a firm's commitment to sustainability disclosure. Therefore, accountability theory can be integrated with both legitimacy theory and stakeholder theory. Hence, the second model is built based on the integration of legitimacy theory, stakeholder theory and accountability theory within a specific political-economy setting in order to investigate the effect of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance (Figure 3.3).

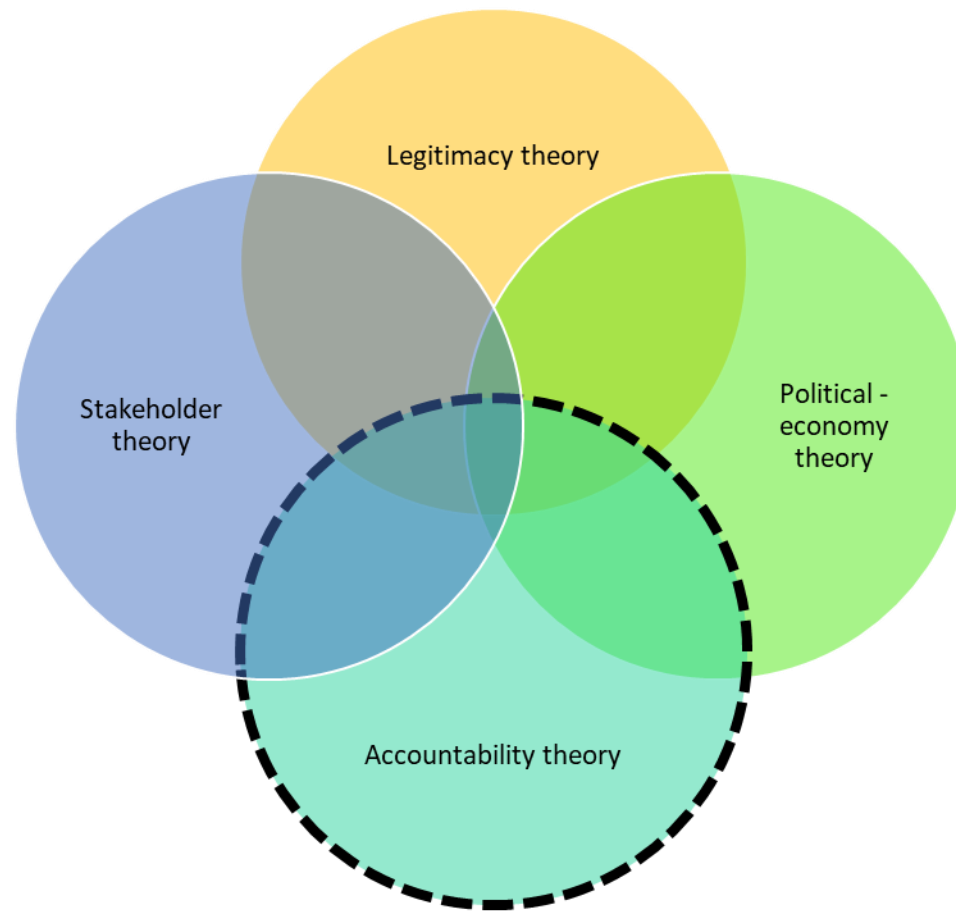


Figure 3.3: Choosing the Theories

Stage 4: Assign Variables to Theories

Based on the above perspectives and theories, in this stage proper variables are assigned to explain how the integration of these theories may lead to a better understanding of the relationship between sustainability reporting and firm performance (Figure 3.4).

First, **stakeholder theory** is defined by Freeman (2010): “any group or individual who can affect or is affected by the achievement of an organization’s objectives” (Freeman & Medoff, 1984: 46). According to Keynes (1936), stakeholders are categorized into three major groups: external stakeholders, internal stakeholders and shareholders. To measure the effect of sustainability reporting on firm performance, different measures were used to measure the expectations of different group of stakeholders as follows:

- 1- Internal stakeholders: Operational performance measures the effect of employee satisfaction using return on assets (ROA).
- 2- External stakeholders: Financial performance measures the effect of customer satisfaction using return on equity (ROE).
- 3- Shareholders or investors: Market performance measures the effect of shareholder satisfaction using Tobin’s Q (TQ).

Therefore, we use stakeholder theory to explain the different performance variables.

Second, in **legitimacy theory**, a firm chooses to disclose sustainability information to fulfil the social contract with society (Fernando & Lawrence, 2014; Hahn & Lülfs, 2014). Thus, a firm seeks to maintain or increase its legitimacy by operating in a manner that satisfactorily addresses societal norms and expectations (Hahn & Lülfs, 2014). To acquire legitimacy, different types of disclosure might help in establishing and maintaining different stakeholder’s expectations, which will have better financial results.

Therefore, we use the legitimacy theory to explain the different sustainability disclosures: environmental disclosure, social disclosure and governance disclosure.

Third, **accountability theory** is used to explain how governmental authority affects firm behaviour. Hence, in the context of sustainability, this theory challenges the firm’s voluntary sustainability reporting and supports the firm’s mandatory sustainability reports (Gillet-

Monjarret, 2015). Therefore, we use accountability theory to explain the SRL, which could affect the relationship between the level of sustainability reporting and firm performance.

Finally, **political-economy theory** states that sustainability reporting has the power to convey social, political and economic meanings for multiple groups of stakeholders. At a macro level, values and standards may have different characteristics depending on cultural and environmental issues in the setting in which they are applied. Even societal perceptions and stakeholder pressure may be determined by those issues and changed over time, affecting the choice of a specific sustainability reporting model (Belal & Owen, 2015). Firms have to evaluate and align their social values with those of the country in which they operate.

Therefore, we use the political-economy theory to explain the political and economic situation of the country. Hence, the country's governance (Gov) explains the political side of the country, and gross domestic product (GDP) explains the economic side of the country. According to this theory, both variables could affect the relationship between the level of sustainability reporting and firm performance.

These variables need to be allocated to develop a conceptual framework. In the next section, we divide these variables into independent, dependent, control and moderator variables to build a conceptual framework that enables us to better develop the study hypothesis.

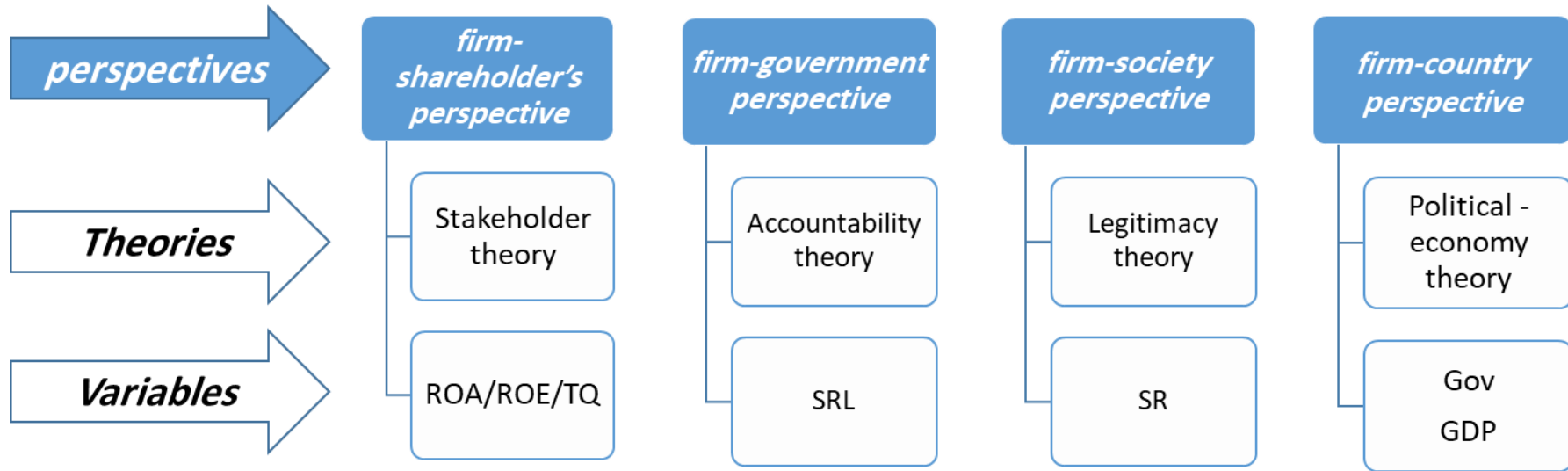


Figure 3.4: Identify the Relevant Variables

3.3 The Developed Conceptual Framework

In this section, the above variables are allocated as independent, dependent, control and moderator variables to build conceptual framework to answer the thesis questions. What is the relationship between the level of sustainability reporting and firm performance? Is there an effect of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance?

As shown in Figure 3.5, the conceptual framework consists of independent, dependent and control variables.

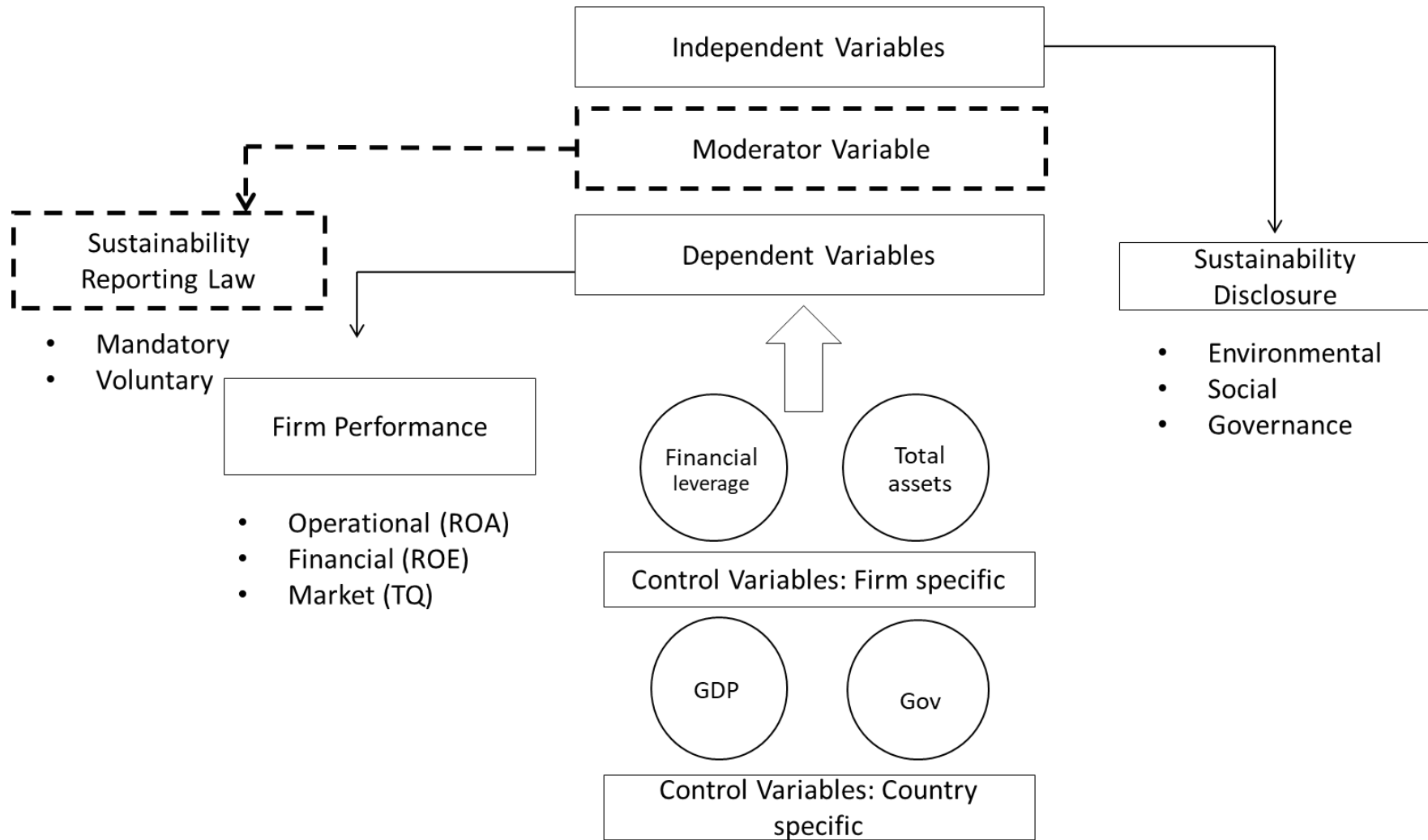


Figure 3.5 The Developed Conceptual Framework

3.3.1 Dependent Variables (Firm Performance)

Measuring firm performance is significant, as it offers information on firm objectives and how well they have been achieved (Shad et al., 2019). Firm performance can be measured using various metrics (Richard et al., 2009). In this thesis, operational, financial and market performance are measured.

Operational Performance: Return on assets (ROA) is one the broadest measures of operational performance (Derwall, 2007). It is defined as the ratio of net income to total assets, and it focuses on whether a firm used its assets in an efficient way (Lee & Faff, 2009). The ROA relates to assets employed to generate profit. Many recent studies have employed ROA to test the link between sustainability reporting and operational performance (Duque-Grisales & Aguilera-Caracue, 2019; Deng & Cheng, 2019; Aouadi & Marsat, 2018; Zhao et al., 2018; Velte, 2017; Lins et al., 2017).

Financial Performance: Return on equity (ROE) is one the broadest measures of financial performance (Buallay, 2019). The ROE is defined as the ratio of net income to total common equity, and it focuses on how a firm generates more income from its equity. Many recent studies have used ROE to test the link between sustainability reporting and financial performance (Aouadi & Marsat, 2018; Zhao et al., 2018; Atan et al., 2018).

Market Performance: Tobin's Q (TQ) is one the most famous measures of market performance (Cahan et al., 2016). It is defined as the market value of a firm divided by its asset replacement cost. The TQ focuses on how a firm can increase the market value of its assets. Many recent studies have used TQ to test the link between sustainability reporting and market performance (Garcia et al., 2019; Aybars et al., 2019; Nekhili et al., 2019; Balasubramanian, 2019; Landi & Sciarelli, 2019; Miralles-Quirós et al., 2019; Aouadi & Marsat, 2018; Atan et al., 2018; Fatemi et al., 2017; Velte, 2017).

3.3.2 Independent Variables (Sustainability Reporting)

Sustainability reporting is proxied by the environmental, social, and governance combined score (ESG). the components of ESG are defoned as follows:

Environmental Score (E): This involves a firm's contributions to the ecosystem. It is a measure of the effect of a firm's operations on the overall natural system. It reflects the degree to which the best practices are implemented to avoid endangering the environment.

Social Score (S): This involves a firm's ability to manage its relationship with all stakeholders in a way that generates confidence and trust.

Governance Score (G): This score applies to the firm's organizational system that guarantees the best interest of its shareholders. It consists of guidelines and procedures implemented to balance the interests of many stakeholders.

The ESG can be measured using different methods (Table 3.3). In this thesis, ESG data are retrieved from the Bloomberg database as a proxy for disclosure. Bloomberg assesses the extent of each firm's disclosure of its environmental, social, and governance activities based on GRI standards, which give more accurate results than other methods. Bloomberg estimates disclosure scores ranging between 0.1 (lowest) and 100 (highest).

Moreover, Bloomberg's data comes from different sources, such as CSR reports, annual reports, and corporate websites, and thus it reflects the universe of information publicly available to investors.

Table 3.3: Methods of ESG Measurement

No.	Method	Purpose	Criteria	Methodology	Reference	
1	Kinder Domini (KLD)	Lydenberg	KLD evaluates a firm's environmental, social and governance performance.	The criteria are divided into two broad categories: "strengths" and "concerns".	Deducting the "concerns" from the "strengths" to reach a single net value using binary values, where "1" indicates the presence of a particular issue, and "0" indicates the absence of an issue.	Hillman and Keim (2001)
2	Ethical Research and Information (EIRIS)	Investment and Service	EIRIS is an independent, non-profit corporation which acts as a leading global provider of research into corporate environmental, social and governance performance.	It covers 87 criteria, including climate change, human rights, supply chain, labour standards, relations with customers and suppliers, stakeholder engagement, board practices and risk management.	Each item is rated on an interval scale as follows: -3 (High Negative), -2 (Medium Negative), -1 (Low Negative), 0 (Neutral), 1 (Low Positive), 2 (Medium Positive), 3 (High Positive)	EIRIS (2011)
3	Sustainable Management (SAM)	Asset	SAM provides a set of questionnaires.	The questionnaire is targeted at CEOs, investor relations, sustainability departments and public affairs.	The results of this questionnaire are weighted and included in the Dow Jones Sustainability Index (DJSI).	UNEP (2011)
4	Asian Sustainability Rating (ASR)	Sustainability	ASR provides set of 100 criteria related to sustainability.	Criteria are grouped into four main areas: general, environmental, social and governance.	Scoring is done by a group of experienced investment analysts in Singapore, where one point is awarded for every criterion on the list.	ASR (2011)
5	Dow Jones Sustainability Index (DJSI)		DJSI provides global sustainability benchmark.	The benchmark is based on the top 2,500 firms in terms of market capitalization across sectors.	Firms are filtered out as part of the DJSI construction process and then monitored on a continuous basis.	DJSI (2011)
6	Morgan Stanley Capital International (MSCI ESG indices)	Capital	MSCI provides investment decision support tools to over 5,000 clients on pension funds and hedge funds.	MSCI generates scores for each applicable criterion (environmental, social and governance).	These scores are aggregated to form one composite ESG score, where AAA represents the highest sustainability performance while C represents the lowest sustainability performance.	MSCI (2011)
7	Financial Times Exchange (FTSE4Good index)	Stock	The FTSE4Good index was developed to provide investors a means by which they could identify and invest in corporations that meet the minimum requirement of socially responsible practices.	Five core areas are included: environmental sustainability, upholding and supporting universal human rights, ensuring good supply chain labour standards, countering bribery and mitigating climate change.	Review of annual reports, research of corporation websites and through written questionnaires and publicly available material.	FTSE (2011)
8	Bloomberg disclosure scores	ESG	To encourage corporations to disclose more ESG data, Bloomberg decided to score corporations based on their ESG data disclosure. The Bloomberg ESG Disclosure Score out of 100 is based on GRI's guidelines.	There are four major categories: Environmental Disclosure Score, Social Disclosure Score, Governance Disclosure Score and ESG Disclosure score (overall combination of Environmental, Social and Governance Disclosure Scores)	Weightings differ by sectors. For example, the omission of the number of fatalities would not be considered significant for a retail corporation but will be punished for a corporation in the oil and gas sector.	Suzuki and Levy (2010)

3.3.3 Control Variables

In this thesis, two types of control variables are used: firm specific and country specific. There are two firm-specific variables: total assets (TA) and financial leverage (FL). There are also two country-specific variables: GDP and governance (Gov).

Firm Specific:

Total assets: Prior literature has found that firm size measured by total assets is a factor affecting both sustainability reporting and firm performance. Hillman and Keim (2001) stated that large firms might have better profitability, and it might be related to the extent of stakeholder expectations and concerns regarding socially responsible activities (Hillman & Keim, 2001). Burke et al. (1986) argued that smaller firms may not disclose social activities, whereas large firms are expected to attract more attention from stakeholders, so they are under more pressure to disclose more sustainability information (Burke et al. , 1986).

Financial leverage: Prior literature has defined financial leverage as total debt divided by total assets (Fischer & Sawczyn, 2013). Some researchers call financial leverage the firm's risk, and it is measured by leverage ratio. Waddock and Graves (1997) argued that a firm's risk may influence its financial performance through decisions related to the cost of sustainability investment opportunities. Supporting this argument, Orlitzky and Benjamin (2001) state that firms with high levels of ESG disclosure incur lower costs of debt (lower financial leverage) thus greater financial performance.

Country Specific:

To control the political and economic moment that the country is going through, the GDP of the country where a firm is located is used to control for the country's economic effect on the firm (Miralles-Quirós et al., 2019; Hu & Scholtens, 2014), and the public governance of the country where a firm is located is used to control for the country's political effect on the firm (Buallay, 2019). The public governance of the country includes six indicators (control of corruption, governmental effectiveness, political stability and absence of violation, rule of law, regulatory quality, and voice and accountability).

3.4 Hypothesis Development

Based on the discussion above, two main hypotheses are used in this thesis. The first hypothesis of this study is developed to answer the first question as follows:

Sustainability report disclosure affects firm performance.

As shown in Figure 3.6, sub-hypotheses are developed based on different performance measures and different sustainability disclosure:

H_{1.1}: Sustainability report disclosure affects a firm's operational performance.

H_{1.1A}: Environmental disclosure affects a firm's operational performance.

H_{1.1B}: Social disclosure affects a firm's operational performance.

H_{1.1C}: Governance disclosure affects a firm's operational performance.

H_{1.2}: Sustainability report disclosure affects a firm's financial performance.

H_{1.2A}: Environmental disclosure affects a firm's financial performance.

H_{1.2B}: Social disclosure affects a firm's financial performance.

H_{1.2C}: Governance disclosure affects a firm's financial performance.

H_{1.3}: Sustainability report disclosure affects a firm's market performance.

H_{1.3A}: Environmental disclosure affects a firm's market performance.

H_{1.3B}: Social disclosure affects a firm's market performance.

H_{1.3C}: Governance disclosure affects a firm's market performance.

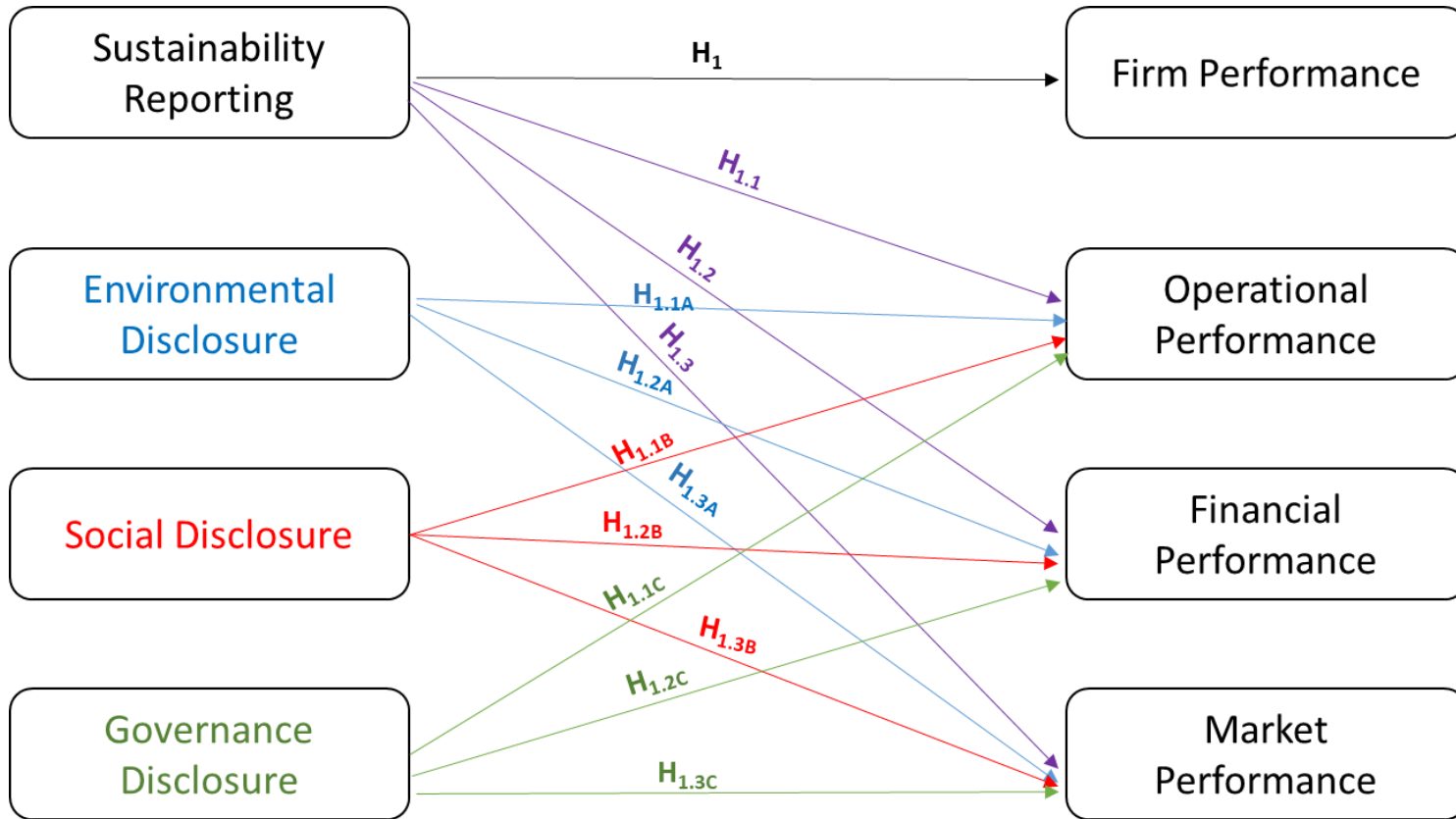


Figure 3.6 Hypotheses (First Question)

Then, the second hypothesis of this study is developed to answer the second question as follows:

Sustainability reporting law moderates the relationship between sustainability report disclosure and firm performance.

As shown in Figure 3.7, sub-hypotheses are developed based on different performance measures and different sustainability disclosure:

H_{2.1}: Sustainability reporting law moderates the relationship between sustainability report disclosure and operational performance.

H_{2.1A}: Sustainability reporting law moderates the relationship between environmental disclosure and operational performance.

H_{2.1B}: Sustainability reporting law moderates the relationship between social disclosure and operational performance.

H_{2.1C}: Sustainability reporting law moderates the relationship between governance disclosure and operational performance.

H_{2.2}: Sustainability reporting law moderates the relationship between sustainability report disclosure and financial performance.

H_{2.2A}: Sustainability reporting law moderates the relationship between environmental disclosure and financial performance.

H_{2.2B}: Sustainability reporting law moderates the relationship between social disclosure and financial performance.

H_{2.2C}: Sustainability reporting law moderates the relationship between governance disclosure and financial performance.

H_{2.3}: Sustainability reporting law moderates the relationship between sustainability report disclosure and market performance.

H_{2.3A}: Sustainability reporting law moderates the relationship between environmental disclosure and market performance.

H_{2.3B}: Sustainability reporting law moderates the relationship between social disclosure and market performance.

H_{2.3C}: Sustainability reporting law moderates the relationship between governance disclosure and market performance.

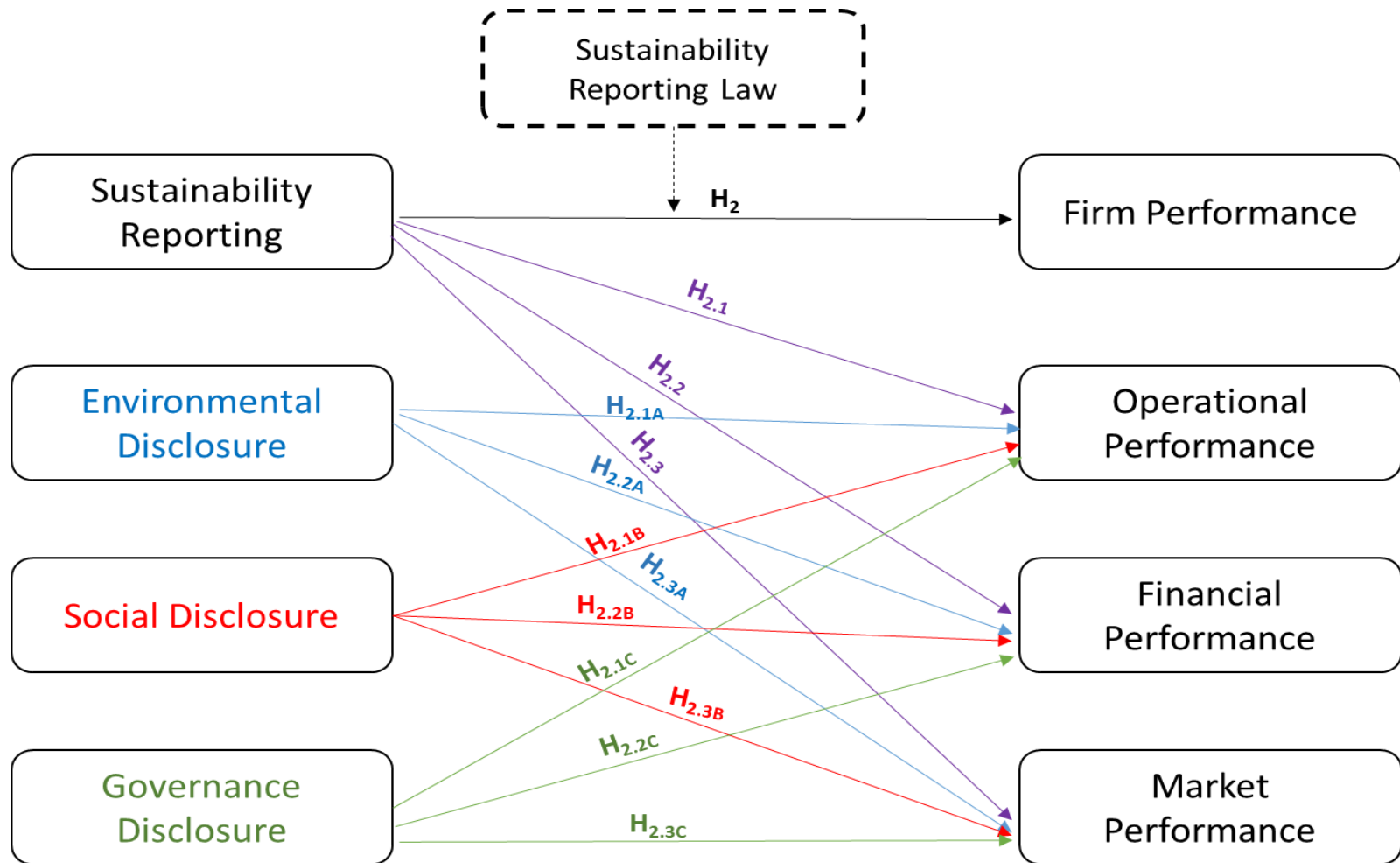


Figure 3.7 Hypotheses (Second Question)

Chapter Conclusion

This chapter first reviews theories associated with sustainability disclosure. These theories have been split into two parts: theories supporting sustainability reporting (Stakeholder theory, Agency theory, Legitimacy theory, Accountability theory, Signalling theory, Resource-based theory, Political-economy theory, Positive accounting theory: bonus plan and Positive accounting theory: debt covenant) and theories against sustainability reporting (Shareholder expense theory, Slack resource theory, Trade-off theory and Positive accounting theory: political cost). The second section is the development of the conceptual frameworks. To build our conceptual framework, several stages were applied. The first stage is to identify perspectives of sustainability reporting. The second stage is to assign the suitable theory to each perspective. The third stage is to choose the proper theories. The fourth stage is to assign proper variables that could be explained by each theory. The third section is the developed conceptual framework where the study variables are discussed; the dependent variables are operational, financial and market performance. The independent variables are the environmental, social, and governance, two types of control variables are used: firm specific and country specific. There are two firm-specific variables: total assets and financial leverage. There are also two country-specific variables: GDP and governance. The moderating variable is the country's sustainability reporting laws

Finally, two main hypotheses are developed based on the conceptual framework to answer the study questions.

Chapter Four: Research Methodology

Chapter 4: Research Methodology

Chapter Introduction

This chapter is structured based on the research methods by Saunders et al., (2016). Figure 4.1 illustrates the research methods applied in this thesis. The first discusses the research philosophy followed by the research approach. The third section discussed the research strategy. The fourth section identifies the research choice. The fifth section determines the research time horizons. The final section is the research techniques and procedures; this section illustrates the mathematical models, the sample selection and the reliability and validity of the models, variables and data.

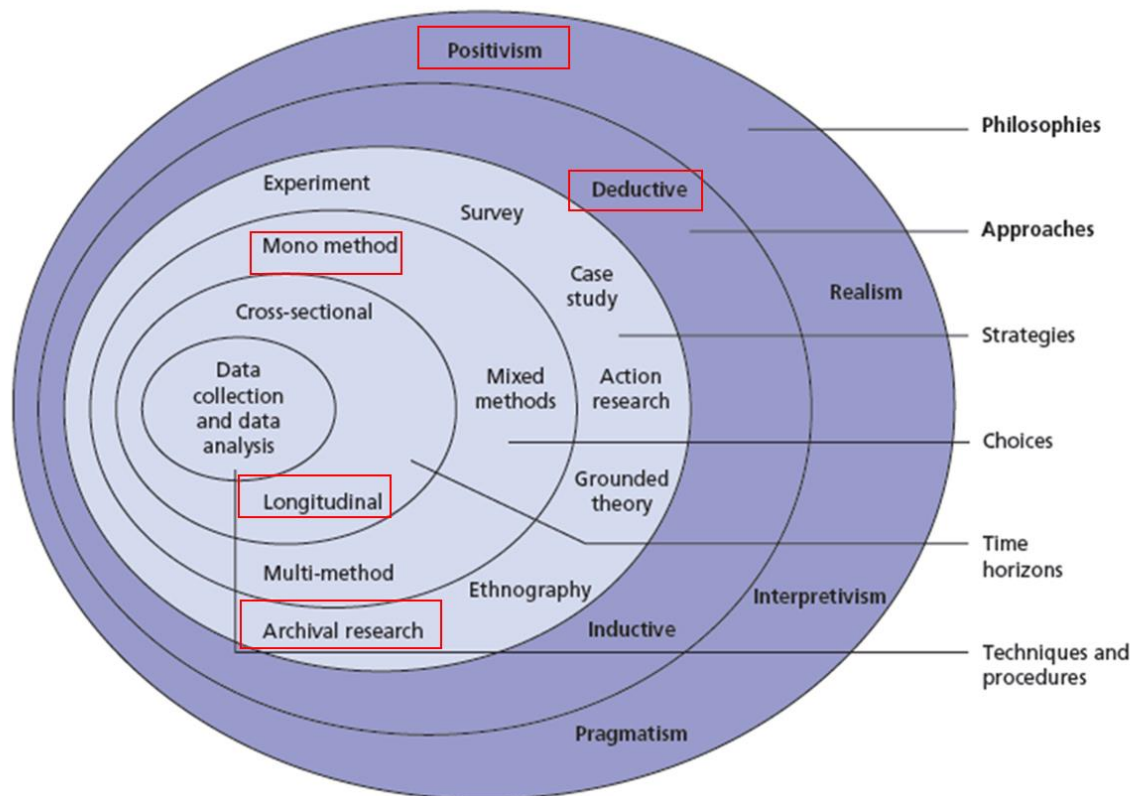


Figure 4.1 Research Methods (Saunders et al., 2016)

4.1 Research Philosophy

A positivistic research philosophy is “a deductive approach which uses quantitative data” (Blumberg et al., 2011), whereas the phenomenological methodology uses qualitative data (Struwig & Stead, 2007).

Trochim (2006) stated that a positivistic research philosophy should be used when a scholar moves from a general point towards a specific point – for example, when a scholar starts with a theory related to a topic which leads to the development and testing of hypotheses. The scholar is then able to gather data to test the hypotheses.

The positivistic philosophy is usually applied when large samples are used (Zikmund et al., 2010). Therefore, a positivistic research philosophy was adopted for this study, as it allowed us to gather and analyse secondary quantitative data and to test the research hypotheses.

4.2 Research Approach

After choosing the research philosophy, the next step is to determine whether deductive or inductive approach should be used. Deductive approach tends to flow from generic to specific. Any researcher using deductive reasoning would start with theory and move on to research question or hypothesis which is tested through data collection afterwards. In the end, findings derived from the collected data would either confirm or reject the research question or hypothesis.

4.3 Research Strategy

The next step is to choose the research strategy. For this thesis “Archival Strategy” is chosen. This strategy derives information from existing data and archive documents “secondary data”.

Secondary data already exists and can be gathered from a database or other source. In secondary research, the data were not initially gathered for the purpose of the researcher’s study (Struwig & Stead, 2007).

A number of advantages and disadvantages exist when using secondary data. One advantage is the availability of the data: it can be collected quickly as it has already been drawn together. It is also more readily available than primary data, as it does not involve contact with respondents (Bryman & Bell, 2007). Further advantages include the ability to evaluate the

data prior to use; the greater potential for comparative analysis; and the potential for triangulation of the data, as well as new insights to be gained (Hair et al., 2007).

However, there is also a disadvantage to using secondary data, which is that the data have not been designed and collected in a way that meets the researcher's specific objectives. This may create problems when the reliability, validity and usefulness of the data are considered. Four reasons exist for these problems: data may be outdated, the definitions of concepts may vary, the measurement units may be different, and there may not be enough information available for the researcher to verify the accuracy of the data (Zikmund & Babin, 2010).

To overcome the disadvantages of secondary data, the reliability and validity of the data are assessed in Section 4.6.4.

4. 4 Research Choice

After choosing the research strategy, the next step is to determine the research method. Mono-method is chosen for this thesis. This type of method takes place when the researcher goes about collecting either qualitative data or quantitative data based on the decisions made in the previous stages. Quantitative research is defined as "research which aims to attend to the research objectives by empirically assessing observations with numerical measurements and analysis" (Cooper & Schindler, 2011, p163). In quantitative research, we use numerical data that can be statistically tested and that can be the basis for hypotheses. In this thesis we used quantitative data.

4. 5 Research Time Horizons

As quantitative data already chosen, the next step is to determine the research time and horizons. In this thesis we used pooled data (a mixture of time series data and cross-section data). Therefore, Longitudinal time horizons is chosen. A longitudinal, like a cross-sectional one. However, in a longitudinal study, researchers conduct several observations of the same subjects over a period of time, sometimes lasting many years.

4.6 Research Techniques and procedures

4.6.1 Mathematical Models

This section expands on the conceptual model introduced earlier in Chapter 3. The first stage in this thesis investigates the relationship between the level of sustainability disclosure (environmental, social and governance) and firm performance. Two additional variables that most previous studies have suggested affect the sustainability of firms are size and financial leverage. Based on political-economy theory, economic and political variables (governance and GDP) were also considered to control for the variability among countries.

In the model of our study, firm performance is the dependent variable. Firm performance consists of three dimensions: financial, operational and market performance. In addition, some factors were considered to be control variables to control the model.

To determine the relationship between sustainability reporting and firm performance, we estimate the equations below.

The first model is constructed to investigate the effects of sustainability disclosure on firm performance as follows:

$$Perf_{itg} = \beta_0 + \beta_1 ESG_{itg-1} + \beta_2 TA_{itg} + \beta_3 FL_{itg} + \beta_4 GDP_{itg} + \beta_5 GOV_{itg} + \varepsilon_{itg}$$

This equation is divided further into three sub-equations based on the performance as follows:

$$ROA_{itg} = \beta_0 + \beta_1 ESG_{itg-1} + \beta_2 TA_{itg} + \beta_3 FL_{itg} + \beta_4 GDP_{itg} + \beta_5 GOV_{itg} + \varepsilon_{itg}$$

$$ROE_{itg} = \beta_0 + \beta_1 ESG_{itg-1} + \beta_2 TA_{itg} + \beta_3 FL_{itg} + \beta_4 GDP_{itg} + \beta_5 GOV_{itg} + \varepsilon_{itg}$$

$$TQ_{itg} = \beta_0 + \beta_1 ESG_{itg-1} + \beta_2 TA_{itg} + \beta_3 FL_{itg} + \beta_4 GDP_{itg} + \beta_5 GOV_{itg} + \varepsilon_{itg}$$

Where: Perf is a continuous variable; the dependent variable is the performance measured by three models (i.e. ROA model, ROE model and Tobin's Q model). β_0 is the constant and β_1 -5 the slope of the controls and independent variables. The independent variable is sustainability disclosure (ESG) measured by the three indicators E, S and G. The firm's control variables are TA and FL, and the country's control variables are GDP and GOV. (ε) is a random

error, (i) stands for firms, (t) stands for the period, (g) represents the country, and (-1) represents the 1-year lagged variables of ESG.

Prior literature states that ESG will not immediately lead to better financial performance (Choi & Wang, 2009). Porter and Kramer (2006) stated that sustainability reporting is a strategic concept, thus effects do not occur immediately (i.e., in the same year) but rather in the following period. Thus, we compare the ESG scores of the year t - 1 with the current performance.

The second model of this thesis investigates the effect of sustainability reporting law on the relationship between sustainability report disclosure and firm performance. Therefore, we estimate the equations below.

To determine the effect of sustainability reporting law, we estimate three regression models:

$$Perf_{itg} = \beta_0 + \beta_1(ESG_{itg-1} * SRL_{itg}) + \beta_2TA_{itg} + \beta_3FL_{itg} + \beta_4GDP_{itg} + \beta_5GOV_{itg} + \varepsilon_{itg}$$

This equation is further divided into three sub-equations based on the performance as follows:

$$ROA_{itg} = \beta_0 + \beta_1(ESG_{itg-1} * SRL_{itg}) + \beta_2TA_{itg} + \beta_3FL_{itg} + \beta_4GDP_{itg} + \beta_5GOV_{itg} + \varepsilon_{itg}$$

$$ROE_{itg} = \beta_0 + \beta_1(ESG_{itg-1} * SRL_{itg}) + \beta_2TA_{itg} + \beta_3FL_{itg} + \beta_4GDP_{itg} + \beta_5GOV_{itg} + \varepsilon_{itg}$$

$$TQ_{itg} = \beta_0 + \beta_1(ESG_{itg-1} * SRL_{itg}) + \beta_2TA_{itg} + \beta_3FL_{itg} + \beta_4GDP_{itg} + \beta_5GOV_{itg} + \varepsilon_{itg}$$

Where: Perf is a continuous variable; the dependent variable is the performance measured by three models (e.g., ROA model, ROE model and Tobin's Q model). β_0 is the constant and β_1 -5 the slope of the controls and independent variables. The independent variable is sustainability disclosure (ESG) measured by the three indicators E, S and G. The moderator variable is sustainability reporting law (SRL). The firm's control variables are TA and FL, and the country's control variables are GDP and GOV. (ε) is a random error, (i) stands for firms, (t) stands for the period, (g) represents the country, and (-1) represent the 1-year lagged variables of ESG.

The acronyms used in the equation models are defined and explained in Table 4.1.

Table 4.1: Variable Measurement

VARIABLES	LABELS	MEASUREMENTS
DEPENDENT VARIABLES		
Operational Performance	ROA	Net income divided by total assets
Financial Performance	ROE	Net income divided by shareholder equity
Market Performance	TQ	(Market value of equity + total liabilities + preferred equity + minority interest) ÷ book value of assets
INDEPENDENT VARIABLES		
ESG Disclosure	ESG	Bloomberg index which combines E, S and G
Environmental Disclosure	E	Bloomberg index which measures the disclosure of the bank's energy use, waste, pollution, natural resource conservation and animal treatment
Corporate Social Responsibility Disclosure	S	Bloomberg index which measures the disclosure of the bank's business relationships, bank donations, volunteer work, employees' health and safety
Corporate Governance Disclosure	G	Bloomberg index which measures the disclosure of corporate governance code
CONTROL VARIABLES:		
FIRM-SPECIFIC CONTROL VARIABLES		
Financial Leverage	FL	Ratio of non-equity funds to total assets
Total Assets	TA	Logarithm of annual total assets of the firm
FIRM-SPECIFIC CONTROL VARIABLES		
Gross Domestic Product	GDP	Logarithm of annual GDP of the country
Governance	GOV	Worldwide Governance Indicators (WGI) of the country which measures six indicators (control of corruption, governmental effectiveness, political stability and absence of violation, rule of law, regulatory quality, and voice and accountability)

4.6.2 Sample Selection

As mentioned previously, the researcher used secondary data. In this thesis, ESG data were retrieved from the Bloomberg database as a proxy for disclosure. Bloomberg's data are from different sources, such as CSR reports, annual reports, and corporate websites, and thus reflect the universe of information publicly available to investors.

The data used in this thesis were collected from the Bloomberg database and included all firms in the Bloomberg database that disclosed ESG information and had data available from 1 Jan 2008 to 31 Dec 2017.

The sample contains diverse listed firms from 80 countries. As listed in Table 4.2, most of the samples come from China (4,531 observations, or 19% of the sample). Past research has

shown that CSR practices, and reporting on those practices, are implemented in China because of institutional pressures and peer effects, in which competitors mimic what other firms are doing (Ioannou & Serafeim, 2017; Misani, 2010).

The second largest sample comes from the US, with 2,505 observations, or 11% of the sample. In third place, Japan has 2,305 observations, which constitute 9% of the sample. The remaining 14,397 observations, which represent 60% of the samples, come from 77 different countries as listed in Table 4.2.

As shown in Table 4.3, the manufacturing sector has the greatest number of observations among the sectors, with 7,248 observations, or 30.5% of the sample. The logistics process in the manufacturing sector is excessively complex (Fletcher and Grose, 2012). It consists of thousands of suppliers, distributors, and retailers, which pushes manufacturers to report more data on sustainability to meet the needs of all stakeholders.

Finally, as shown in Table 4.4, the sample is also categorised based on region. Almost one-half of the sample (47%) is from Asia. The key drivers behind this growth include regulatory growth by financial market regulators and stock exchanges in Asia (Carrots & Sticks, 2016).

Table 4.2: Sample Selection (by Country)

COUNTRY NAME	NO. FIRMS	NO. OBSERVATIONS	COUNTRY NAME	NO. FIRMS	NO. OBSERVATIONS
Argentina	6	46	Macau	3	25
Australia	121	949	Malawi	1	9
Austria	15	112	Malaysia	31	237
Bahrain	2	20	Malta	1	6
Bangladesh	2	12	Mauritius	5	26
Belgium	17	154	Mexico	31	242
Bermuda	2	18	Morocco	1	6
Botswana	1	7	Namibia	1	6
Brazil	76	623	Netherlands	27	210
Canada	77	662	New Zealand	6	46
Chile	14	107	Nigeria	8	56
China	561	4,531	Norway	23	160
Colombia	16	104	Oman	4	16
Croatia	4	26	Pakistan	8	56
Czech Republic	2	17	Peru	4	34
Denmark	22	194	Philippines	13	99
Estonia	2	16	Poland	7	48
Finland	36	275	Portugal	9	87
France	90	768	Qatar	3	24
Georgia	1	4	Russia	23	188
Germany	78	613	Saudi Arabia	2	12
Gibraltar	1	9	Singapore	24	181
Greece	11	92	Slovakia	1	7
Guernsey	1	3	Slovenia	3	28
Hong Kong	72	544	South Africa	56	434
Hungary	2	17	South Korea	125	825
India	126	962	Spain	37	299
Indonesia	20	146	Sri Lanka	10	53
Ireland	12	92	Sweden	69	504
Isle of Man	1	8	Switzerland	44	363
Israel	6	35	Taiwan	154	1,092
Italy	39	310	Thailand	28	204
Japan	276	2,305	Togo	1	10
Jersey	2	19	Turkey	17	133
Jordan	1	7	Ukraine	1	4
Kenya	1	6	United Arab Emirates	6	43
Kuwait	2	13	United Kingdom	197	1566
Lebanon	1	8	United States	289	2,505
Lithuania	1	9	Vietnam	4	24
Luxembourg	2	18	Zambia	1	9
Total Countries					80
Total Firms					3,000
Total Observations					23,738

Table 4.3: Sample Selection (by Sector)

SECTORS	NO. FIRMS	NO. OBSERVATIONS	PERCENTAGE
Primary:	591	4,736	19.9
Agriculture & Food Industries Sector	189	1,426	6
Energy Sector	402	3,310	13.9
Secondary:	932	7,248	30.5
Manufacturing Sector	932	7,248	30.5
Tertiary:	1,477	11,754	49.5
Banks & Financial Services Sector	530	4,457	18.8
Retail Sector	533	4,078	17.2
Telecommunication & Information Technology Sector	238	1,844	7.8
Tourism Sector	176	1,375	5.8
TOTAL	3,000	23,738	100%

Table 4.4: Sample Selection (by Region)

REGION	NO. FIRMS	NO. OBSERVATIONS	PERCENTAGE
Asia	1,399	11,128	47%
Australia and Oceania	121	958	4%
Europe	762	6,077	25%
Mena	48	316	2%
North America	468	3,724	16%
South America	117	890	4%
Sub-Saharan Africa	85	645	3%
Total	3,000	23,738	100%

4.6.3 Reliability and Validity

Before moving to the findings chapter, the final step in the research techniques and procedures is assessing the reliability and validity of the data and models.

Reliability and validity are considered important aspects of a research study. A researcher should always discuss to what extent the data and methodologies used in a study were reliable and valid. In this section, we adopt three kinds of diagnostic tests to assess the validity and reliability.

Data diagnostics: normality (skewness, kurtosis and Jarque–Bera tests).

Variables diagnostics: stationarity (augmented Dickey–Fuller test) and collinearity (variance inflation factor test).

Models diagnostics: autocorrelation (Durbin–Watson) and heteroscedasticity (Breusch–Pagan and Koenker tests).

Data Diagnostics

As presented in Table 4.5, to test the normality of the data, the skewness and kurtosis tests were used. The results show that not all the values for skewness and kurtosis were between -2 and +2, which are considered unacceptable proof of normal univariate distribution (George, 2011).

The normality of data was tested using the Jarque–Bera test. Variables are not normally distributed, as the p-value appears to be less than 0.050.

All test results indicate that data are not normally distributed; the abnormally distributed data may not influence the credibility of the study because the sample was large and it was assumed that the data was not distributed normally. However, to overcome this problem, the natural logarithms of these variables were considered.

Table 4.5: Normality Tests

VARIABLES	LABELS	NORMALITY TESTS			
		Skewness	Kurtosis	Jarque–Bera	Probability
<i>DEPENDENT VARIABLES</i>	ROA	-0.388	17.858	150,116	0.000
	ROE	18.313	865.593	506,000,000	0.000
	TQ	90.538	8,267.742	46,300,000,000	0.000
<i>INDEPENDENT VARIABLES</i>	E	0.657	2.411	1,405	0.000
	S	0.535	2.878	786	0.000
	G	0.057	3.640	287	0.000
<i>FIRM-SPECIFIC CONTROL VARIABLES</i>	FL	27.676	1,300.553	1,140,000,000	0.000
	TA	2.998	14.875	166,593.4	0.000
<i>COUNTRY-SPECIFIC CONTROL VARIABLES</i>	GDP	0.419	3.247	719.469	0.000
	GOV	-0.433	1.456	2,125	0.000

Variables Diagnostics

The strength of the linear model depends on the hypothesis that independent variables are not correlated. Extreme multicollinearity tends to inflate the standard errors of the estimated coefficients. To test the collinearity of the independent variables, we calculated the variance inflation factor (VIF). Gujarati and Porter (2003) stated that a VIF higher than 10 indicates serious multicollinearity problem for the independent variable of concern. Table 4.6 shows that the VIF values for all independent variables are less than 10, meaning that the variables are not suffering from a serious collinearity problem.

However, empirical research using time series, as in this study, presupposes the stability of the series. Autocorrelation can occur in the model because the time series on which this study is based is non-stationary (Gujarati and Porter, 2003). To check the stationarity of time series, unit root tests, which include the parametric augmented Dicky–Fuller (ADF) test, were used. The results, presented in Table 4.6, show that the ADF test is statistically significant at the 1% level, meaning that the data series is stationary. This stationarity allows us to proceed with the regression. However, since the effect of ESG on financial performance does not occur immediately (in the same period), the lag ESG is included in the regression.

Table 4.6: Variables Diagnostics

VARIABLES	LABELS	STATIONARITY TEST		COLLINEARITY TEST	
		ADF	Probability	Tolerance	VIF
<i>DEPENDENT VARIABLES</i>	ROA	-57.202	0.000		
	ROE	-56.607	0.000		
	TQ	-38.778	0.000		
<i>INDEPENDENT VARIABLES</i>	E	-8.239	0.000	0.190	5.271
	S	-9.017	0.000	0.467	2.143
	G	-14.852	0.000	0.572	1.749
<i>FIRM-SPECIFIC CONTROL VARIABLES</i>	FL	-42.542	0.000	0.988	1.012
	TA	-31.530	0.000	0.914	1.094
	AQ	-22.564	0.000	0.641	1.561
	SEC	-30.193	0.000	0.952	1.051
<i>COUNTRY-SPECIFIC CONTROL VARIABLES</i>	GDP	-30.691	0.000	0.801	1.248
	GOV	-29.008	0.000	0.190	5.271

Models Diagnostics

As discussed in the previous chapter, two mathematical models were introduced to achieve the thesis objectives. These models needed to be checked before adopting the regression test. A significant assumption of the regression is the presence of heteroscedasticity. We tested heteroscedasticity using the Breusch–Pagan and Koenker tests. As Table 4.7 and Table 4.8 show, the p-values of the Breusch–Pagan tests for the three performance measures were lower than the conventional level of significance of 5% (0.000), so we rejected the Alternative hypothesis that the models have a heteroscedasticity problem. However, the Koenker test for the ROE model was greater than the 5% level of significance in both models (0.491 and 0.399), so we accepted the Alternative hypothesis that the models have a heteroscedasticity problem. This problem had to be resolved to obtain an accurate estimate of the standard error. The results used to test the hypotheses were therefore based on heteroscedasticity-robust standard errors. If heteroscedasticity is present in the model, then some statistical methods must be used to overcome this problem, such as the White test.

Finally, to test the autocorrelation problem in the study models, we used the Durbin–Watson (DW) test. Table 4.8 and Table 4.9 show that the DW values of both models are almost within the 1.5–2.5 range. This indicates there is no autocorrelation problem that may affect the results of the regression.

Table 4.7: First Mathematical Model Diagnostics

MODELS	AUTOCORRELATION TEST	HETEROSCEDASTICITY TEST			
	Durbin–Watson	Breusch–Pagan	Probability	Koenker	Probability
ROA	1.060	392.371	0.000	22.010	0.000
ROE	1.297	1,368.589	0.000	3.415	0.491
TQ	1.010	53,239.742	0.000	10.232	0.037

Table 4.8: Second Mathematical Model Diagnostics

MODELS	AUTOCORRELATION TEST	HETEROSCEDASTICITY TEST			
	Durbin–Watson	Breusch–Pagan	Probability	Koenker	Probability
ROA	1.049	768.841	0.000	37.391	0.000
ROE	1.287	258.108	0.000	0.712	0.399
TQ	1.010	6,327.818	0.000	1.609	0.025

Chapter Conclusion

This chapter is structured based on the research methods by Saunders et al., (2016). A positivistic research philosophy was adopted for this study, as it allowed us to gather and analyse secondary quantitative data and to test the research hypotheses. After choosing the research philosophy, the next step is to determine whether deductive or inductive approach should be used. Deductive approach tends to flow from generic to specific. The next step is to choose the research strategy. For this thesis “Archival Strategy” is chosen. This strategy derives information from existing data and archive documents “secondary data”. After choosing the research strategy, the next step is to determine the research method. Mono-method is chosen for this thesis. This type of method takes place when the researcher goes about collecting either qualitative data or quantitative data based on the decisions made in the previous stages. As quantitative data already chosen, the next step is to determine the research time and horizons. In this thesis we used pooled data (a mixture of time series data and cross-section data). Therefore, Longitudinal time horizons is chosen. The final section is the research techniques and procedures; this section illustrates the mathematical models, the sample selection and the reliability and validity of the models, variables and data. The first mathematical model is constructed to investigate the effects of sustainability disclosure, the second mathematical model is constructed to investigate the effect of sustainability reporting law on the relationship between sustainability report disclosure and firm performance. The data used in this thesis were collected from the Bloomberg database and included all firms in the Bloomberg database that disclosed ESG information and had data available from 1 Jan 2008 to 31 Dec 2017. The sample consist of 3000 diverse listed firms from 80 different countries ends up with 23,738 observations. The final step in the research techniques and procedures is assessing the reliability and validity of the data and models. we adopt three kinds of diagnostic tests to assess the validity and reliability; data diagnostics: normality (skewness, kurtosis and Jarque–Bera tests), variables diagnostics: stationarity (augmented Dickey–Fuller test) and collinearity (variance inflation factor test), and models diagnostics: autocorrelation (Durbin–Watson) and heteroscedasticity (Breusch–Pagan and Koenker tests).

Chapter Five: Findings and Results

Chapter 5: Findings and Results

Chapter Introduction

This chapter first provides a descriptive analysis. This descriptive analysis is divided by year, sector, region and the level of disclosure. Second, one-way ANOVA is used to describe the variables pre and post SRL and to differentiate between variables in terms of adoption of GRI. The final section in this chapter is hypothesis testing. In this section, we test the hypotheses developed in Chapter 3. The first main hypothesis aims to tests the effect of sustainability disclosure on a firm's operational, financial and market performance, while the second main hypothesis aims to tests the moderating role of a country's SRL in the relationship between sustainability report disclosure and a firm's operational, financial and market performance.

5.1 Descriptive Statistics

This section first provides descriptive insight about the variables in general, then describes these variables across years, sectors and regions. Finally, descriptive results are presented according to the level of disclosure.

As shown in Table 5.1, the maximum ESG disclosure was 80%, while the minimum was only 1.3%. When we come to the components of the ESG, the descriptive analysis results show that the mean of governance disclosure had the highest value (81%), followed by the mean for social disclosure (33%), while the mean for environmental disclosure had the lowest value among the firms (24%). This means that many firms concluded that the disclosure of corporate governance practices and roles ultimately leads to better performance. We explain the low environmental disclosure value by noting that almost half of the firms in the sample are from the tertiary sector, which is heavily service-based, and therefore these firms have less environmental impact than operations of other firms (e.g., manufacturers).

For firm performance, the descriptive analysis results show that the mean of ROE had the highest value (12%), followed by the ROA mean (4.6%), while the TQ mean had the lowest value (2%).

Table 5.1: Descriptive Results

VARIABLES	INDEPENDENT VARIABLES				DEPENDENT VARIABLES			FIRM-SPECIFIC CONTROL VARIABLES		COUNTRY-SPECIFIC CONTROL VARIABLES	
	ESG	E	S	G	ROA	ROE	TQ	FLEV	TA	GDP	GOV
Mean	32.749	24.066	33.379	51.577	4.620	11.672	1.927	103.202	50,945	5,481,836	0.719
Median	29.386	18.750	30.000	51.786	3.811	10.581	1.288	55.761	3,912	3,022,828	1.232
Maximum	80.579	91.071	94.737	85.714	75.177	1,398.806	2,271.142	14,260.750	4,009,300	19,390,604	1.873
Minimum	1.368	0.775	1.848	1.590	-90.508	-198.172	0.234	0.000	2	9,129	-1.181
Std. Dev.	12.904	16.445	16.010	9.677	6.920	24.949	23.496	253.166	23,2713	5,304,139	0.891

5.1.1 Descriptive Results (by Year)

As shown in Figure 5.1, ESG disclosure increased over the years, which means that firms have recognized the importance of disclosing sustainability information.

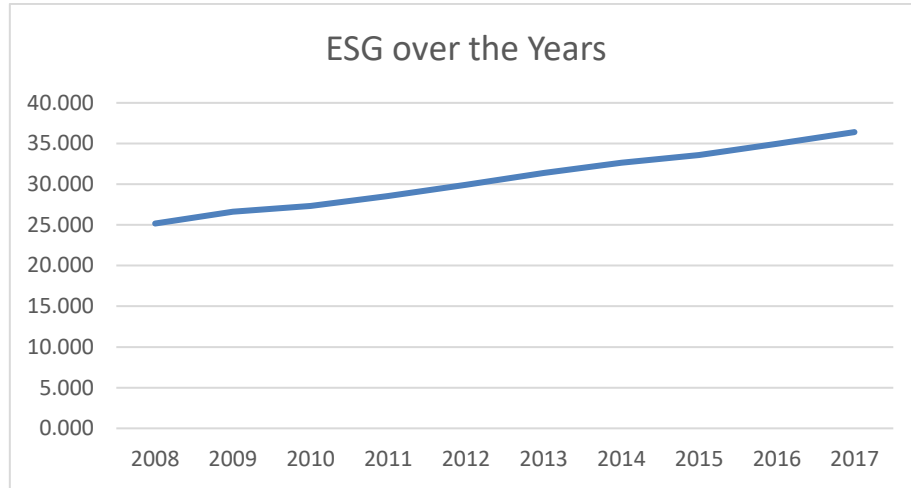


Figure 5.1: ESG over the Years

Further details are illustrated in Figure 5.2. The values for E, S and G disclosures have increased over the years. Governance information was the most frequently disclosed type over the years, while environmental information was the least disclosed.

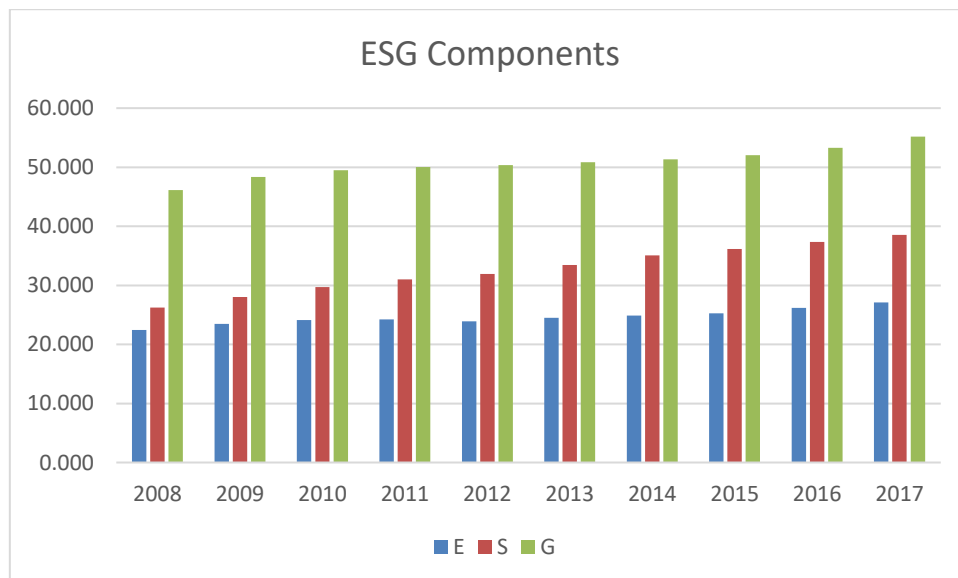


Figure 5.2: ESG Components over the Years

For firm performance, as shown in Figure 5.3, the ROA was the highest over the years, while the TQ was the lowest.

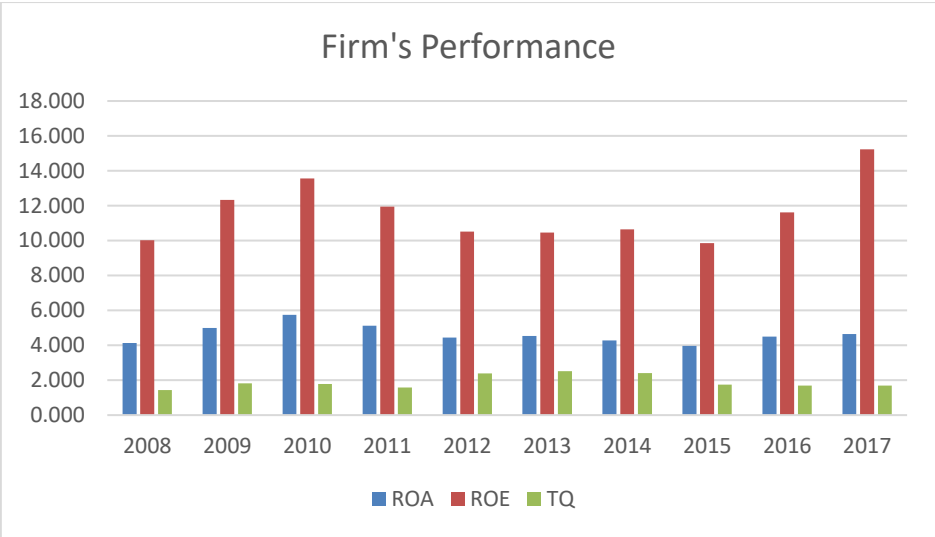


Figure 5.3: Firm Performance over the Years

5.1.2 Descriptive Results (by Sector)

As shown in Figure 5.4, the ESG was highest in the energy and manufacturing sectors, while it was lowest in the agriculture and food industries sector. The initial descriptive results reflect that energy and manufacturing sector firms placed more emphasis on ESG investment than other sectors.

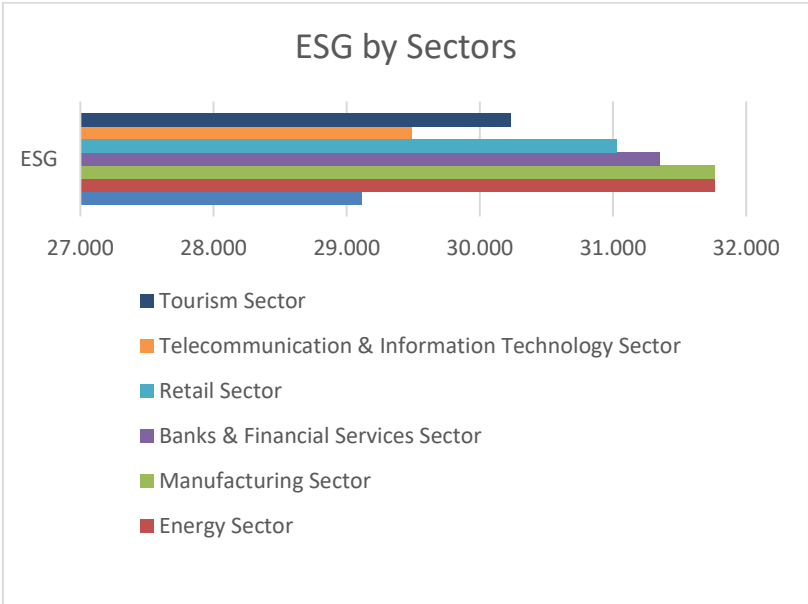


Figure 5.4: ESG by Sector

As detailed in Figure 5.5, in all sectors the governance disclosure component had the highest value, while environmental disclosure had the lowest. However, when we split ESG into three components, the results show that the banks and financial services sector led in disclosing

environmental information, the energy sector led in disclosing social information, and finally the retail sector led in disclosing governance information.

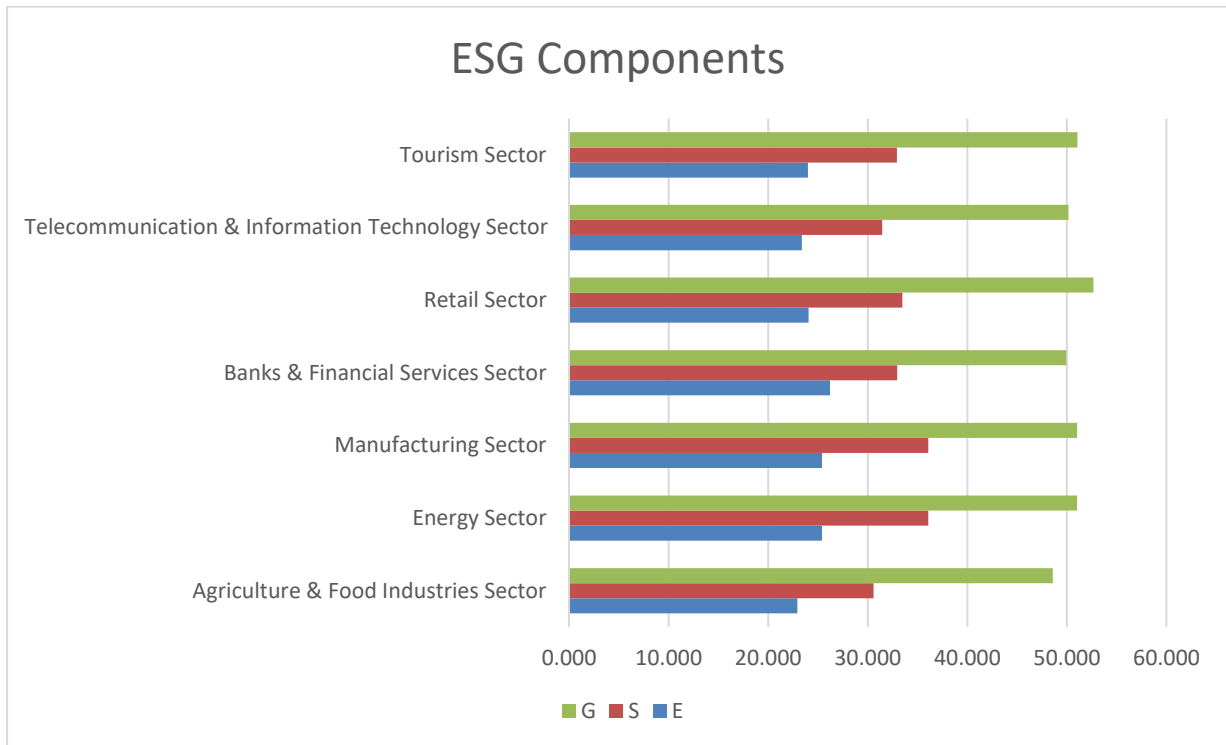


Figure 5.5: ESG Components by Sector

Moving to firm performance, as shown in Figure 5.6, in all sectors the ROE had the highest value, while the TQ had the lowest. The results also show that the telecommunication and information technology sector had the highest ROA and ROE, while energy sector and manufacturing sector had the highest TQ.

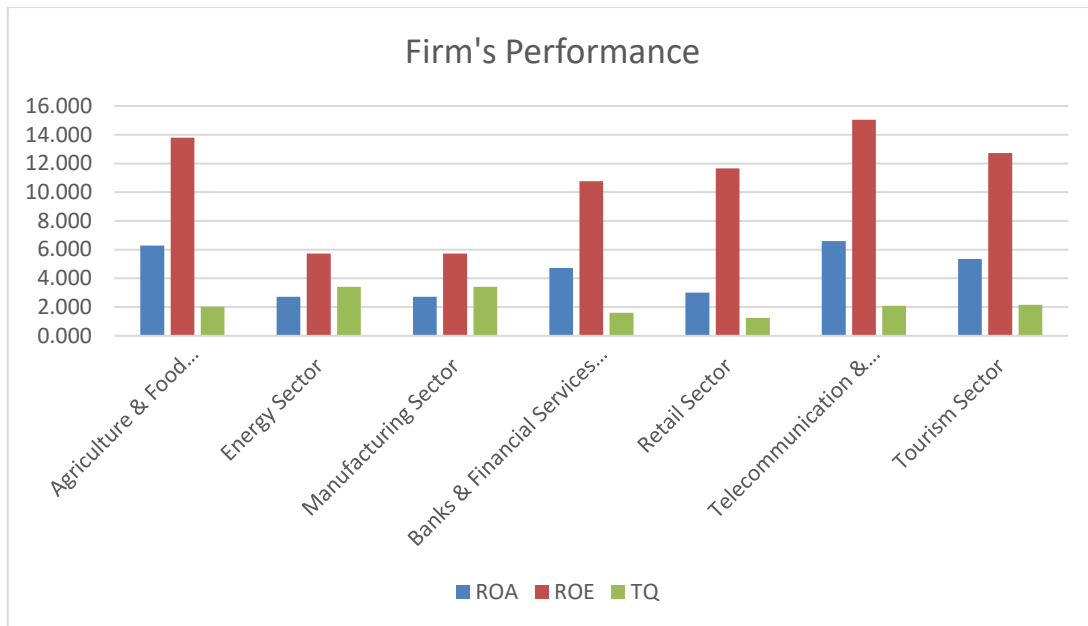


Figure 5.6: Firm Performance by Sector

5.1.3 Descriptive Results (by Region)

In this section, ESG is contrasted with performance indicators of banks according to Matt Rosenberg's Official Eight Regional Groupings of the World. As shown in Figure 5.7, South Africa had the highest ESG (38%). In South Africa, the Johannesburg Stock Exchange (JSE) mandated the disclosure of ESG starting in the 2010 financial year. However, ESG disclosure had been widespread before the regulation (Ioannou & Serafeim, 2017). Asia had the lowest ESG disclosure (26%). In Asia, only 11 countries out of 48 have mandatory sustainability reporting laws, which makes the level of ESG disclosure low compared to that seen in other regions.

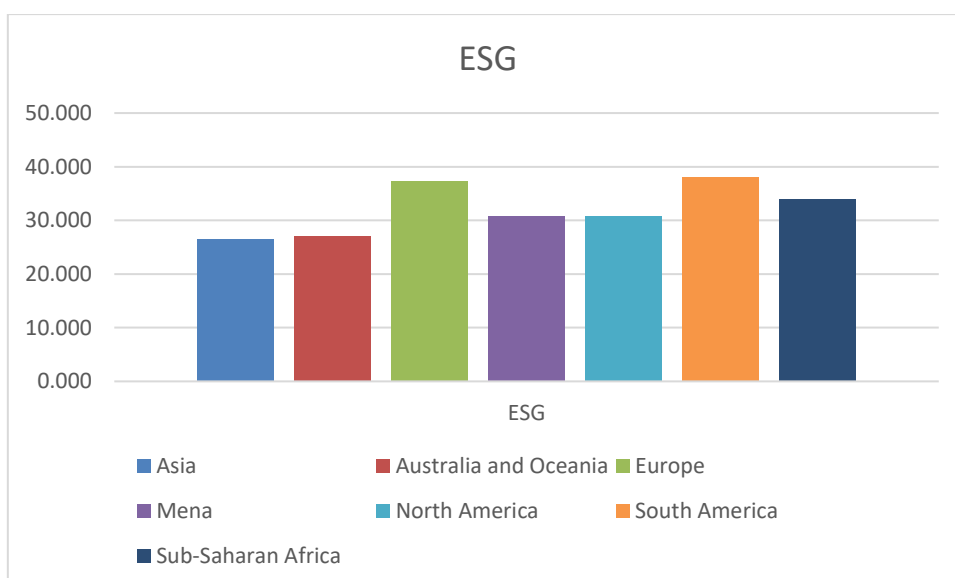


Figure 5.7: ESG within the Regions

Figure 5.8 illustrates that governance disclosure had the highest value in all regions, while environmental disclosure had the lowest. When we split the ESG into its three components, the results show that South America was the highest in disclosing environmental and social information (33% and 49%), and Sub-Saharan Africa was the highest in disclosing governance information (54%).

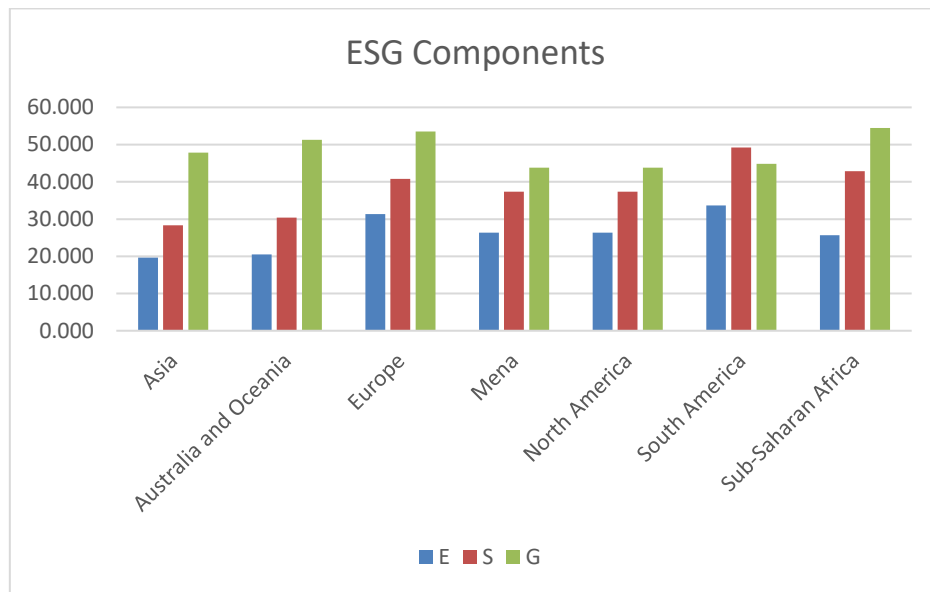


Figure 5.8: ESG Components within the Regions

Moving to firm performance, as displayed in Figure 5.9, in all regions ROE had the highest value, while TQ had the lowest in all regions except South America, where the results show that ROA had the lowest value.

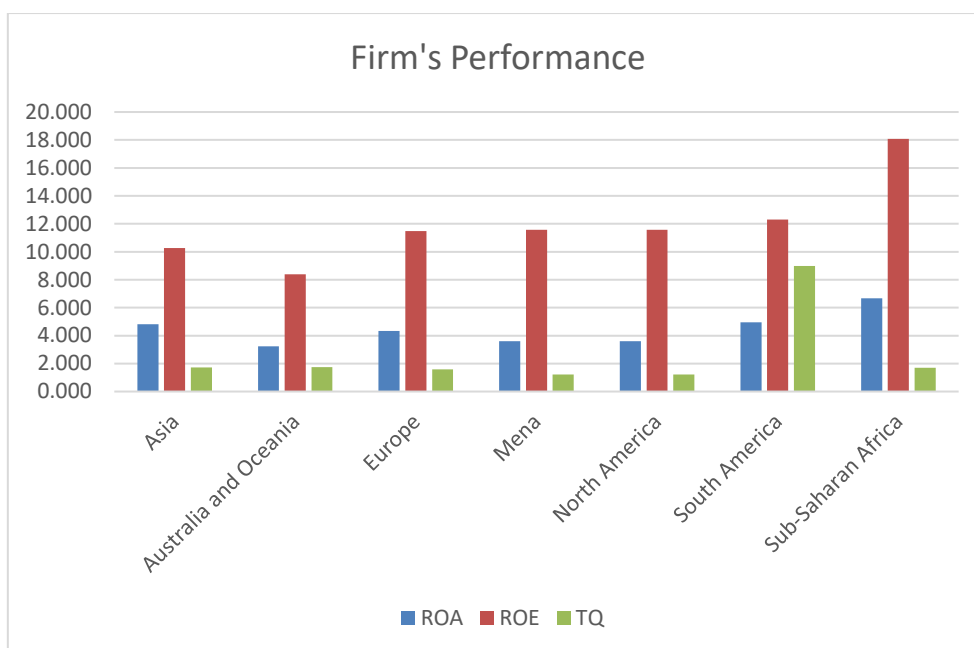


Figure 5.9: Firm Performance within the Regions

5.1.4 Descriptive Results (by Level of Disclosure)

In this section, ESG is divided into four levels (less than 25%, between 26 and 50%, between 51 and 75%, and greater than 75%). As shown in Table 5.2, ROA and TQ are greater when ESG disclosure is less than 25%. However, ROE is greater when ESG disclosure is between 26 and 50%.

Table 5.2: Descriptive Results (by Level of Disclosure)

Variables	ESG less than 25%	ESG between 26 and 50%	ESG between 51 and 75%	ESG greater than 75%
ROA	4.91	4.46	4.07	3.10
ROE	11.05	11.62	11.54	6.90
TQ	2.29	1.53	1.50	1.11

5.2 One-Way ANOVA

At this point, a one-way ANOVA test is used to describe the variables among different variables. The one-way ANOVA compares the means between the groups to determine whether any of those means are statistically significantly different from each other.

To do this, two tests were used: Levene's test and the difference test (t-statistic). Levene's test is used to assess variance of the deviations of two group means (Anderson, 2006:245),

and the t-test is used to determine whether there is a significant difference between the means of two groups.

In this section, the dependent and independent variables are measured based on SRL and the adoption of GRI standards.

5.2.1 One-Way ANOVA (Pre and Post Sustainability Reporting Law)

In this section, we divide the ESG disclosure and firm performance into two categories: pre and post SRL (Table 5.3). The study used one-way ANOVA based on the year the SRL was introduced to identify the variance between the means of the two samples. A t-statistic test was used. The analysis shows that the three sustainability report indicators tend to be higher post SRL. However, the three indicators of ESG were negatively significant, as the p-value was less than 5%. Mandatory sustainability reporting may have a negative impact on those firms with superior ESG disclosure, as they then may have to exert greater efforts and possibly incur higher costs to distinguish themselves from other firms in the period following regulation.

For firm performance, the analysis shows that ROA tends to be higher pre SRL. This result was significant, as the p-value was less than 5%. However, the Levene's test result showed that the variance of ROA did not deviate excessively between the group means, as the p-value of the F test was greater than 0.05. This result is in contra to La Porta et al. (2000), who found that mandatory disclosure may increase a firm's value by improving management of the firm's assets.

Table 5.3 One-Way ANOVA (Pre and Post Sustainability Reporting Law)

Variables	LEVENE'S TEST FOR EQUALITY OF VARIANCES		MEAN DIFFERENCE		DIFFERENCE TEST	
	F	Sig.	Pre SRL	Post SRL	t-Statistic	Sig.
INDEPENDENT VARIABLES						
ESG	6.904	0.009	28.033	33.562	-29.616	0.000
E	23.218	0.000	22.940	26.286	-14.038	0.000
S	2.682	0.102	30.282	35.402	-22.368	0.000
G	2.781	0.095	48.992	52.793	-30.294	0.000
DEPENDENT VARIABLES						
ROA	0.023	0.880	4.769	4.313	4.345	0.000
ROE	3.353	0.067	11.187	11.170	0.054	0.957
TQ	1.110	0.292	1.851	2.067	-0.662	0.508

5.2.2 One-Way ANOVA Analysis (Based on Adoption of GRI)

In this section, we divide the ESG disclosure and firm performance into two categories: firms following GRI guidelines in their sustainability disclosure and firms not following GRI guidelines (Table 5.4).

The analysis shows that the three sustainability report components tend to be significantly higher for firms following the GRI, as the p-value was less than 5% (0.000). Therefore, the SRL has an impact on firms' propensity to seek to improve the credibility and comparability of their ESG disclosures.

On the other side, the ROE was higher in firms following the GRI, and this result was significant, as the p-value of t was less than 5% (0.023). However, the Levene's test result shows that the variance of ROE did not deviate excessively between the group means, as the p-value of the F test was greater than 0.05. In fact, this indicates that shareholders or investors trust firms more when their disclosure is built based on the GRI guidelines, and they invest more in those firms.

Table 5.4: One-Way ANOVA Analysis (Based on Adoption of GRI)

Variables	LEVENE'S TEST FOR EQUALITY OF VARIANCES		MEAN DIFFERENCE		DIFFERENCE TEST	
	F	Sig.	GRI	Non GRI	t-Statistic	Sig.
INDEPENDENT VARIABLES						
ESG	99.00	0.00	49.72			0.00
	4	0	5	31.029	40.357	0
E	71.41	0.00	42.74			0.00
	4	0	5	23.948	33.043	0
S	40.61	0.00	52.36			0.00
	3	0	6	32.309	35.397	0
G	32.40	0.00	62.59			0.00
	7	0	7	50.675	36.883	0
DEPENDENT VARIABLES						
ROA	12.44	0.00				0.80
	2	0	4.544	4.609	-0.241	9
ROE		0.54	13.12			0.02
	0.364	6	8	11.270	2.269	3
TQ		0.46				0.56
	0.545	0	1.472	1.873	-0.571	8

5.3 Testing the Hypotheses

In this section, we test the hypotheses developed in Chapter 3. The first main hypothesis developed to tests the effect of sustainability disclosure on a firm’s operational, financial and market performance (Section 5.3.1), while the second main hypothesis developed to tests the moderating role of a country’s SRL in the relationship between sustainability report disclosure and a firm’s operational, financial and market performance (Section 5.3.2).

5.3.1 Testing the Relationship between Sustainability Reporting (ESG) and Firm Performance

As the results in Table 5.5 reveal, ROA, ROE and TQ regression models have high statistical significance and high explanatory power, as the p-values of the F-tests are less than 5% (0.000, 0.000 and 0.007).

As shown in Table 5.5, the slope coefficients of ESG for ROA indicate that ESG disclosure has a negative significant impact on operational performance, as evident from the coefficient and the fact that p-value is less than 1% (0.000). Therefore, we accept the Alternative hypothesis:

H₁: Sustainability report disclosure affects a firm's operational performance.

For a firm's specific control variables, we found that financial leverage negatively affects the ROA, as the p-value is greater than 5% (0.000). Moreover, the results of total assets negatively affect the ROA and ROE.

Finally, after testing the effect of country-specific control variables, we found that GDP negatively affects the ROE, while governance negatively affects both the ROA and ROE.

The result above is general for the whole sample size. However, when the sample is divided into sectors we found different results (see appendix 1).

Table 5.5: Multiple Regressions for the First Mathematical Model

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	-0.881	-4.207	0.000	0.097	0.459	0.647	-0.224	-1.054	0.292
<i>FIRM SPECIFICS CONTROL VARIABLES</i>									
FL	-0.065	-9.128	0.000	-0.009	-1.206	0.228	-0.002	-0.217	0.828
TA	-0.093	-12.555	0.000	-0.038	-5.071	0.000	-0.003	-0.345	0.730
<i>COUNTRY SPECIFICS CONTROL VARIABLES</i>									
GDP	-0.006	-0.852	0.394	-0.028	-3.934	0.000	-0.004	-0.554	0.579
GOV	-0.107	-12.969	0.000	-0.068	-8.152	0.000	-0.012	-1.400	0.162
F	56.461			40.172			2.436		
Sig.	0.000			0.000			0.007		
R Square	0.028			0.020			0.001		
Adjusted R Square	0.028			0.020			0.001		

5.3.2 Testing the Moderating role of a Country's Sustainability Reporting Law on the Relationship between Sustainability Reporting (ESG) and Firm Performance

The results in Table 5.6 reveal that ROA, ROE and TQ regression models have high statistical significance and high explanatory power, as the p-values of the F-tests are less than 5% (0.000, 0.000 and 0.008).

Table 5.6's results also specify that the inclusion of SRL as a moderating variable affects the relationship between sustainability disclosure and operational performance, as evident from the coefficient and the p-value of less than 1% (0.004). Therefore, we accept the following Alternative hypothesis:

H1: Sustainability reporting law moderates the relationship between sustainability report disclosure and operational performance.

For firm-specific control variables, we found that financial leverage negatively affects the ROA, as the p-value is greater than 5% (0.000). Moreover, the results of total assets negatively affect the ROA and ROE.

Finally, after testing the effect of country-specific control variables, we found that GDP negatively affects the ROE, while governance negatively affects both the ROA and ROE.

Table 5.6: Multiple Regressions for the Second Mathematical Model

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	-0.699	-2.910	0.004	0.174	0.720	0.472	-0.239	-0.981	0.327
<i>FIRM-SPECIFIC CONTROL VARIABLES</i>									
FL	-0.064	-9.089	0.000	-0.008	-1.161	0.246	-0.002	-0.246	0.806
TA	-0.091	-12.435	0.000	-0.033	-4.467	0.000	-0.004	-0.541	0.588
<i>COUNTRY-SPECIFIC CONTROL VARIABLES</i>									
GDP	-0.006	-0.885	0.376	-0.028	-3.947	0.000	-0.004	-0.608	0.543
GOV	-0.105	-12.410	0.000	-0.069	-8.066	0.000	-0.013	-1.514	0.130
F	55.640			37.132			2.398		
Sig.	0.000			0.000			0.008		
R Square	0.028			0.019			0.001		
Adjusted R Square	0.027			0.018			0.001		

5.3.3 Testing the Relationship between Separate Sustainability Disclosure Measures (E, S and G) and Firm Performance: (Mathematical Model 1 vs. Mathematical Model 2)

As shown in Table 5.7, the results reveal that E, S and G have a positive impact on operational performance if measured separately, as evident from the coefficients and the p-values of less than 5% (0.000). Therefore, we accept the Alternative hypotheses:

H_{1.A}: Environmental disclosure affects a firm's operational performance.

H_{1.B}: Social disclosure affects a firm's operational performance.

H_{1.C}: Governance disclosure affects a firm's operational performance.

Similarly, the inclusion of SRL as a moderating variable positively affects the relationships between the E, S and G components and operational performance, as evident from the coefficients and the p-values of less than 5% (0.005, 0.012 and 0.000). Therefore, we accept the following alternative hypotheses:

H_{1.A}: Sustainability reporting law moderates the relationship between environmental disclosure and operational performance.

H_{1.B}: Sustainability reporting law moderates the relationship between social disclosure and operational performance.

H_{1.C}: Sustainability reporting law moderates the relationship between governance disclosure and operational performance.

Table 5.7: Multiple Regressions for Separate Sustainability Disclosure Measures

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
Model 1									
E	0.571	4.072	0.000	-0.096	-0.682	0.495	0.121	0.852	0.394
S	0.239	3.793	0.000	-0.029	-0.450	0.653	0.090	1.399	0.162
G	0.189	5.054	0.000	0.052	1.379	0.168	0.030	0.784	0.433
Model 2									
E*SRL	0.413	2.797	0.005	-0.126	-0.848	0.396	0.114	0.759	0.448
S*SRL	0.175	2.522	0.012	-0.055	-0.789	0.430	0.096	1.363	0.173
G*SRL	0.189	3.336	0.001	-0.001	-0.020	0.984	0.055	0.948	0.343

Chapter Conclusion

This chapter first provides a descriptive analysis. The results show that the maximum ESG disclosure was 80%, while the minimum was only 1.3%. For firm performance, the descriptive analysis results show that the mean of ROE had the highest value (12%), followed by the ROA mean (4.6%), while the TQ mean had the lowest value (2%). Then descriptive analysis is divided by year, the results show that ESG disclosure increased over the years. Moreover, the descriptive analysis is categorised based on different sectors, the results show that the ESG was highest in the energy and manufacturing sectors, while it was lowest in the agriculture and food industries sector. Furthermore, descriptive analysis is divided based on different regions, South Africa had the highest ESG (38%) compared to that seen in other regions.

Second, one-way ANOVA is used to describe the variables pre and post SRL, the analysis shows that the three sustainability report indicators tend to be higher post SRL. Furthermore, one-way ANOVA is used to differentiate between variables in terms of adoption of GRI. The result shows that the three sustainability report components tend to be significantly higher for firms following the GRI.

The final section in this chapter is hypothesis testing. The first main hypothesis aim is to test the effect of sustainability disclosure on a firm's operational, financial and market performance. The result indicates that ESG disclosure has a negative significant impact on operational performance. The second main hypothesis aim is to test the moderating role of a country's SRL in the relationship between sustainability report disclosure and a firm's operational, financial and market performance. The result also specifies that the inclusion of SRL as a moderating variable negatively affects the relationship between sustainability disclosure and operational performance.

The final section in this chapter tests the relationship between separate sustainability disclosure measures (E, S and G) and firm performance for both Mathematical Model 1 & 2. The results reveal that E, S and G have a positive impact on operational performance if measured separately. Similarly, the inclusion of SRL as a moderating variable has a

positive impact on the relationship between E, S and G and operational performance if measured separately.

Chapter Six: Discussions

Chapter 6: Discussions

Chapter Introduction

This chapter first discusses the results for the thesis's first main hypothesis. The first section addresses the relationship between ESG and a firm's operational performance, the second section between ESG and financial performance and the third section between ESG and market performance. Then this chapter discusses the results for the second main hypothesis. The fourth section discusses the effects of SRL on the relationship between ESG and a firm's operational performance, while the fifth section addresses financial performance, and the sixth section market performance. Finally, this chapter presents the final developed framework.

6.1 Discussion of the Relationship between ESG and a Firm's Operational Performance

Table 6.1 summarizes the hypotheses results. Even if a hypothesis is accepted, it might have different results (positive or negative), as shown in Table 6.2 sustainability reporting disclosure (ESG) negatively affects a firm's operational performance (ROA). This result is in line with a recent study by Duque-Grisales and Aguilera-Caracue (2019), which looked at data from Brazil, Chile, Colombia, Mexico and Peru for the five years 2011 to 2015 and found that the relationship between ESG score and ROA was statistically significant and negative. However, this result is in contrast to many other recent studies that have found a positive relationship between ESG and ROA (Deng & Cheng, 2019; Zhao et al., 2018; Lins et al., 2017).

In fact, most firms still choose not to disclose sustainability information because they need to recruit and train new accountants to understand and prepare sustainability reports. They think that these additional costs may exceed the benefits in the short term. Moreover, sustainability reporting may have a negative impact on intangible assets such as employee loyalty (Ittner and Larcker, 1998; McGuire et al., 1998; Lee et al., 2013). Thus,

the results support shareholder expense theory and confirm that disclosing information about ESG can lead to inefficient utilization of firm's assets (Lee & Faff, 2009).

However, as shown in Table 6.2 when the components of ESG are considered separately it has a positive effect on a firm's operational performance (ROA). The environmental disclosure positively affected a firm's operational performance. This result confirms a study by Jo and Harjoto (2011), which stated that disclosing information about environmental practices improved operational performance. The social disclosure positively affected a firm's operational performance. This supports the results of a study by Margolis and Walsh (2003) which found that disclosing social information about a firm enhanced its return on assets. The governance disclosure positively affected a firm's operational performance. This result agrees with results of two studies by Gompers et al. (2003; 2010) which found that governance disclosure improved firm performance.

It is clear that the return on assets generated by disclosing separate E, S and G information exceeds the costs of that disclosure. Research that confirms a positive relationship between sustainability reporting and operational performance supports the thought that satisfying the needs of internal stakeholders (i.e., employees and management) raises a firm's operational performance by strengthening relationships and improving employee motivation and loyalty (Perrini et al., 2009). Moreover, La Porta et al. (2000) found that sustainability disclosure may increase firm value by improving management of a firm's assets, and this could happen when employees are satisfied. Furthermore, a positive relationship will result if firms with greater ESG disclosure are better able to recruit and hold onto talented workers (Greening & Turban, 2000).

Finally, in more details as shown in appendix 1, When the sample was divided into sectors, it was found that sustainability reporting disclosure affects the operational performance of five sectors out of seven (energy, manufacturing, banks and financial services, retail, and tourism sectors). In the banks and financial services sector, the effect was negative. The banking and financial services sector is responding more slowly than other sectors to sustainability challenges (Jeucken, 2004). Jeucken and Bouma (1999) stated that banks

are slow in examining the social and environmental impacts of their performance. However, the remaining four affected sectors (energy, manufacturing, retail and tourism sectors) had their operational performance positively affected by sustainability reporting. These results are in line with those of Aouadi and Marsat (2018) and Velte (2017), who found a positive relationship between ESG and ROA.

6.2 Discussion of the Relationship between ESG and a Firm's Financial Performance

As shown in Table 6.2, sustainability reporting disclosure does not affect a firm's financial performance. This result is in line with a recent study by Atan et al. (2018), which found that ESG does not have a statistically significant influencing on ROE. However, this result is in contrast to those of many recent studies that find a positive relationship between ESG and ROE (Aouadi & Marsat, 2018; Zhao et al., 2018).

Simillary, as shown in Table 6.2 when the components of ESG are considered separately it has no effect on a firm's financial performance (ROE). The social disclosure did not affect a firm's financial performance. This result suggests that disclosing social information is not helpful in improving ROE. When firms use their resources for non-profit social activities, they have fewer resources in the long run to invest in positive net present value projects, which puts the firm at a disadvantage (Balabanis et al., 1998). This result supports trade-off theory. Thus, in the long run, the costs outweigh the benefits, explaining the inverse relationship with financial performance. Nyeadi et al. (2018) disapproved of social responsibility-oriented investments, as they found that being socially sustainable leads to a decrease in wealth, thus capital must be injected in self-profitable projects. The environmental disclosure does not affect a firm's financial performance. This result is in line with Horváthová's (2010) meta-analysis of 37 studies. He found that half of the studies documented either a negative or an insignificant impact on financial performance. The governance disclosure did not affect a firm's financial performance. This result is in line with two studies by Gompers et al. (2003; 2010) which found that governance disclosure improved financial performance.

However, different results were found when the sample was divided into sectors (appendix 1), it was found that sustainability reporting disclosure affects the financial performance of three sectors out of seven (manufacturing, banks and financial services, and retail sectors). In the banks and financial services sector, this relationship was negative. These results are consistent with empirical investigations such as those by

Nollet et al. (2016), Climent (2018), Buallay (2019), and Duque-Grisales and Aguilera-Caracuel (2019), all of which report a negative impact of ESG on ROE in banks.

An explanation of the results is that investors feel that expenditure on sustainability reporting is unnecessary and puts the firm at a competitive disadvantage (Barnett, 2007; Lee & Faff, 2009). For this reason, sustainability reporting may have a negative impact on intangible assets such as shareholder satisfaction, which is reflected in terms of their investment in the firm's equity (Lee & Faff, 2009).

However, the remaining sectors (retail and manufacturing) showed a positive relationship between ESG and ROE. It is clear that investors in these sectors feel that the return on equity generated by disclosing ESG information exceeds its costs. Research that finds a positive relationship between sustainability reporting and financial performance supports the thought that satisfying the needs of shareholders raises a firm's financial performance by strengthening its relationships with its shareholders. This result is in line with results of other recent studies that find a positive relationship between ESG and ROE (Aouadi & Marsat, 2018; Zhao et al., 2018).

6.3 Discussion of the Relationship between ESG and a Firm's Market Performance

As summarized in Table 6.2, sustainability reporting disclosure does not affect a firm's market performance. This result is in line with recent studies by Atan et al. (2018) and Velte (2017), who found that ESG has no impact on Tobin's Q.

Similarly, as shown in Table 6.2 when the components of ESG are considered separately it has no effect on a firm's market performance (TQ). The environmental disclosure did not affect a firm's market performance. Firms try to reduce costs and increase benefits without harming the eco-system. To develop their resources and at the same time meet stakeholder's need, they must report on environmental issues to inform stakeholders about the environmental impact of their operations and how they solve problems associated with environmental issues, such as eco-friendly, recyclable, and substitute materials; biodegradable packaging; remanufacturing; recycling; and taking back products at the end of the life cycle. Carter et al. (2000) and Jo and Harjoto (2011) stated that disclosing information about environmental practices improved market performance.

The social disclosure did not affect a firm's market performance. Margolis and Walsh (2003) found that disclosing social information about firms enhanced a firm's value performance. It is also possible that the relationship between social disclosure and a firm's financial performance has changed over time, as socially irresponsible business practices which were once commonplace have gradually come to be considered unacceptable among stakeholders as both the regulatory environment and societal expectations have raised the bar (Brooks & Oikonomou, 2018).

The governance disclosure did not affect a firm's market performance. Similarly, Che Haat et al. (2008) found that governance disclosure did not significantly affect market performance.

However, different results were found when the sample was divided into sectors (appendix 1), it was found that sustainability reporting disclosure affects the market performance of five sectors out of seven (manufacturing, banks and financial services, retail, telecommunication and information technology, and tourism sectors). In the banks and financial services and telecommunication and information technology sectors, the effect was negative. This supports a study by Landi and Sciarelli (2019) that found a negative and statistically significant impact in terms of market performance using Tobin's Q. Various studies have provided explanations for the negative relationship between sustainability reporting and a firm's market performance. Marsat and Williams (2014) argued that investing in ESG increases costs and has economic consequences, resulting in lower market values. The stock price or market value of a firm is seen as the most objective way of rating a firm, and any non-financial objectives will make the firm less effective (Friedman, 1962). The negative impact of ESG on market return indicates that, to some extent, ESG spending is not rewarding.

In the remaining sectors, however, ESG positively affected market performance. This result is in line with many recent studies (Garcia et al., 2019; Aybars et al., 2019; Nekhili et al., 2019; Balasubramanian, 2019; Aouadi & Marsat, 2018; Fatemi et al., 2017). Research that indicates a positive relationship between sustainability reporting and market performance clearly supports the thought that satisfying the needs of stakeholders raises firm performance by strengthening relationships with stakeholders, promoting the firm's reputation, enhancing legitimacy and reducing transaction costs (Barnett, 2007; Perrini et al., 2009). Moreover, sustainability reporting can be viewed as an investment that, in return, enhances a firm's value (Perrini et al., 2009).

Table 6.1: Summary of ESG and ROA Hypotheses Results

Variables	ROA Model	ROE Model	TQ Model
ESG	A	R	R
E	A	R	R
S	A	R	R
G	A	R	R

A = Accept

R = Reject

Table 6.2: Summary of the ESG and Firm's Performance Results Signs

Variables	ROA Model	ROE Model	TQ Model
ESG	-	Not Sig.	Not Sig.
E	+	Not Sig.	Not Sig.
S	+	Not Sig.	Not Sig.
G	+	Not Sig.	Not Sig.

Sig. @1%

Sig. @5%

6.4 Discussion of the Effect of a Sustainability Reporting Law on the Relationship between ESG and a Firm's Operational Performance

Table 6.3 summarizes the hypotheses results. Even if the hypotheses are accepted, they might have different results (positive or negative), as shown in Table 6.4. An SRL negatively affects the relationship between ESG and a firm's operational performance.

This result contradicts accountability theory. Mandating environmental disclosure law see as a barrier to enhance the ROA. However, as shown in Table 6.4 when the components of ESG are considered separately, SRL positively affected the relationship between environmental disclosure and a firm's operational performance.

An SRL positively affected the relationship between social disclosure and a firm's operational performance. This result is line with accountability theory. The greater the regulation of corporate social responsibility disclosure by government, the greater the ROA.

An SRL positively affected the relationship between governance disclosure and a firm's operational performance. This result suggests that mandatory laws about governance disclosure improve a firm's operational performance. Firms report on governance issues to confirm the impact of governance on their operations, such as improving a firm's reputation and building or maintaining community trust along with anticipating and resolving governance-related problems, such as implementing anti-corruption, anti-extortion and anti-bribery initiatives; integrating sustainability into management decisions; and safeguarding reputations.

In more detail as shown in appendix 2, when the sample was divided into sectors, it was found that SRL affected the relationship between ESG and a firm's operational performance in five sectors out of seven (energy, manufacturing, banks and financial services, retail, and tourism sectors). In the banks and financial services sector, the effect was negative. This result contradicts accountability theory.

However, the remaining sectors (manufacturing, retail, energy, and tourism sectors) saw a positive effect. In these sectors, the role of an SRL enhances the relationship between ESG disclosure and operational performance. Therefore, government regulation plays an important role in the disclosure of sustainability reports. A law mandating sustainability reports mitigates debates about the credibility of sustainability reports (Birkey et al., 2015; Dhaliwal et al., 2014; Ruhnke & Gabriel, 2013). Issues with sustainability reporting have been confirmed by many authors (Birkey et al., 2016). They have argued that unregulated and voluntary disclosure of sustainability is a core challenge to stakeholders who must determine whether the sustainability information is complete and credible as recommended by the GRI (GRI, 2016). Thus, accountability can offer recognition of how internal stakeholders (i.e., employees) see a firm as responsible for its environmental, social and governance impacts along with its operational impact (Milne & Gray, 2007; Gray et al., 1997; Gray et al., 1995).

6.5 Discussion of the Effect of a Sustainability Reporting Law on the Relationship between ESG and a Firm's Financial Performance

As shown in Table 6. 3 and 6.4 an SRL did not affect the relationship between ESG and a firm's financial performance.

Simillary, as shown in Table 6.3 and 6.4 when the components of ESG are considered separately. An SRL did not affect the relationship between environmental disclosure and a firm's financial performance. This result is contra to the accountability theory. The greater the regulation of environmental disclosure by government, the greater the ROE. This indicates that shareholders are not very much concerned about how the firms they invest in are complying with the country's law about environmental disclosure.

An SRL did not affect the relationship between social disclosure and a firm's financial performance. This result is contra with accountability theory. The greater the regulation of CSR disclosure by government, the greater the ROE.

An SRL did not affect the relationship between governance disclosure and a firm's financial performance. These results are in contra with accountability theory. The greater the regulation of governance disclosure by government, the less the ROE. Investors are not willing to pay more in firms implementing governance principles. Governance assists them in monitoring controls, solving conflicts of interest and enforcing transparency (Buallay et al., 2017). A mandatory law about corporate governance ensures that rules, regulations and laws, particularly those associated with economic, environmental and social issues, are followed and corrective action is implemented, which helps the firm maintain its long-term sustainability.

However, in more details as shown in appendix 2, when the sample was divided into sectors, it was found that an SRL affected the relationship between ESG and a firm's financial performance in only three sectors out of seven (manufacturing, banks and financial services, and retail sectors). In the banks and financial services sector, the effect was negative. This result contradicts accountability theory. An SRL might reduce a firm's

value by bringing additional costs – for example, preparation costs. Similarly, forcing firms to disclose more ESG information by law opens the door other stakeholders demanding more sustainability practices. For example, civil society organizations might put pressure on firms to further improve working conditions, which indeed could increase costs and lead to decreased ROE.

However, the remaining sectors (retail and manufacturing sectors) saw positive effects. In these sectors, the role of an SRL enhanced the relationship between ESG disclosure and financial performance. Therefore, accountability can offer recognition of how shareholders and institutional investors see a firm as responsible for its environmental, social and governance impacts along with its financial impact (Milne & Gray, 2007; Gray et al., 1997; Gray et al., 1995).

6.6 Discussion of the Effect of a Sustainability Reporting Law on the Relationship between ESG and a Firm's Market Performance

As shown in Table 6.3 and 6.4 the SRL did not affect the relationship between ESG and a firm's market performance.

Similarly, as shown in Table 6.3 and 6.4 when the components of ESG are considered separately. An SRL did not affect the relationship between environmental disclosure and a firm's market performance. This result is contra with accountability theory. The greater the regulation of environmental disclosure by government, the fewer the firm's value.

An SRL did not affect the relationship between social disclosure and a firm's market performance. This result is in contra with accountability theory. The fewer the regulation of CSR disclosure by government, the greater firm's value.

An SRL did not affect the relationship between governance disclosure and a firm's market performance. The law associated with governance disclosure is seen as a barrier to enhancing the firm's market value.

However, in more details as shown in appendix 2, When the sample was divided into sectors, it was found that an SRL affected the relationship between ESG and a firm's market performance in only three sectors out of seven (manufacturing, banks and financial services, and retail sectors). In the banks and financial services sector, the effect was negative. This result contradicts accountability theory. The stock price or market value of a firm is seen as the most objective way of rating a firm, and any other non-financial objectives will make the firm less effective (Friedman, 1962). An SRL is seen by the banks and financial services sector as lowering a firm's value by disclosing sustainability information. The negative impact of an SRL on the relationship between ESG and market return indicates that, to some extent, enforcement by government of ESG spending is not rewarding.

However, the other two sectors (manufacturing and retail) saw positive effects. These sectors support the effects of accountability theory in the relationship between ESG and

market performance. It is clear that these sectors thought that complying with the law satisfies the needs of stakeholders, which then raises firm performance by strengthening its relationships with its stakeholders.

Table 6.3: Summary of the Effect of SRL on ESG and ROA Hypotheses Results

Variables	ROA Model	ROE Model	TQ Model
ESG	A	R	R
E	A	R	R
S	A	R	R
G	A	R	R

A = Accept

R = Reject

Table 6.4: Summary of the Effect of SRL on ESG and ROA Results Signs

Variables	ROA Model	ROE Model	TQ Model
ESG	-	Not Sig.	Not Sig.
E	+	Not Sig.	Not Sig.
S	+	Not Sig.	Not Sig.
G	+	Not Sig.	Not Sig.

Sig. @1%

Sig. @5%

6.7 The Final Develop Framework

From the results above as summarized in table 6.5, the developed conceptual model drawn in section 3.3 is significant for the operational performance only. It does not significant for both financial and maket performance.

Table 6.5: Supportive/Contradictory Conceptual Framework

Variables	ROA Model	ROE Model	TQ Model
ESG	S	C	C
E	S	C	C
S	S	C	C
G	S	C	C

C=Contradictory

S= Support

Therefore, as shown in figure 6.1 the final develop framework for this thesis is built based on the results found above considering only the operational performance as dependent variable as its affected significantly by the disclosure of sustainability reporting.

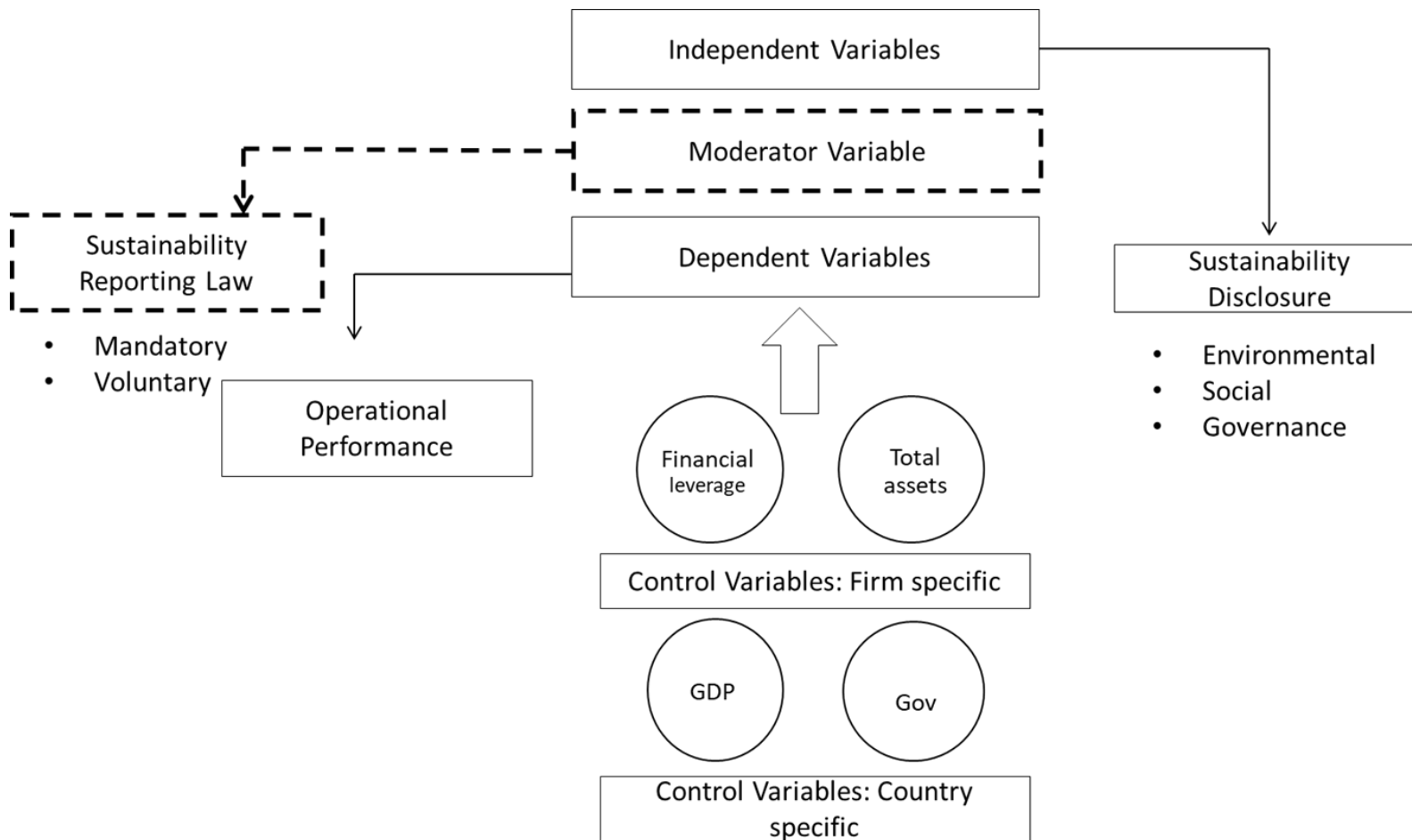


Figure 6.1: The Final Develop Framework

Chapter Conclusion

This chapter first discusses the results for the thesis's first main hypothesis (the relationship between ESG and a firm's operational, financial and market performance). The results show that sustainability reporting disclosure (ESG) negatively affects a firm's operational performance (ROA). However, when the components of ESG are considered separately it has a positive effect on a firm's operational performance (ROA).

On the other hand, sustainability reporting disclosure (ESG) does not affect a firm's financial and market performance (ROE and TQ).

Then this chapter discusses the results for the second main hypothesis (the effects of SRL on the relationship between ESG and a firm's operational, financial and market performance). The results show that the inclusion of SRL as moderator variable affects negatively the relationship between ESG and a firm's operational performance. However, when the components of ESG are considered separately an SRL has a positive effect on the relationship between E, S and G and firm's operational performance (ROA).

Finally, the result shows that the inclusion of SRL as moderator variable does not affect the relationship between ESG and a firm's financial and market performance.

Based on these results, the final developed framework for this thesis is built considering only the operational performance as dependent variable as it is affected significantly by the disclosure of sustainability reporting.

Chapter Seven: Conclusion

Chapter Seven: Conclusion

Chapter Introduction

This chapter first provides a conclusion. The second section presents its implications and contributions. The fourth section offers recommendations, and the Third section outlines the limitations of this thesis. The final section suggests future research.

7.1 Conclusion

This thesis aimed at investigating the moderating role of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance. To achieve this, two questions need to be answering. What is the relationship between the level of sustainability reporting and firm performance? And, Is there an effect of country's sustainability reporting law on the relationship between the level of sustainability reporting and firm performance?

The results show that sustainability reporting disclosure (ESG) negatively affects a firm's operational performance (ROA). However, when the components of ESG are considered separately it has a positive effect on a firm's operational performance (ROA). On the other hand, sustainability reporting disclosure (ESG) does not affects a firm's financial and market performance (ROE and TQ).

Moreover, the result show that the inclusion of SRL as moderator variable negatively affects the relationship between ESG and a firm's operational performance. However, when the components of ESG are considered separately an SRL has a positive effect on the relationship between E, S and G and firm's operational performance (ROA). On the other hand, the result shows that the inclusion of SRL as moderator variable does not affect the relationship between ESG and a firm's financial and market performance.

The uniqueness of this thesis is that the previous studies are mostly based on either stakeholder theory, legitimacy theory or a combination of both theories. In this thesis, as it has a sample from 80 countries, both developed and developing countries; political-

economy theory is integrated with stakeholder theory and legitimacy theory. Moreover, this thesis goes beyond previous studies and considers the moderating role of a country's sustainability reporting law on the relationship between sustainability reporting and firm performance. The new idea of this thesis is that we have different legal environments in countries with regard to a firm's sustainability disclosure (mandatory or voluntary), therefore, the accountability theory is integrated with stakeholder theory, legitimacy theory and the political economy theory in order to meet the goal of this thesis.

The results have significant implications for policy makers, regulators and government authorities, as they can recognise the effect of the sustainability reporting law on the relationship between ESG and different performance measures (operational, financial and market).

7.2 Contributions

This thesis makes significant contributions, both theoretical and practical, to the field of sustainability disclosure.

7.2.1 Theoretical Contributions

Previous research about the relationship between sustainability reporting and firm performance has used either stakeholder theory or legitimacy theory. A recent trend in accounting studies uses integrated theories to address the topic of sustainability reporting (Lokuwaduge & Heenetigala, 2017). Researchers have recognized a clear link between stakeholder and legitimacy theories (Soobaroyen & Mahadeo, 2016). In the current study, we use a sample of 80 countries, both developed and developing, and integrate political-economy theory to control for the political-economy setting of these countries. As this thesis investigates the moderating role of a country's sustainability reporting law on the relationship between reporting and performance, we link a fourth theory – accountability theory – to our conceptual framework, which deepens our understanding of the effects of such laws on this relationship.

7.2.2 Practical Contributions

As an initial practical contribution to the field, this thesis uses a mix of both accounting-based measures and market-based measures.

Second, this thesis studies the separate relationships between each sustainability reporting area (environmental, social and governance) and firm performance. It also assesses multiple performance measures (operational, financial and market).

As a third practical contribution to the field, the study investigates the moderating role of a country's sustainability reporting law on the relationship between sustainability reporting and firm performance.

The next section offers recommendations for firms, governments, policy makers and academics.

7.3 Recommendations

In general, results suggest that the relationship between ESG and operational performance is negative. However, the relationship between ESG and both financial and market performance is insignificant. The results of this thesis could be very confusing for managers in different sectors. Therefore, we make our recommendations for each sector separately based on the results in appendix 1 and 2 to clearly help policy makers, managers, stakeholders and investors taking decisions about ESG strategy.

First, in the agriculture and food industries sector, governance disclosure affects market performance. The managers of this sector are recommended to focus on their governance strategy and to disclose more information about governance to enhance the firm's market value.

Second, in the energy sector, ESG disclosure positively affects a firm's operational performance (ROA). The managers in this sector are recommended to focus on their sustainability reporting as a tool to generate greater return on assets.

Third, in the manufacturing sector, ESG disclosure positively affects a firm's ROA, ROE and TQ. The sustainability reporting strategy is very important to various stakeholders (employees, investors and other stakeholders). Therefore, firms in this sector must attend to their ESG disclosure, as it is important for their operational, financial and market performance.

Fourth, in the banks and financial services sector, ESG disclosure negatively affects a firm's operational, financial and market performance. The sustainability reporting strategy is sensitive in this sector; it adversely affects various stakeholders (employees, investors and other stakeholders). Therefore, banks must pick up optimistic information and disclose it to avoid the negative impact of ESG disclosure on their return on assets, return on equity and firm value.

Fifth, in the retail sector, ESG disclosure positively affects a firm's ROA, ROE and TQ. The sustainability reporting strategy is very important to various stakeholders (employees, investors, suppliers, distributors and other stakeholders). Therefore, retailers must keep disclosing ESG information to maintain their relationships with different stakeholders.

Sixth, in the telecommunication and information technology sector, ESG disclosure negatively affects a firm's market performance. The sustainability reporting strategy has to be rewritten in a way that focuses on the firm's strength to avoid the negative impact of ESG disclosure on the firm's value.

Finally, in the tourism sector, ESG disclosure positively affects a firm's operational and market performance. Managers in this sector must focus more on sustainability information that attracts shareholders and institutional investors to enhance their financial performance in addition to operational and market performance.

From the pedagogical context, these results are varied, complex and difficult to understand. We hope that these results will encourage business educators to make room

for courses in sustainability reporting in their academic programs. Reviews of accounting and business programs offered by higher education institutions worldwide show that sustainability reporting is largely ignored. If it is taught, it is not more than a topic in current issues in accounting that is covered in a single lecture session. These results should encourage academic institutions to promote the adoption of the UN Partnership for Sustainability Development Goals (SDGs).

The next section outlines the limitations of this thesis.

7.4 Limitations

The results of this thesis should be presented in light of its potential limitations, which might help for suggesting future research.

The first limitation of this thesis is that content analysis captures only quantity rather than the quality of ESG disclosure. Therefore, the results of this study may not necessarily give the “true” motivation for firms to disclose sustainability activities. Hence, the quality of ESG disclosure could be gathered from primary sources, such as interviews with firms’ managers, to understand motivations that may be behind the sustainability practices.

The second limitation of this thesis is that it uses the Bloomberg ESG score, which might fail to take into consideration the actual sustainability actions a firm engages in. In fact, a firm’s ESG disclosure might differ from the effort they actually made. However, this drawback also exists with other measurements of corporate social responsibility (Nollet et al., 2016). Although Bloomberg is a specialized agency, a globally known platform and a reliable data provider widely used by academicians and investors. Added to that, scores reported by Bloomberg are based on data collected from firms’ websites and annual reports, which decreases any sort of bias that may appear in self-gathered data.

Third, the sample is restricted to only listed operating firms whose information is available on Bloomberg. There are many small and medium enterprises that are disclosing ESG but are not listed in Bloomberg. Thus, still more significant results could have been derived if the sample size had been enlarged.

Fourth, the sample was heterogeneous because it included firms operating in different sectors. This research reduced this limitation by splitting the sectors. However, only the main sectors have been used. Other sectors such as mining, transportation and professional services are not considered. Moreover, the sample was heterogeneous because it included firms operating in different countries, and it would be better if we could split the samples by country. This was not possible due to the large number of countries used in this thesis.

Fifth, the GRI provides “a trusted and credible framework for sustainability reporting that can be used by organizations of any size, sector, or location” (GRI, 2016). However, this thesis does not consider the GRI guideline as a variable in its model because this guideline was introduced in 2016 and our data is from 2008 to 2017. Including this factor in the thesis model would not be useful and would destroy our model, as it would then cover only one year (2017). However, we used a one-way ANOVA test to see the difference in ESG disclosure between firms following GRI and firms that are not.

Despite the above limitations, the thesis provides a better understanding of different dimensions of sustainability reporting and how they are affected by different theories, different performance measures, aggregate ESG disclosure, separate ESG component disclosure and different sectors.

The final section of this thesis suggests future research.

7.5 Future Research

Future research could use mixed research methods (quantitative and qualitative). Supporting the analysis of secondary data with some primary sources, such as interviews with firms’ managers, might allow for better understanding of motivations behind the sustainability practices.

Other future research could perform similar testing by splitting the model into geographical areas (countries) to explore the variations and similarities between countries.

Including GRI as a control variable in the same applied model could give additional insight into the effects of this guideline on the relationship between sustainability reporting and firm performance.

It would be interesting for future research to distinguish between the effects of ESG information disclosed in stand-alone reports and in integrated reports on firm performance.

Lastly, a fruitful avenue for further research would be to investigate the changes in the demand for and the amount of sustainability reporting being produced over time.

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Appendices

Appendices

Appendix 1: Multiple Regressions for Question 1 per sectors

Appendix 1.1: Agriculture & Food Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	-0.796	-1.171	0.242	-0.103	-0.155	0.877	-1.183	-1.796	0.073
F	21.721			30.010			29.782		
Sig.	0.000			0.000			0.000		
R Square	0.140			0.183			0.182		
Adjusted R Square	0.133			0.177			0.176		

Appendix 1.2: Energy Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	2.634	2.145	0.032	0.756	0.613	0.540	-1.269	-1.014	0.311
F	12.309			10.198			1.583		
Sig.	0.000			0.000			0.114		
R Square	0.037			0.031			0.005		
Adjusted R Square	0.034			0.028			0.002		

Appendix 1.3: Manufacturing Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	4.958	3.994	0.000	2.903	2.317	0.021	4.293	3.517	0.000
F	27.791			15.646			58.032		
Sig.	0.000			0.000			0.000		
R Square	0.040			0.023			0.082		
Adjusted R Square	0.039			0.022			0.080		

Appendix 1.4: Banks & Financial Services Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	-7.429	-15.291	0.000	-1.609	-3.152	0.002	-5.708	-11.374	0.000
F	58.715			17.686			33.041		
Sig.	0.000			0.000			0.000		
R Square	0.130			0.043			0.078		
Adjusted R Square	0.127			0.041			0.075		

Appendix 1.5: Retail Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	2.524	6.249	0.000	1.163	2.936	0.003	1.694	4.242	0.000
F	24.114			39.127			34.617		
Sig.	0.000			0.000			0.000		
R Square	0.061			0.097			0.086		
Adjusted R Square	0.059			0.094			0.084		

Appendix 1.6: Telecommunication & Information Technology Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	-0.347	-0.915	0.360	-0.234	-0.616	0.538	-1.152	-3.050	0.002
F	6.527			6.594			7.360		
Sig.	0.000			0.000			0.000		
R Square	0.040			0.040			0.045		
Adjusted R Square	0.034			0.034			0.039		

Appendix 1.7: Tourism Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT VARIABLE</i>									
ESG	2.050	2.307	0.021	1.025	1.150	0.250	4.937	5.641	0.000
F	6.394			6.240			10.294		
Sig.	0.000			0.000			0.000		
R Square	0.049			0.048			0.078		
Adjusted R Square	0.041			0.040			0.070		

Appendix 2: Multiple Regressions for Question 2 per sectors

Appendix 2.1: Agriculture & Food Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	-0.191	-0.224	0.823	0.387	0.463	0.643	-0.827	-1.008	0.314
F	23.970			31.148			33.667		
Sig.	0.000			0.000			0.000		
R Square	0.150			0.187			0.199		
Adjusted R Square	0.144			0.181			0.193		

Appendix 2.2: Energy Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	3.336	2.266	0.024	0.921	0.623	0.534	-1.587	-1.057	0.291
F	13.095			10.415			1.643		
Sig.	0.000			0.000			0.098		
R Square	0.040			0.032			0.005		
Adjusted R Square	0.037			0.029			0.002		

Appendix 2.3: Manufacturing Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	5.438	3.876	0.000	3.113	2.197	0.028	5.242	3.812	0.000
F	29.072			16.775			65.942		
Sig.	0.000			0.000			0.000		
R Square	0.038			0.022			0.082		
Adjusted R Square	0.036			0.021			0.081		

Appendix 2.4: Banks & Financial Services Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	-8.819	-15.025	0.000	-2.163	-3.505	0.000	-6.778	-11.211	0.000
F	60.392			18.562			37.675		
Sig.	0.000			0.000			0.000		
R Square	0.131			0.044			0.086		
Adjusted R Square	0.129			0.042			0.084		

Appendix 2.5: Retail Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	2.810	6.506	0.000	1.332	3.143	0.002	1.998	4.678	0.000
F	21.564			36.037			32.598		
Sig.	0.000			0.000			0.000		
R Square	0.055			0.089			0.082		
Adjusted R Square	0.053			0.087			0.079		

Appendix 2.6: Telecommunication & Information Technology Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	-0.349	-0.806	0.420	-0.208	-0.478	0.633	-1.382	-3.169	0.002
F	6.300			5.157			4.507		
Sig.	0.000			0.000			0.000		
R Square	0.038			0.031			0.028		
Adjusted R Square	0.032			0.025			0.022		

Appendix 2.7: Tourism Sector

Variables	ROA Model			ROE Model			TQ Model		
	β	t-Statistic	Sig.	β	t-Statistic	Sig.	β	t-Statistic	Sig.
<i>INDEPENDENT & MODERATOR INTERACTION</i>									
ESG*SRL	2.614	2.361	0.018	1.483	1.334	0.183	6.163	5.598	0.000
F	8.268			8.034			11.340		
Sig.	0.000			0.000			0.000		
R Square	0.061			0.060			0.084		
Adjusted R Square	0.054			0.053			0.076		

Appendix 3: Firms Used in the Thesis Sample

No.	Firm Name	Country	No.	Firm Name	Country
1	BBVA BANCO FRANC	Argentina	39	ORIGIN ENERGY	Australia
2	BANCO MACRO SA-B	Argentina	40	SANDFIRE RESOURC	Australia
3	TRANSPORT GAS-B	Argentina	41	CROMWELL PROPERT	Australia
4	SAN MIGUEL-B	Argentina	42	AUST ETHICAL INV	Australia
5	GAS NATUR BAN-B	Argentina	43	TREASURY WINE ES	Australia
6	GRUPO GALICIA-B	Argentina	44	MMG	Australia
7	WOODSIDE PETRO	Australia	45	SPARK INFRASTRUC	Australia
8	OIL SEARCH LTD	Australia	46	INFIGEN ENERGY	Australia
9	BHP BILLITON LTD	Australia	47	HEALTHSCOPE LTD	Australia
10	NATL AUST BANK	Australia	48	NEXTDC LTD	Australia
11	SOUTH32 LTD	Australia	49	ABACUS PROPERTY	Australia
12	WESTPAC BANKING	Australia	50	LINK ADMINISTRAT	Australia
13	STOCKLAND	Australia	51	DULUXGROUP LTD	Australia
14	TELSTRA CORP	Australia	52	ALUMINA LTD	Australia
15	AUST AND NZ BANK	Australia	53	BRAMBLES LTD	Australia
16	DEXUS	Australia	54	GRAINCORP LTD-A	Australia
17	WESFARMERS LTD	Australia	55	WHITEHAVEN COAL	Australia
18	CIMIC GROUP LTD	Australia	56	AMP LTD	Australia
19	OCEANAGOLD CORP	Australia	57	CALTEX AUST LTD	Australia
20	OZ MINERALS LTD	Australia	58	ALS LTD	Australia
21	COMMONW BK AUSTR	Australia	59	ASX LTD	Australia
22	SYDNEY AIRPORT	Australia	60	SARACEN MIN HLDG	Australia
23	WOOLWORTHS GROUP	Australia	61	ASALEO CARE LTD	Australia
24	ORICA LTD	Australia	62	CHARTER HALL RET	Australia
25	GPT GROUP	Australia	63	SONIC HEALTHCARE	Australia
26	MACQUARIE GROUP	Australia	64	GROWTHPOINT PROP	Australia
27	BLUESCOPE STEEL	Australia	65	AUSNET SERVICES	Australia
28	BORAL LTD	Australia	66	NATIONAL STORAGE	Australia
29	MIRVAC GROUP	Australia	67	BINGO INDUSTRIES	Australia
30	QBE INSURANCE	Australia	68	MEDIBANK PRIVATE	Australia
31	ILUKA RESOURCES	Australia	69	MC MINING LTD	Australia
32	COCA-COLA AMATIL	Australia	70	HIGHFIELD RESOUR	Australia
33	INCITEC PIVOT LT	Australia	71	SELECT HARVESTS	Australia
34	INSURANCE AUSTR	Australia	72	MOUNT GIBSON IRO	Australia
35	SCENTRE GROUP	Australia	73	SENEX ENERGY LTD	Australia
36	FORTESCUE METALS	Australia	74	OOH!MEDIA LTD	Australia
37	CHALLENGER LTD	Australia	75	BENDIGO AND ADEL	Australia
38	ST BARBARA LTD	Australia	76	ANSELL LTD	Australia

No.	Firm Name	Country	No.	Firm Name	Country
77	JB HI-FI LTD	Australia	115	IRESS LTD	Australia
78	REGIS HEALTHCARE	Australia	116	BREVILLE GROUP L	Australia
79	ADELAIDE BRI LTD	Australia	117	JAPARA HEALTHCAR	Australia
80	PMP LTD	Australia	118	SYRAH RESOURCES	Australia
81	CLEANAWAY WASTE	Australia	119	SIGMA HEALTHCARE	Australia
82	HARVEY NORMAN	Australia	120	INVOCARE LTD	Australia
83	EMECO HOLDINGS L	Australia	121	CREDIT CORP GRP	Australia
84	COMPUTERSHARE LT	Australia	122	NIB HOLDINGS LTD	Australia
85	FAIRFAX MEDIA LT	Australia	123	NRW HOLDINGS LTD	Australia
86	BWP TRUST	Australia	124	COSTA GROUP HOLD	Australia
87	METCASH LTD	Australia	125	AVEO GROUP	Australia
88	APA GROUP	Australia	126	SALMAT LTD	Australia
89	ORORA LTD	Australia	127	CABCHARGE AUSTR	Australia
90	WISETECH GLOBAL	Australia	128	OMV AG	Austria
91	INGHAMS GROUP LT	Australia	129	EVN AG	Austria
92	QUBE HOLDINGS LT	Australia	130	VERBUND AG	Austria
93	ERM POWER LTD	Australia	131	ERSTE GROUP BANK	Austria
94	ATLAS ARTERIA	Australia	132	PALFINGER AG	Austria
95	COCHLEAR LTD	Australia	133	ZUMTOBEL GROUP A	Austria
96	PENDAL GROUP LTD	Australia	134	ANDRITZ AG	Austria
97	MAGELLAN FIN GRP	Australia	135	UNIQA INSURANCE	Austria
98	AUTOMOTIVE HOLDI	Australia	136	AGRANA BETEIL	Austria
99	GOODMAN GROUP	Australia	137	AT&S	Austria
100	FLIGHT CENTRE TR	Australia	138	SW UMWELTTECHNIK	Austria
101	KAROON GAS AUSTR	Australia	139	VIENNA INSURANCE	Austria
102	SEVEN WEST MEDIA	Australia	140	SCHOELLER-BLECKM	Austria
103	SEEK LTD	Australia	141	CA IMMOBILIEN AN	Austria
104	PREMIER INV LTD	Australia	142	IMMOFINANZ AG	Austria
105	MEDUSA MINING	Australia	143	BBK BSC	Bahrain
106	MACMAHON HLDGS	Australia	144	AHLI UNITED BANK	Bahrain
107	LIQUEFIED NATURA	Australia	145	IDLC FINANCE	Bangladesh
108	DECMIL GROUP LTD	Australia	146	GRAMEENPHONE LTD	Bangladesh
109	CARSALES.COM LTD	Australia	147	SOLVAY SA-A	Belgium
110	WHITE ENERGY CO	Australia	148	NYRSTAR NV	Belgium
111	ARQ GROUP LTD	Australia	149	UMICORE	Belgium
112	PRIMARY HEALTH	Australia	150	COFINIMMO	Belgium
113	GREENCROSS LTD	Australia	151	PROXIMUS	Belgium
114	GWA GROUP LTD	Australia	152	BEFIMMO	Belgium

No.	Firm Name	Country	No.	Firm Name	Country
153	BEKAERT NV	Belgium	192	USIMINAS-PREF A	Brazil
154	ANHEUSER-BUSCH I	Belgium	193	VALE SA	Brazil
155	KBC GROUP	Belgium	194	BANCO SANTA-UNIT	Brazil
156	RADISSON HOSPITA	Belgium	195	OI SA-PREF	Brazil
157	D'IETEREN	Belgium	196	CPFL ENERGIA SA	Brazil
158	EURONAV NV	Belgium	197	CIELO SA	Brazil
159	COLRUYT SA	Belgium	198	JBS	Brazil
160	GROUPE BRUX LAMB	Belgium	199	B3 SA	Brazil
161	ACKERMANS & VAN	Belgium	200	CPFL ENERGIAS RE	Brazil
162	FLUXYS BELGIUM	Belgium	201	EVEN	Brazil
163	AGEAS	Belgium	202	SANEPAR-PREF	Brazil
164	WILSON SONS-BDR	Bermuda	203	M DIAS BRANCO SA	Brazil
165	HISCOX LTD	Bermuda	204	BRADESCO SA-PREF	Brazil
166	WILDERNESS HOLDI	Botswana	205	SABESP	Brazil
167	ENERGIAS DO BRAS	Brazil	206	ELETRORBRAS	Brazil
168	FIBRIA CELULOSE	Brazil	207	LOJAS AMERIC-PRF	Brazil
169	COPEL-PREF B	Brazil	208	RUMO SA	Brazil
170	PETROBRAS-PREF	Brazil	209	MRV ENGENHARIA	Brazil
171	ITAU UNIBAN-PREF	Brazil	210	SANTOS BRP-ORD	Brazil
172	ENGIE BR ENER SA	Brazil	211	WEG SA	Brazil
173	TIM PART	Brazil	212	CELGPAR	Brazil
174	EMBRAER	Brazil	213	CELPA-PREF A	Brazil
175	CEMIG-PREF	Brazil	214	SAO MARTINHO	Brazil
176	NATURA	Brazil	215	ULTRAPAR	Brazil
177	DURATEX SA	Brazil	216	CEEE-GT	Brazil
178	KLABIN SA-PREF	Brazil	217	BIOSEV SA	Brazil
179	FLEURY SA	Brazil	218	ODONTOPREV	Brazil
180	CIA DE TRANSMISA	Brazil	219	HYPERA SA	Brazil
181	SUZANO PAPEL-ORD	Brazil	220	ENERGISA	Brazil
182	CCR SA	Brazil	221	MULTIPLAN	Brazil
183	SONAE SIERRA BRA	Brazil	222	B2W CIA DIGITAL	Brazil
184	SUL AMERICA-UNIT	Brazil	223	MINERVA SA	Brazil
185	TELEF BRASI-PREF	Brazil	224	CIA HERING	Brazil
186	CELULOSE IRANI-P	Brazil	225	SID NACIONAL	Brazil
187	LOJAS RENNER SA	Brazil	226	ESTACIO	Brazil
188	BANCO DO BRASIL	Brazil	227	KROTON	Brazil
189	PAO ACUCA-PREF	Brazil	228	PORTO SEGURO SA	Brazil
190	ECORODOVIAS	Brazil	229	AMAZONIA	Brazil
191	BRASKEM-PREF A	Brazil	230	MET GERDAU-PREF	Brazil

No.	Firm Name	Country	No.	Firm Name	Country
231	AMBEV SA	Brazil	270	FIRST CAP REALTY	Canada
232	MAGAZINE LUIZA S	Brazil	271	TRANSCONTINENT-A	Canada
233	COSAN SA	Brazil	272	WEST FRASER TIMB	Canada
234	GERDAU-PREF	Brazil	273	DETOUR GOLD CORP	Canada
235	POSITIVO TECNOLO	Brazil	274	PAN AMER SILVER	Canada
236	TRANSM ALIAN-UNI	Brazil	275	TRANSCANADA CORP	Canada
237	LOCALIZA	Brazil	276	BLACKBERRY LTD	Canada
238	BB SEGURIDADE PA	Brazil	277	ATCO LTD-CLASS I	Canada
239	CEG	Brazil	278	MANULIFE FIN	Canada
240	ITAUSA-PREF	Brazil	279	CONTINENTAL GOLD	Canada
241	ALPARGATAS-PREF	Brazil	280	TERANGA GOLD	Canada
242	ITAUTEC SA	Brazil	281	LOBLAW COS LTD	Canada
243	TECK RESOURCES-B	Canada	282	METRO INC	Canada
244	BCE INC	Canada	283	AVALON ADVANCED	Canada
245	KINROSS GOLD	Canada	284	CHINA GOLD INTER	Canada
246	GOLDCORP INC	Canada	285	NATL BK CANADA	Canada
247	AGNICO EAGLE MIN	Canada	286	INTACT FINANCIAL	Canada
248	WSP GLOBAL INC	Canada	287	GOLDEN STAR RES	Canada
249	BARRICK GOLD CRP	Canada	288	GREAT-WEST LIFEC	Canada
250	TRANSALTA CORP	Canada	289	ECOSYNTHETIX INC	Canada
251	TORONTO-DOM BANK	Canada	290	MAGNA INTL	Canada
252	TELUS CORP	Canada	291	JAGUAR MINING IN	Canada
253	ENERPLUS CORP	Canada	292	DOLLARAMA INC	Canada
254	ROGERS COMMUNI-B	Canada	293	INTERFOR CORP	Canada
255	LUNDIN MINING CO	Canada	294	LINAMAR CORP	Canada
256	GILDAN ACTIVEWEA	Canada	295	FINNING INTL INC	Canada
257	PAREX RESOURCES	Canada	296	ALGONQUIN POWER	Canada
258	BOMBARDIER INC-B	Canada	297	VALENER INC	Canada
259	CAMECO CORP	Canada	298	TRANSALTA RENEWA	Canada
260	HUBBAY MINERALS	Canada	299	CCL INDS B	Canada
261	BANK OF NOVA SCO	Canada	300	TOROMONT INDS	Canada
262	IAMGOLD CORP	Canada	301	PEMBINA PIPELINE	Canada
263	CAE INC	Canada	302	AECON GROUP INC	Canada
264	ELDORADO GOLD	Canada	303	RITCHIE BROS	Canada
265	SHERRITT INTL	Canada	304	BROOKFIELD ASS-A	Canada
266	ENDEAVOUR SILVER	Canada	305	SUPERIOR PLUS CO	Canada
267	SUN LIFE FINANCI	Canada	306	QUEBECOR INC-B	Canada
268	CAN NATURAL RES	Canada	307	PARKLAND FUEL CO	Canada
269	LUCARA DIAMOND	Canada	308	TURQUOISE HILL R	Canada

No.	Firm Name	Country	No.	Firm Name	Country
309	NFI GROUP INC	Canada	348	SHENMA INDUS C-A	China
310	ALIMEN COUCHE-B	Canada	349	CMOC-H	China
311	MIDAS GOLD CORP	Canada	350	WEST CHINA CEMEN	China
312	NORBORD INC	Canada	351	CHINA VANKE-H	China
313	EMPIRE CO LTD A	Canada	352	TCL CORP-A	China
314	SSR MINING INC	Canada	353	BEIJING CAP AI-H	China
315	PRETIUM RESOURCE	Canada	354	YANZHOU COAL-H	China
316	CAN WESTERN BANK	Canada	355	SINOPEC CORP-H	China
317	SEVEN GENERATI-A	Canada	356	CHINA COM CONS-H	China
318	SECURE ENERGY SE	Canada	357	CHINA STATE -A	China
319	SUNOPTA INC	Canada	358	SINOTRUK HK LTD	China
320	COLBUN SA	Chile	359	CHINA LIFE-H	China
321	AGUAS ANDINAS-A	Chile	360	BBMG CORP-H	China
322	CERVEZAS	Chile	361	SH INTL PORT -A	China
323	LATAM AIRLINES	Chile	362	ZHEJIANG HISUN-A	China
324	SOQUIMICH-B	Chile	363	CCB-H	China
325	ANDINA-A PREF	Chile	364	BOE TECHNOLOGY-B	China
326	CMPC	Chile	365	CHINA MERCH BK-A	China
327	ENEL DISTRIBUCIO	Chile	366	PETROCHINA-H	China
328	PARQUE ARAUCO	Chile	367	SHANXI TAIGANG-A	China
329	BANCO SANTANDER	Chile	368	CHINA UNITED-A	China
330	FALABELLA	Chile	369	EVERBRIG SEC -A	China
331	ENEL GENERACION	Chile	370	LIVZON PHARM-A	China
332	ENGIE ENERGIA CH	Chile	371	CHINA SHINWAY	China
333	GEOPARK LTD	Chile	372	FIBERHOME TELE-A	China
334	LENOVO GROUP	China	373	SHANGHAI ELECT-A	China
335	SHANGHAI FOSUN-A	China	374	ALUMINUM CORP-H	China
336	CHINA PACIFIC-A	China	375	GUOTAI JUNAN S-A	China
337	LOMON BILLIONS-A	China	376	GF SECURITIES-A	China
338	KINGDOM HLDG LTD	China	377	LIUZHOU IRON-A	China
339	CNOOC	China	378	CHINA INTL MAR-A	China
340	GEELY AUTOMOBILE	China	379	TENCENT	China
341	INNER MONGOLIA-B	China	380	BEIJING SANYUA-A	China
342	COSCO SHIP ENG-H	China	381	SINOPEC SHANG-A	China
343	CSSC OFFSHORE -A	China	382	CHINA RAIL GR-H	China
344	SMIC	China	383	BAOSHAN IRON &-A	China
345	UNIVERSAL SCIE-A	China	384	CHINA RAIL CN-H	China
346	ZIJIN MINING-H	China	385	CRRC CORP LTD-A	China
347	BYD CO LTD-H	China	386	DONGYUE GROUP	China

No.	Firm Name	Country	No.	Firm Name	Country
387	PANGANG GROUP -A	China	425	CHINA WUJI CO-A	China
388	SDIC POWER HOL-A	China	426	GUANGZHOU PEAR-A	China
389	HUATAI SECURIT-A	China	427	CHINA MINSHENG-A	China
390	MAYINGLONG PHA-A	China	428	BANK OF CHINA-H	China
391	SHANG HIGHLY-B	China	429	JIANGLING MOTO-B	China
392	SHANG CHLOR-B	China	430	ZHEJIANG HAILI-A	China
393	UNI-PRESIDENT CH	China	431	SAIC MOTOR-A	China
394	MAANSHAN IRON-A	China	432	INNER MONGOLIA-A	China
395	HAITONG SECURI-A	China	433	AECC AVIATION-A	China
396	INNER MONG YIL-A	China	434	SICHUAN KELUN-A	China
397	CHINA YANGTZE-A	China	435	SHANG NEW WORL-A	China
398	SHANGHAI JAHWA-A	China	436	SHANGHAI JINFE-A	China
399	ASIA CEMENT CH	China	437	BANK OF SHANGH-A	China
400	ABC-H	China	438	CHINA NATIONAL-A	China
401	LOGAN PPT	China	439	GUANGZHOU DEVE-A	China
402	ZHEJIANG HUAYO-A	China	440	NANJING IRON-A	China
403	CHINA COAL ENE-H	China	441	SHANGHAI ZHIXI-A	China
404	TIBET CHEEZHEN-A	China	442	ZHEJIANG JUHUA-A	China
405	SHANGHAI PUDON-A	China	443	SHANG WAIGAO-B	China
406	ANGANG STEEL-A	China	444	CHINA NUCLEAR -A	China
407	YUNNAN BAIYAO-A	China	445	GUANGZHOU AUTO-H	China
408	METALLURGICAL-A	China	446	HUAYU AUTOM-A	China
409	YUNNAN TIN CO-A	China	447	PING AN BANK-A	China
410	JOINTOWN PHARM-A	China	448	BEIJING ORIENT-A	China
411	HAINAN AIRLINE-B	China	449	YUNNAN COAL EN-A	China
412	SHANG PUDONG-A	China	450	KANGMEI PHARMA-A	China
413	TIANMA-A	China	451	CITIC SECURITI-A	China
414	SHANDONG HUMON-A	China	452	SHANG BELLING-A	China
415	CHINA GEZHOUBA-A	China	453	CHINA FORTUNE-A	China
416	GOLDCARD SMART G	China	454	GD POWER DEVEL-A	China
417	SUNING.COM CO-A	China	455	SHANGHAI SHYND-A	China
418	DONGFENG AUTO-A	China	456	BRIGHT DAIRY-A	China
419	GREAT WALL MOT-H	China	457	SINOCHEM INTL-A	China
420	GRANDBLUE ENV-A	China	458	HUADONG MEDICI-A	China
421	GEM CO LTD-A	China	459	CHINA NATIONAL-A	China
422	IND & COMM BK-A	China	460	SHENZHEN EXPRE-A	China
423	TINGYI	China	461	INDUSTRIAL BAN-A	China
424	ZHEJIANGEXPRE-H	China	462	POWER CONSTRUC-A	China

No.	Firm Name	Country	No.	Firm Name	Country
463	SHANG JINQ EXP-B	China	501	LIMIN CHEMICAL-A	China
464	CHINA NATIONAL-B	China	502	FUYAO GLASS-A	China
465	TSINGTAO BREW-A	China	503	EASTERN SHENGH-A	China
466	CHINA MERCHANT-A	China	504	LUTHAI TEXTILE-B	China
467	CHINA NATL BDG-H	China	505	NEW HOPE LIUHE-A	China
468	SHENZHEN TECHA-A	China	506	ZHEJIANG CHINT-A	China
469	HAN'S LASER -A	China	507	CHONGQING CHAN-B	China
470	DYMATIC CHEMIC-A	China	508	JINGWEI TEXTIL-A	China
471	SINOTRANS AIR-A	China	509	BANK OF JIANGS-A	China
472	SHAANXI COAL I-A	China	510	CHINA MERCHANT-A	China
473	BEIJING CAP CO-A	China	511	SHANXI LU'AN -A	China
474	GREATTOWN HOLD-B	China	512	TIBET MINERAL-A	China
475	HUAFENG -A	China	513	GUANGDONG ELEC-B	China
476	HUAXIA BANK CO-A	China	514	JIANGSU YABANG-A	China
477	SHANTUI CONST-A	China	515	YUMMY TOWN	China
478	FUJIAN NANPING-A	China	516	QINGDAO HAIER-A	China
479	HENAN SHENHUO-A	China	517	SHANDONG SUN -A	China
480	CHINA HAINAN-A	China	518	LIANHE CHEMICA-A	China
481	WENS FOODSTUFFS	China	519	SHANGHAI YANHU-A	China
482	CHINA TIANYING-A	China	520	SHANGHAI STEP-A	China
483	YUNNAN COPPER-A	China	521	OCEANWIDE HOLD-A	China
484	SICHUAN HONGDA-A	China	522	CEFC ANHUI INT-A	China
485	ZHONGJIN GOLD-A	China	523	CHENGDU GUIBAO-A	China
486	BEIJING WANDON-A	China	524	FOSUN INTL	China
487	CHINA CINDA-H	China	525	SHENZEN OVERSE-A	China
488	SHENZHEN GAS -A	China	526	BEIQI FOTON-A	China
489	GUANGXI LIUGON-A	China	527	GUANGDONG TAPA-A	China
490	CHINA RAILWAY-A	China	528	YUNNAN CHIHONG-A	China
491	SHANDONG GOLD-A	China	529	BLUEFOCUS INTE-A	China
492	HUAXIN CEMENT-B	China	530	CHENGDU XINGRO-A	China
493	AECC AERO-ENGI-A	China	531	SHANDONG IRON -A	China
494	SHANGHAI YIMIN-A	China	532	FIH MOBILE LTD	China
495	NINGXIA ORIENT-A	China	533	CHINA SHIPBUIL-A	China
496	YUNNAN WENSHAN-A	China	534	XINJIANG ZHONG-A	China
497	YABAO PHARMACE-A	China	535	ZHEJIANG LONGS-A	China
498	CHINA NATIONAL-A	China	536	CHINA RESOURCE-A	China
499	SHANGHAI EVERJ-A	China	537	SHANG ZHANGJIA-A	China
500	JANGHO GROUP C-A	China	538	SEALAND SECURI-A	China

No.	Firm Name	Country	No.	Firm Name	Country
539	TIANJIN ZHONG-A	China	577	ZHEJIANG JOLLY-A	China
540	ANHUI HELI CO-A	China	578	COSCO SHIPPING-A	China
541	GCI SCIENCE-A	China	579	XINGYE LEATHER-A	China
542	ZHANGZHOU PIEN-A	China	580	OFFSHORE OIL-A	China
543	FUJIAN CEMENT-A	China	581	DAZHONG TRANS-B	China
544	PINGDINGSHAN -A	China	582	SHANGHAI ORIEN-A	China
545	LIJIANG YULONG-A	China	583	TIANQI LITHIUM-A	China
546	ANHUI SUN-CREA-A	China	584	FUJIAN SNOWMAN-A	China
547	BEIJING ORIGIN-A	China	585	TBEA CO LTD-A	China
548	LONGI GREEN EN-A	China	586	JIANGSU SHENTO-A	China
549	BROS EASTERN C-A	China	587	SHENZHEN INOVA-A	China
550	XIAMEN XGMA-A	China	588	BEIJING ORIENT-A	China
551	DATANG TELECOM-A	China	589	SANSTEEL MINGU-A	China
552	TANGSHAN JIDON-A	China	590	SHANGHAI DATUN-A	China
553	CHINA CSSC HOL-A	China	591	YANGZIJIAN SHIP	China
554	CHINA AEROSPAC-A	China	592	O-FILM TECH CO-A	China
555	DONG E-E-JIAO-A	China	593	KAILUAN ENERGY-A	China
556	COMMODITIES CI-A	China	594	SINOMACH AUTO -A	China
557	CMST DEVELOPM-A	China	595	CHINA NONFERRO-A	China
558	RONGAN PROPERT-A	China	596	BEIJING HAOHUA-A	China
559	BEIJING TIAN-A	China	597	SHANGHAI MECHA-B	China
560	CHINA GRAND AU-A	China	598	BEIJING YAN-A	China
561	GUIRENNIAO CO-A	China	599	SHANG SHENHUA -A	China
562	GANSU SHANGFEN-A	China	600	YUNNAN ALUM-A	China
563	WOLONG ELECTRI-A	China	601	GUANGHUI ENERG-A	China
564	SHANXI LANHUA-A	China	602	YTO EXPRESS GR-A	China
565	CINDA REAL EST-A	China	603	SDIC ZHONGLU-A	China
566	SHANG YUYUAN-A	China	604	MUDANJIANG HEN-A	China
567	CHANGJIANG SEC-A	China	605	DONGXU OPTOELC-B	China
568	SHAANXI INTL-A	China	606	XINJIANG JOINW-A	China
569	SHANG EAST-CHN-A	China	607	HENAN SHUAN-A	China
570	YUNNAN YUNTIAN-A	China	608	DONGJIAN ENVIR-A	China
571	ANHUI WANWEI U-A	China	609	WINTIME ENERGY-A	China
572	SHANXI XISHAN-A	China	610	MEINIAN ONEHEA-A	China
573	HUBEI ENERGY -A	China	611	YANTAI JEREH-A	China
574	AVIC JONHON OP-A	China	612	SHANGHAI GROUP-A	China
575	FUJIAN QINGSHA-A	China	613	YANTAI CHANGYU-B	China
576	SINO-PLATINUM-A	China	614	SICHUAN NIRTRO-A	China

No.	Firm Name	Country	No.	Firm Name	Country
615	KUAIJISHAN SHA-A	China	653	INNER MONGOLIA-A	China
616	MIDEA GROUP CO-A	China	654	SHENZHEN LAIBA-A	China
617	HONZ PHARMA-A	China	655	BAOJI TITANIUM-A	China
618	XINXING DUCTIL-A	China	656	XINJIANG GUANN-A	China
619	HANGZHOU ADVAN-A	China	657	KINGSWOOD ENTE-A	China
620	MINMETALS DEVE-A	China	658	BEIJING SIFANG-A	China
621	ANHUI WANTONG-A	China	659	SHANGHAI GROUN-A	China
622	BEIJING AIRPOR-A	China	660	ALPHA GROUP-A	China
623	ZHONGTIAN FINA-A	China	661	NEUSOFT CORP-A	China
624	LIAONING CHENG-A	China	662	JIANGSU CHENG-A	China
625	YUEYANG XINGCH-A	China	663	SHANGHAI HUAYI-B	China
626	SH JINJIANG IN-B	China	664	DA AN GENE CO -A	China
627	ZHEJIANG XINAN-A	China	665	QINGDAO HANHE-A	China
628	UNISPLENDOUR C-A	China	666	GUANGBO GROUP -A	China
629	WHIRLPOOL CHIN-A	China	667	RISESUN REAL -A	China
630	FUJIAN MINDONG-A	China	668	ZHONGSHAN BROA-A	China
631	GOERTEK INC -A	China	669	DAQIN RAILWAY -A	China
632	YONYOU NETWORK-A	China	670	HUNAN VALIN ST-A	China
633	RIZHAO PORT -A	China	671	SANY HEAVY IND-A	China
634	SHENZHEN TAGEN-A	China	672	CITIC GUOAN-A	China
635	CHINA SHIPBUIL-A	China	673	MEIHUA HOLDING-A	China
636	BEIJING CISRI-A	China	674	HENGTONG OPTIC-A	China
637	INZONE GROUP-A	China	675	BAONENGYUAN-A	China
638	GUOSEN SECURIT-A	China	676	SUZHOU GOLD -A	China
639	WESTERN SECURI-A	China	677	SHANG BAILIAN -B	China
640	PACIFIC SECURI-A	China	678	CHINA AVIONICS-A	China
641	CSPC PHARMACEUTI	China	679	CHINA CAMC -A	China
642	SHANGHAI SHIBE-B	China	680	WEIFU HIGH TEC-B	China
643	ZHANGZIDAO GRO-A	China	681	NANFENG VENT-A	China
644	GUANGDONG VANW-A	China	682	JIANGSU HENGRU-A	China
645	SHANGHAI AEROS-A	China	683	SHANG BAOSIGHT-B	China
646	HUAFU FASHION-A	China	684	HONGDA HIGH-TE-A	China
647	TANGSHAN PORT-A	China	685	HENAN YUGUANG-A	China
648	GUIZHOU SALVAG-A	China	686	XINYU IRON & S-A	China
649	ZHEJIANG JINGG-A	China	687	SHANGHAI INDUS-A	China
650	LEGEND HOLDING-H	China	688	ZHEJIANG WEIXI-A	China
651	ZHEJIANG DINGL-A	China	689	FUJIAN SANMU G-A	China
652	LAOBAIXING PHA-A	China	690	WULIANGYE YIBI-A	China

No.	Firm Name	Country	No.	Firm Name	Country
691	TIANJIN TIANYA-A	China	729	GUANGZHOU HAIG-A	China
692	WASU MEDIA HOL-A	China	730	SHANDONG HUATA-A	China
693	ANYUAN COAL IN-A	China	731	POLY DEVELOPME-A	China
694	FUJIAN STAR-A	China	732	GUIZHOU QIANYU-A	China
695	AIER EYE HSPTL-A	China	733	ZHEJIANG WEIXI-A	China
696	LIER CHEMICAL -A	China	734	BEIJING GEOENV-A	China
697	FUJIAN RONGJI-A	China	735	MESNAC CO LTD -A	China
698	CHONGQING GAS-A	China	736	PHENIX OPTIC-A	China
699	SGIS SONGSHAN -A	China	737	TASLY PHARMAC-A	China
700	SHENZHEN CLOU-A	China	738	XIAMEN XINDECO-A	China
701	AEOLUS TYRE CO-A	China	739	YUNNAN YUNWEI-A	China
702	GUANGXI GUIDON-A	China	740	TIANJIN PORT -A	China
703	HUADIAN ENERGY-B	China	741	CHINA RAILWAY -A	China
704	CHINA NORTHERN-A	China	742	ZHENGZHOU YUT-A	China
705	HUAREN PHARMAC-A	China	743	ZHUZHOU KIBING-A	China
706	ZHEJIANG DAHUA-A	China	744	LIAONING SG AU-A	China
707	CHANGYUAN GRO-A	China	745	XIAMEN ITG GRO-A	China
708	HUBEI XINYANG -A	China	746	FAW CAR CO LTD-A	China
709	BEIJING JINGNE-A	China	747	JIANGZHONG PHM-A	China
710	LINZHOU HEAVY-A	China	748	CITYCHAMP DART-A	China
711	NINGBO THERMAL-A	China	749	SHENERGY CO LT-A	China
712	FUJIAN FUNENG -A	China	750	SHANGHAI DAZHO-A	China
713	XIAMEN C & D-A	China	751	SHANG LUJIAZUI-B	China
714	BANK OF HANGZH-A	China	752	KINGENTA ECOLO-A	China
715	SHENWAN HONGYU-A	China	753	HUBEI KAILE SC-A	China
716	INDUSTRIAL-A	China	754	GUANGZHOU GUAN-A	China
717	GUOYUAN SECURI-A	China	755	GUODIAN CHANGY-A	China
718	SINOLINK SECUR-A	China	756	FUJIAN GREEN-A	China
719	BANK OF BEIJIN-A	China	757	HUNAN GOLD COR-A	China
720	SEAGULL KITCH -A	China	758	NINGXIA YOUNGL-A	China
721	ZHEJIANG YASHA-A	China	759	MARKOR INTL HO-A	China
722	HONGBAOLI GROU-A	China	760	XI'AN SHAANGU-A	China
723	BEIJING BEILU-A	China	761	JIANGSU HIGH H-A	China
724	NORINCO INTL -A	China	762	JINXI AXLE -A	China
725	SHANDONG CHEN-B	China	763	CHINA RESOURCE-A	China
726	ZHEJIANG GUYU-A	China	764	KUNMING YUNNEI-A	China
727	WESTERN MINING-A	China	765	JILIN SINO-MIC-A	China
728	QIAQIA FOOD CO-A	China	766	IFLYTEK CO LTD-A	China

No.	Firm Name	Country	No.	Firm Name	Country
767	HEILONGJIANG-A	China	805	ANGEL YEAST CO-A	China
768	CHINA SOUTH PU-A	China	806	CHINA ANIMAL-A	China
769	ENN ECOLOGICAL-A	China	807	CULTURAL INVES-A	China
770	YANGQUAN COAL -A	China	808	HEILONGJIANG I-A	China
771	SHEDE SPIRITS -A	China	809	SHANGHAI SMI H-A	China
772	CSG HOLDING CO-B	China	810	NARI TECHNOLOG-A	China
773	ZHEJIANG WEIMI-A	China	811	ZHEJIANG MEDI-A	China
774	CHONGQING SOKO-A	China	812	JIANGSU JIANGN-A	China
775	XINJIANG XUEFE-A	China	813	YONGHUI SUPERS-A	China
776	ANHUI FENGXING-A	China	814	SHENZHEN BATIA-A	China
777	CHENZHOU CITY-A	China	815	HESTEEL CO LTD-A	China
778	SUNTRONT TECHO-A	China	816	YANAN BICON -A	China
779	SIASUN ROBOT-A	China	817	ZHEJIANG HANGM-A	China
780	NINGBO ZHOUSHA-A	China	818	GEMDALE CORP-A	China
781	SHANDONG BOHUI-A	China	819	WANHUA CHEMIC-A	China
782	CHINA GREATWAL-A	China	820	SHENZHEN KAIFA-A	China
783	CPT TECHNOLOGY-A	China	821	HUBEI XINGFA-A	China
784	GUANGFU HOLDIN-A	China	822	SICHUAN SWELL-A	China
785	HENAN DAYOU-A	China	823	HENAN REBECCA -A	China
786	JINZHOU PORT-B	China	824	AVIC AIRCRAFT-A	China
787	ZHONGFU STRAIT-A	China	825	CHINA JUSHI CO-A	China
788	LUOYANG GLASS-A	China	826	COFCO TUNHE CO-A	China
789	SHANGHAI DIESE-B	China	827	FOSHAN ELEC-B	China
790	SHANG JIELONG-A	China	828	CQ PHARMACEUTI-A	China
791	SICHUAN CHANG-A	China	829	SHANGHAI KAIBA-A	China
792	SHIJIAZHUANG Y-A	China	830	FUJIAN YUANLI-A	China
793	MINTH GROUP LTD	China	831	CHONGYI ZHANG-A	China
794	SUNA CO LTD-A	China	832	NINGBO YUNSHEN-A	China
795	GUANGXI GUIGAN-A	China	833	TAIJI COMPUTER-A	China
796	BEIJING TONGRE-A	China	834	BAODING TIANWE-A	China
797	ZHEJIANG HUAHA-A	China	835	HANGZHOU STEAM-B	China
798	SHENYANG JINSH-A	China	836	SHANTOU DONGFE-A	China
799	NINGBO SHANSHA-A	China	837	HUANGSHAN NOVE-A	China
800	XINING SPEC ST-A	China	838	HENAN ZHONGYUA-A	China
801	RAINBOW DEPART-A	China	839	SHANDONG HI-SP-A	China
802	HUMANWELL HEAL-A	China	840	FUJIAN LONGXI-A	China
803	WANGFUJING GRO-A	China	841	ZHEJIANG YANKO-A	China
804	JONJEE HIGH-TE-A	China	842	SHENZHEN WOER -A	China

No.	Firm Name	Country	No.	Firm Name	Country
843	FUJIAN DONGBAI-A	China	881	SHANDONG JINLI-A	China
844	JIANGXI CHANGY-A	China	882	LIANYUNGANG -A	China
845	FUJIAN LONGKIN-A	China	883	GRINM ADVANCE-A	China
846	SUZHOU ANJIE T-A	China	884	JIANGSU YANGHE-A	China
847	NUODE INVEST-A	China	885	KEDA CLEAN ENE-A	China
848	SHENGYI TECH C-A	China	886	INSPUR ELECTRO-A	China
849	GREE ELECTRIC-A	China	887	NINGBO UNITED-A	China
850	HENAN ZHONGFU-A	China	888	WUCHAN ZHONGDA-A	China
851	BEIJING ELECT-A	China	889	TIANJIN BENEFO-A	China
852	GUIZHOU RED ST-A	China	890	TANGSHAN SANYO-A	China
853	DENGHAI SEEDS -A	China	891	JIANGSU YANGNO-A	China
854	SAILUN GROUP - A	China	892	SOOCHOW SECURI-A	China
855	HANGZHOU HIKVI-A	China	893	DONGXING SECUR-A	China
856	GUIZHOU GUIHAN-A	China	894	FIRST CAPITAL -A	China
857	XINJIANG TIAN-A	China	895	ECOPETROL	Colombia
858	NEWAY VALVE SU-A	China	896	PROMIGAS SA ESP	Colombia
859	MCC MEILI CLOU-A	China	897	BANCOLOMBIA SA	Colombia
860	HENGDIAN DMEGC-A	China	898	CEMEX LATAM HOLD	Colombia
861	SUZHOU VICTORY-A	China	899	EMP TELECOM BOGO	Colombia
862	JIANGSU LIANFA-A	China	900	SURAMERICANA	Colombia
863	SHENZ AGRICULT-A	China	901	GRUPO NUTRESA SA	Colombia
864	TAHOE GROUP CO-A	China	902	ISA SA	Colombia
865	JINDUICHENG -A	China	903	BANCO DAVIVIENDA	Colombia
866	BEIJING ARITIM-A	China	904	GRUPO ENERGIA BO	Colombia
867	WOLONG REAL ES-A	China	905	GRUPO ARGOS SA	Colombia
868	QINGDAO EAST-A	China	906	GRUPO BOLIVAR SA	Colombia
869	FAR EAST SMART-A	China	907	ALMACENES EXITO	Colombia
870	VATTI CORP LTD-A	China	908	BV COLOMBIA	Colombia
871	BEIJING DYNAMI-A	China	909	MINEROS SA	Colombia
872	NORTH NAVIGATI-A	China	910	PROTECCION/COLOM	Colombia
873	ZOOMLION HEAVY-A	China	911	AD PLASTIK DD	Croatia
874	SINOMA SCIENCE-A	China	912	INA INDUSTRIJA	Croatia
875	TOP ENERGY-A	China	913	HRVATSKI TELEKOM	Croatia
876	TONGLING NONFE-A	China	914	KONCAR-ELEKTOIN	Croatia
877	BEIJING ZHONGK-A	China	915	CEZ AS	Czech Republic
878	LESHAN ELEC PO-A	China	916	KOMERCNI BANKA	Czech Republic
879	SHANG TUNNEL-A	China	917	ORSTED A/S	Denmark
880	XCMG CONSTRUCT-A	China	918	NOVOZYMES-B SHS	Denmark

No.	Firm Name	Country	No.	Firm Name	Country
919	CARLSBERG-B	Denmark	957	TECHNOPOLIS OYJ	Finland
920	DANSKE BANK A/S	Denmark	958	ELISA OYJ	Finland
921	VESTAS WIND SYST	Denmark	959	CARGOTEC OYJ-B	Finland
922	KOBENHAVNS LUFTH	Denmark	960	TIETO OYJ	Finland
923	AP MOLLER-B	Denmark	961	CRAMO OYJ	Finland
924	ROCKWOOL INTL-B	Denmark	962	METSA BOARD OYJ	Finland
925	NOVO NORDISK-B	Denmark	963	NORDEA BANK ABP	Finland
926	TDC A/S	Denmark	964	LASSILA & TIKAN	Finland
927	D/S NORDEN	Denmark	965	MARIMEKKO OYJ	Finland
928	H LUNDBECK A/S	Denmark	966	CAVERION OYJ	Finland
929	ALK-ABELLO A/S	Denmark	967	AKTIA BANK OYJ	Finland
930	FLSMIDTH	Denmark	968	ATRIA OYJ	Finland
931	TOPDANMARK A/S	Denmark	969	SANOMA OYJ	Finland
932	SYDBANK	Denmark	970	ORIOLA CORP - B	Finland
933	JYSKE BANK-REG	Denmark	971	RAPALA VMC OYJ	Finland
934	NKT A/S	Denmark	972	YIT OYJ	Finland
935	GABRIEL HLDG	Denmark	973	FISKARS OYJ	Finland
936	GN STORE NORD	Denmark	974	COMPONENTA OYJ	Finland
937	BRODRENE HARTMAN	Denmark	975	SUOMINEN OYJ	Finland
938	GENMAB A/S	Denmark	976	TULIKIVI OYJ-A S	Finland
939	AS TALLINNA VESI	Estonia	977	VALEO SA	France
940	TALLINK GRUPP	Estonia	978	SCHNEIDER ELECTR	France
941	FORTUM OYJ	Finland	979	SAINT GOBAIN	France
942	STORA ENSO OYJ-R	Finland	980	KERING	France
943	KEMIRA OYJ	Finland	981	TOTAL SA	France
944	NOKIA OYJ	Finland	982	PEUGEOT SA	France
945	WARTSILA OYJ ABP	Finland	983	SANOFI	France
946	ORION OYJ-CL B	Finland	984	SOC GENERALE SA	France
947	OUTOKUMPU OYJ	Finland	985	EURAZEO SE	France
948	VALMET OYJ	Finland	986	LVMH MOET HENNE	France
949	NESTE OYJ	Finland	987	KLEPIERRE	France
950	KONE OYJ-B	Finland	988	VALLOUREC	France
951	UPM-KYMMENE OYJ	Finland	989	CNP ASSURANCES	France
952	KESKO OYJ-B	Finland	990	IMERYS SA	France
953	METSO OYJ	Finland	991	RENAULT SA	France
954	VAISALA OYJ-A SH	Finland	992	ESSILORLUXOTTICA	France
955	CITYCON OYJ	Finland	993	L'OREAL	France
956	FINNAIR OYJ	Finland	994	JCDECAUX SA	France

No.	Firm Name	Country	No.	Firm Name	Country
995	ARKEMA	France	1033	SOPRA STERIA GRO	France
996	EDF	France	1034	CAPGEMINI SE	France
997	PLASTIC OMNIUM	France	1035	RALLYE SA	France
998	ENGIE	France	1036	AREVA	France
999	SEB SA	France	1037	VICAT	France
1000	BNP PARIBAS	France	1038	AMUNDI SA	France
1001	DANONE	France	1039	SAFRAN SA	France
1002	REXEL SA	France	1040	GECINA SA	France
1003	CHRISTIAN DIOR	France	1041	WORLDLINE	France
1004	VIVENDI	France	1042	SECHE ENVIRONNEM	France
1005	CREDIT AGRICOLE	France	1043	SCOR SE	France
1006	REMY COINTREAU	France	1044	ACCOR SA	France
1007	NEXANS SA	France	1045	BOUYGUES SA	France
1008	THALES SA	France	1046	BIGBEN INTERACTI	France
1009	NATIXIS	France	1047	CARREFOUR SA	France
1010	BOLLORE	France	1048	RUBIS	France
1011	SARTORIUS STEDIM	France	1049	VILMORIN & CIE	France
1012	TELEVISION FRANC	France	1050	CIE DES ALPES	France
1013	ERAMET	France	1051	CASINO GUICHARD	France
1014	AIR LIQUIDE SA	France	1052	COLAS SA	France
1015	VINCI SA	France	1053	MANUTAN INTERNAT	France
1016	ICADE	France	1054	LATECOERE	France
1017	BONDUELLE SCA	France	1055	ASSYSTEM	France
1018	FONCIERE LYONN	France	1056	HERMES INTL	France
1019	CNIM	France	1057	BUREAU VERITAS S	France
1020	INGENICO GROUP	France	1058	AFFINE	France
1021	PUBLICIS GROUPE	France	1059	BOURBON CORP	France
1022	EDENRED	France	1060	ILIAD SA	France
1023	AXA	France	1061	ELIOR GROUP	France
1024	MICHELIN	France	1062	EUTELSAT COMMUNI	France
1025	AIRBUS SE	France	1063	WENDEL	France
1026	ATOS SE	France	1064	HAULOTTE GROUP	France
1027	GETLINK	France	1065	LECTRA	France
1028	TARKETT	France	1066	METABOLIC EXPLOR	France
1029	DASSAULT AVIATIO	France	1067	TBC BANK GROUP P	Georgia
1030	BIC	France	1068	BAYER MOTOREN WK	Germany
1031	ADP	France	1069	EVONIK INDUSTRIE	Germany
1032	LAGARDERE SCA	France	1070	LINDE AG	Germany

No.	Firm Name	Country	No.	Firm Name	Country
1071	BASF SE	Germany	1109	OSRAM LICHT AG	Germany
1072	VOLKSWAGEN AG	Germany	1110	TLG IMMOBILIEN A	Germany
1073	SOLARWORLD AG	Germany	1111	LEONI AG	Germany
1074	HUGO BOSS -ORD	Germany	1112	ZALANDO SE	Germany
1075	INFINEON TECH	Germany	1113	DUERR AG	Germany
1076	MTU AERO ENGINES	Germany	1114	SARTORIUS AG	Germany
1077	MERCK KGAA	Germany	1115	SAP SE	Germany
1078	SIEMENS AG-REG	Germany	1116	BAYER AG-REG	Germany
1079	HENKEL AG -PFD	Germany	1117	HAMBURGER HAFEN	Germany
1080	BEIERSDORF AG	Germany	1118	SGL CARBON SE	Germany
1081	MUENCHENER RUE-R	Germany	1119	SCHAEFFLER AG	Germany
1082	MAN SE	Germany	1120	SALZGITTER AG	Germany
1083	SYMRISE AG	Germany	1121	ENBW ENERGIE BAD	Germany
1084	ALLIANZ SE-VINK	Germany	1122	MVV ENERGIE AG	Germany
1085	LANXESS AG	Germany	1123	KRONES AG	Germany
1086	DEUTSCHE POST-RG	Germany	1124	PROSIEBENSAT.1 M	Germany
1087	DEUTSCHE BANK-RG	Germany	1125	1&1 DRILLISCH AG	Germany
1088	DAIMLER AG	Germany	1126	NORDEX SE	Germany
1089	COVESTRO AG	Germany	1127	DEUTSCHE LUFT-RG	Germany
1090	HEIDELBERGCEMENT	Germany	1128	TUI AG-DI	Germany
1091	AUDI AG	Germany	1129	FRESENIUS SE & C	Germany
1092	FRAPORT AG	Germany	1130	SUEDZUCKER AG	Germany
1093	THYSSENKRUPP AG	Germany	1131	NORMA GROUP SE	Germany
1094	DEUTSCHE WOHNEN	Germany	1132	TALANX AG	Germany
1095	HOCHTIEF AG	Germany	1133	HAMBORNER REIT	Germany
1096	WACKER NEUSON SE	Germany	1134	KSB SE & CO KGAA	Germany
1097	DEUTSCHE BOERSE	Germany	1135	FUCHS PETROLUB S	Germany
1098	CONTINENTAL AG	Germany	1136	KUKA AG	Germany
1099	ADIDAS AG	Germany	1137	CROPENERGIES AG	Germany
1100	RWE AG	Germany	1138	FIELMANN AG	Germany
1101	E.ON SE	Germany	1139	FRESENIUS MEDICA	Germany
1102	WACKER CHEMIE AG	Germany	1140	DEUTSCHE BETEILI	Germany
1103	DEUTSCHE TELEKOM	Germany	1141	GERRY WEBER INTL	Germany
1104	UNIPER SE	Germany	1142	SMA SOLAR TECHNO	Germany
1105	VONOVIA SE	Germany	1143	KLOECKNER & CO S	Germany
1106	K+S AG-REG	Germany	1144	AIR BERLIN PLC	Germany
1107	BRENNTAG AG	Germany	1145	DEUTSCHE PFANDBR	Germany
1108	INNOGY SE	Germany	1146	888 HOLDINGS	Gibraltar

No.	Firm Name	Country	No.	Firm Name	Country
1147	MYTILINEOS HLDGS	Greece	1185	COSCO SHIPPING I	Hong Kong
1148	TITAN CEMENT CO	Greece	1186	CHOW SANG SANG	Hong Kong
1149	HELLENIC TELECOM	Greece	1187	CHOW TAI FOOK JE	Hong Kong
1150	ELVALHALCOR SA	Greece	1188	LI & FUNG LTD	Hong Kong
1151	ATTICA HOLDINGS	Greece	1189	CHINA POWER INTE	Hong Kong
1152	EUROBANK ERGASIA	Greece	1190	POWER ASSETS	Hong Kong
1153	MOTOR OIL-HELLAS	Greece	1191	GIORDANO INTL	Hong Kong
1154	FOURLIS SA	Greece	1192	CHINA OVERSEAS	Hong Kong
1155	FRIGOGLOSS SAIC	Greece	1193	NOBLE GROUP LTD	Hong Kong
1156	INTRALOT S.A.	Greece	1194	SHENZHEN INVEST	Hong Kong
1157	ELLAKTOR SA	Greece	1195	CHINA JINMAO HOL	Hong Kong
1158	RAVEN PROPERTY G	Guernsey	1196	GLOBAL SWEETENER	Hong Kong
1159	ORIENT OVERSEAS	Hong Kong	1197	CAFE DE CORAL	Hong Kong
1160	CLP HOLDINGS	Hong Kong	1198	GREAT EAGLE	Hong Kong
1161	HKEX	Hong Kong	1199	WH GROUP LTD	Hong Kong
1162	CHINA STATE CONS	Hong Kong	1200	GALAXY ENTERTAIN	Hong Kong
1163	GCL-POLY ENERGY	Hong Kong	1201	CHINA TRAVEL HK	Hong Kong
1164	HONG KG AIRCRAFT	Hong Kong	1202	CITIC RESOURCES	Hong Kong
1165	CHINA EVERBR INT	Hong Kong	1203	TVB	Hong Kong
1166	CHINA MOBILE	Hong Kong	1204	HYSAN DEV	Hong Kong
1167	CHINA RES POWER	Hong Kong	1205	CHINA EVER LTD	Hong Kong
1168	VTECH HLDGS LTD	Hong Kong	1206	GLOBAL BRANDS GR	Hong Kong
1169	CATHAY PAC AIR	Hong Kong	1207	MELCO INTL DEV	Hong Kong
1170	NEW WORLD DEPT C	Hong Kong	1208	MENGNIU DAIRY	Hong Kong
1171	KERRY PPT	Hong Kong	1209	CHINA AGRI-INDUS	Hong Kong
1172	BANK EAST ASIA	Hong Kong	1210	DAH SING	Hong Kong
1173	AIA	Hong Kong	1211	MANDARIN ORIENTL	Hong Kong
1174	HK ELECTRIC INVE	Hong Kong	1212	CITIC	Hong Kong
1175	COSCO SHIPPING P	Hong Kong	1213	SINOTRANS SHIPPI	Hong Kong
1176	HANG SENG BANK	Hong Kong	1214	CHINA MERCHANTS	Hong Kong
1177	CHINA RES LAND	Hong Kong	1215	CHINA FOODS LTD	Hong Kong
1178	SHUN TAK HOLDING	Hong Kong	1216	WONGS KONG KING	Hong Kong
1179	HONG KG CHINA GS	Hong Kong	1217	MIDLAND HOLDINGS	Hong Kong
1180	BOC HONG KONG HO	Hong Kong	1218	TECHTRONIC IND	Hong Kong
1181	HENDERSON LAND D	Hong Kong	1219	CHINA RES CEMENT	Hong Kong
1182	HK&S HOTELS	Hong Kong	1220	VITASOY INTL HLD	Hong Kong
1183	REGINA MIRACLE I	Hong Kong	1221	SJM HOLDINGS LTD	Hong Kong
1184	PCCW LTD	Hong Kong	1222	ASM PACIFIC	Hong Kong

No.	Firm Name	Country	No.	Firm Name	Country
1223	CHINA MINSHENG F	Hong Kong	1261	RBL BANK LTD	India
1224	G-RESOURCES GROU	Hong Kong	1262	POWER GRID CORP	India
1225	LANGHAM -SS	Hong Kong	1263	NATL PEROXIDE	India
1226	SOUTHWEST SECURI	Hong Kong	1264	TORRENT PHARMA	India
1227	SHENZ INTL HLDG	Hong Kong	1265	RELIANCE INFRAST	India
1228	RICHFIELD GROUP	Hong Kong	1266	HINDUSTAN UNILEV	India
1229	HUTCHTEL HK	Hong Kong	1267	MOIL LTD	India
1230	CIMC ENRIC HLDG	Hong Kong	1268	TATA SPONGE IRON	India
1231	MOL	Hungary	1269	BAJAJ AUTO LTD	India
1232	MAGYAR TELEKOM	Hungary	1270	TRENT LTD	India
1233	AMBUJA CEMENTS	India	1271	TORRENT POWER LT	India
1234	ITC LTD	India	1272	JAIPRAKASH ASSOC	India
1235	JAIN IRRIGATION	India	1273	IDFC LTD	India
1236	ACC LTD	India	1274	CYIENT LTD	India
1237	TECH MAHINDRA LT	India	1275	GODREJ PROPERTIE	India
1238	CHAMBAL FERTILIS	India	1276	GRASIM INDS LTD	India
1239	YES BANK LTD	India	1277	INDOCO REMEDIES	India
1240	HAVELLS INDIA	India	1278	HERO MOTOCORP LT	India
1241	MARUTI SUZUKI IN	India	1279	NESTLE INDIA LTD	India
1242	WELSPUN CORP LTD	India	1280	BRITANNIA INDS	India
1243	WELSPUN INDIA	India	1281	MMTC LTD	India
1244	ESSAR SHIPPING L	India	1282	ENGINEERS INDIA	India
1245	RASHTRIYA CHEMS	India	1283	MONSANTO INDIA	India
1246	AXIS BANK LTD	India	1284	AIA ENGINEERING	India
1247	JK CEMENTS LTD	India	1285	TAKE SOLUTIONS	India
1248	COAL INDIA LTD	India	1286	HONEYWELL AUTOMA	India
1249	BOSCH LTD	India	1287	ADANI POWER LTD	India
1250	APOLLO TYRES LTD	India	1288	ICICI BANK LTD	India
1251	HINDUSTAN CONST	India	1289	GRUH FINANCE LTD	India
1252	SKF INDIA LTD	India	1290	SOLAR INDUSTRIES	India
1253	GLAXOSMITHKLI-IN	India	1291	IRB INFRASTRUCTU	India
1254	TATA STEEL LTD	India	1292	LUPIN LTD	India
1255	CIPLA LTD	India	1293	ALOK INDUSTRIES	India
1256	HINDUSTAN ZINC	India	1294	INDIABULLS HOUSI	India
1257	TATA MOTORS LTD	India	1295	TIMKEN INDIA LTD	India
1258	MAHINDRA LIFESPA	India	1296	ADANI ENTERPRISE	India
1259	BHARTI AIRTEL	India	1297	AKZO NOBEL INDIA	India
1260	SRF LTD	India	1298	HINDUSTAN COPPER	India

No.	Firm Name	Country	No.	Firm Name	Country
1299	NATL FERTILIZERS	India	1337	NHPC LTD	India
1300	REDINGTON INDIA	India	1338	JINDAL STAINLESS	India
1301	BHARTI INFRATEL	India	1339	INEOS STYROLUTIO	India
1302	INTERNATIONAL PA	India	1340	DYNAMATIC TECH	India
1303	SHRIRAM TRANSPRT	India	1341	GLAXOSMITHKLINE	India
1304	PI INDUSTRIES	India	1342	AUROBINDO PHARMA	India
1305	EICHER MOTORS	India	1343	HCL INFOSYSTEMS	India
1306	FOSECO INDIA LTD	India	1344	SOBHA LTD	India
1307	APAR INDUSTRIES	India	1345	NAVIN FLUORINE I	India
1308	LIC HOUSING FIN	India	1346	VIVIMED LABS LTD	India
1309	VA TECH WABAG LT	India	1347	BALMER LAWRIE	India
1310	TI FINANCIAL HOL	India	1348	ZEE ENTERTAINMEN	India
1311	VESUVIUS INDIA	India	1349	BALKRISHNA INDS	India
1312	TATA COMMUNICATI	India	1350	HIKAL LTD	India
1313	SUN PHARMA INDU	India	1351	NEUEON TOWERS LT	India
1314	VAKRANGEE LTD	India	1352	JET AIRWAYS IND	India
1315	VIP INDS LTD	India	1353	NOVARTIS INDIA	India
1316	BALMER LAWRIE IN	India	1354	VINATI ORGANICS	India
1317	JAI CORP LTD	India	1355	RALLIS INDIA LTD	India
1318	NBCC INDIA LTD	India	1356	CMI FPE LTD	India
1319	BAJAJ FINANCE LT	India	1357	HITECH CORP LTD	India
1320	TIL LTD	India	1358	GALLANTT METAL	India
1321	BASF INDIA LTD	India	1359	ANEKA TAMBANG TB	Indonesia
1322	TAMIL NADU NEWSP	India	1360	VALE INDONESIA T	Indonesia
1323	GILLETTE INDIA	India	1361	INDOCEMENT TUNGG	Indonesia
1324	HEIDELBERGCEMENT	India	1362	PERUSAHAAN GAS N	Indonesia
1325	APL APOLLO TUBES	India	1363	ASTRA INTERNATIO	Indonesia
1326	INSILCO LTD	India	1364	BANK CIMB NIAGA	Indonesia
1327	KOTAK MAHINDRA	India	1365	SEMEN INDONESIA	Indonesia
1328	VARDHMAN TEXTILE	India	1366	BAKRIE & BROTHER	Indonesia
1329	STATE BANK IND	India	1367	BANK TABUNGAN NE	Indonesia
1330	PVR LTD	India	1368	INDOSAT TBK PT	Indonesia
1331	ICRA LTD	India	1369	WASKITA KARYA PE	Indonesia
1332	MOTHERSON SUMI	India	1370	WIJAYA KARYA	Indonesia
1333	JK PAPER LTD	India	1371	KALBE FARMA	Indonesia
1334	CONTAINER CORP	India	1372	INDOFOOD SUKSES	Indonesia
1335	AMARA RAJA BATT	India	1373	MATAHARI DEPT	Indonesia
1336	PIDILITE INDS	India	1374	KRAKATAU STEEL	Indonesia

No.	Firm Name	Country	No.	Firm Name	Country
1375	BANK RAKYAT INDO	Indonesia	1413	UNICREDIT SPA	Italy
1376	INDOFOOD CBP SUK	Indonesia	1414	SABAF SPA	Italy
1377	GUDANG GARAM TBK	Indonesia	1415	MONDADORI (ARN)	Italy
1378	MITRA KELUARGA K	Indonesia	1416	BPER BANCA	Italy
1379	CRH PLC	Ireland	1417	UNIPOLSAI SPA	Italy
1380	PADDY POWER BETF	Ireland	1418	BUZZI UNICEM SPA	Italy
1381	IFG GROUP PLC	Ireland	1419	PIAGGIO & C. SPA	Italy
1382	PERMANENT TSB GR	Ireland	1420	ASTALDI SPA	Italy
1383	KERRY GROUP-A	Ireland	1421	IMMOBILIARE GRAN	Italy
1384	GREENCORE GROUP	Ireland	1422	LUXOTTICA GROUP	Italy
1385	JAMES HARDIE-CDI	Ireland	1423	GEDI GRUPPO EDIT	Italy
1386	GLANBIA PLC	Ireland	1424	MEDIOBANCA	Italy
1387	UDG HEALTHCARE P	Ireland	1425	PRYSMIAN SPA	Italy
1388	GRAFTON GRP-UTS	Ireland	1426	PRADA	Italy
1389	C&C GROUP PLC	Ireland	1427	FERRAGAMO SPA	Italy
1390	ALLEGION PLC	Ireland	1428	MEDIASET SPA	Italy
1391	PLAYTECH PLC	Isle of Man	1429	BANCA MEDIOLANUM	Italy
1392	TEVA PHARMA	Israel	1430	JUVENTUS FOOTBAL	Italy
1393	BANK HAPOALIM	Israel	1431	BANCA MONTE DEI	Italy
1394	MIZRAHI TEFAHOT	Israel	1432	AMPLIFON SPA	Italy
1395	BANK LEUMI LE-IS	Israel	1433	IMA SPA	Italy
1396	DELTA GALIL	Israel	1434	RECORDATI SPA	Italy
1397	CAESARSTONE LTD	Israel	1435	FERRARI NV	Italy
1398	ENEL SPA	Italy	1436	RCS MEDIAGROUP	Italy
1399	INTESA SANPAOLO	Italy	1437	TOKYO ELECTRIC P	Japan
1400	UBI BANCA SPA	Italy	1438	MARUI GROUP	Japan
1401	ENI SPA	Italy	1439	NIPPON TELEGRAPH	Japan
1402	ANSALDO STS SPA	Italy	1440	MITSUBISHI TANAB	Japan
1403	TERNA SPA	Italy	1441	OMRON CORP	Japan
1404	SAIPEM SPA	Italy	1442	SHISEIDO CO LTD	Japan
1405	SNAM SPA	Italy	1443	TOTO LTD	Japan
1406	A2A SPA	Italy	1444	KIRIN HOLDINGS C	Japan
1407	ACEA SPA	Italy	1445	RICOH CO LTD	Japan
1408	ATLANTIA SPA	Italy	1446	FUJITSU LTD	Japan
1409	PIRELLI E C SPA	Italy	1447	CHUGAI PHARMA CO	Japan
1410	LEONARDO SPA	Italy	1448	SHARP CORP	Japan
1411	SALINI IMPREGILO	Italy	1449	TOYO INK SC HD	Japan
1412	TELECOM ITALIA S	Italy	1450	SHIN-ETSU CHEM	Japan

No.	Firm Name	Country	No.	Firm Name	Country
1451	KAO CORP	Japan	1489	TAIYO NIPPON SAN	Japan
1452	PANASONIC CORP	Japan	1490	SHIKOKU ELEC PWR	Japan
1453	SOMPO HOLDINGS I	Japan	1491	SUMITOMO RUBBER	Japan
1454	ANRITSU CORP	Japan	1492	TECHNO ASSOCIE C	Japan
1455	SUMITOMO MET MIN	Japan	1493	ANA HOLDINGS INC	Japan
1456	DAI NIPPON PRINT	Japan	1494	TAMRON	Japan
1457	JSR CORP	Japan	1495	NORITZ CORP	Japan
1458	NIKON CORP	Japan	1496	TOAGOSEI CO LTD	Japan
1459	NITTO DENKO CORP	Japan	1497	ELECTRIC POWER D	Japan
1460	ROHM CO LTD	Japan	1498	NOF	Japan
1461	NGK INSULATORS	Japan	1499	KANSAI PAINT	Japan
1462	MEIJI HD	Japan	1500	MIZUHO FINANCIAL	Japan
1463	UNICHARM CORP	Japan	1501	SHOWA SHELL	Japan
1464	AJINOMOTO CO INC	Japan	1502	S & B FOODS INC	Japan
1465	FUJIFILM HOLDING	Japan	1503	KAJIMA CORP	Japan
1466	NOMURA HOLDINGS	Japan	1504	SUMITOMO CHEM CO	Japan
1467	KOKUYO	Japan	1505	NISSEI CORP	Japan
1468	JAPAN TOBACCO	Japan	1506	ASAHI INDUSTRIES	Japan
1469	SWCC SHOWA HOLDI	Japan	1507	NIPPON SHINYAKU	Japan
1470	TOYOTA MOTOR	Japan	1508	RENESAS ELECTRON	Japan
1471	FUJI ELECTRIC CO	Japan	1509	YAKULT HONSHA CO	Japan
1472	IBIDEN CO LTD	Japan	1510	KANSAI ELEC PWR	Japan
1473	BRIDGESTONE CORP	Japan	1511	TOMOEGAWA CO LTD	Japan
1474	TOKYO OHKA KOGYO	Japan	1512	KURARAY CO LTD	Japan
1475	THK CO LTD	Japan	1513	TOHOKU ELEC PWR	Japan
1476	ONO PHARMA	Japan	1514	SHOWA DENKO K K	Japan
1477	EAST JAPAN RAIL	Japan	1515	EBARA CORP	Japan
1478	SANTEN PHARM	Japan	1516	SAWAI PHARMACEUT	Japan
1479	NIHON NOHYAKU	Japan	1517	AOHATA CORP	Japan
1480	NISSHA CO LTD	Japan	1518	FUJI OIL HOLDING	Japan
1481	SEKISUI PLASTICS	Japan	1519	NIPPON ELEC GLAS	Japan
1482	LION CORP	Japan	1520	FUJITSU FRONTECH	Japan
1483	HULIC CO LTD	Japan	1521	ITOCHU CORP	Japan
1484	EISAI CO LTD	Japan	1522	JAPAN AIRLINES C	Japan
1485	SEKISUI HOUSE	Japan	1523	AEON MALL CO LTD	Japan
1486	HITACHI HIGH TEC	Japan	1524	MAKITA CORP	Japan
1487	CITIZEN WATCH CO	Japan	1525	KYODEN CO LTD	Japan
1488	OSAKA GAS CO LTD	Japan	1526	MEIKO ELECTRONIC	Japan

No.	Firm Name	Country	No.	Firm Name	Country
1527	TOYO TIRE & RUBB	Japan	1565	TAKEDA PRINTING	Japan
1528	UCHIDA YOKO CO	Japan	1566	RINGER HUT CO	Japan
1529	ISHIZUKA GLASS	Japan	1567	ULVAC INC	Japan
1530	JAPAN DISPLAY	Japan	1568	SENSHU ELECTRIC	Japan
1531	YASKAWA ELECTRIC	Japan	1569	JAPAN POST HOLDI	Japan
1532	SOJITZ CORP	Japan	1570	NAKANISHI INC	Japan
1533	DYNIC CORP	Japan	1571	TOYOTA TSUSHO	Japan
1534	TAKUMA CO	Japan	1572	SUMCO CORP	Japan
1535	SOKEN CHEMICAL	Japan	1573	EZAKI GLICO	Japan
1536	KATO SANGYO CO	Japan	1574	HITACHI CAPITAL	Japan
1537	ORIENTAL LAND CO	Japan	1575	ADASTRIA CO LTD	Japan
1538	SUNTORY FOOD BEV	Japan	1576	MCDONALD'S HOLDI	Japan
1539	YAMAHA MOTOR CO	Japan	1577	YUTAKA GIKEN CO	Japan
1540	GLORY LTD	Japan	1578	PASCO CORP	Japan
1541	CHUO KAGAKU CO L	Japan	1579	BOURBON CORP	Japan
1542	FP CORP	Japan	1580	ASANUMA CORP	Japan
1543	TERUMO CORP	Japan	1581	AKEBONO BRAKE	Japan
1544	TOHO ACETYLENE	Japan	1582	YASUHARA CHEMICA	Japan
1545	HACHIJUNI BANK	Japan	1583	RYOYO ELECTRO	Japan
1546	IMURAYA GROUP CO	Japan	1584	TOKYU CONSTRUCTI	Japan
1547	DMW CORP	Japan	1585	INAGEYA	Japan
1548	TOHO GAS CO LTD	Japan	1586	CMK CORP	Japan
1549	CENTRAL JAPAN RL	Japan	1587	HITACHI TRANSPOR	Japan
1550	NACHI-FUJIKOSHI	Japan	1588	A&A MATERIAL	Japan
1551	JAPAN STEEL WORK	Japan	1589	MABUCHI MOTOR	Japan
1552	OHARA INC	Japan	1590	MITSUBISHI UFJ L	Japan
1553	IWATSU ELECTRIC	Japan	1591	ASIA AIR SURVEY	Japan
1554	TOKYO TATEMONO	Japan	1592	MAXVALU CHUBU	Japan
1555	SHINTO PAINT	Japan	1593	HOKURIKU ELE IND	Japan
1556	MEC CO LTD	Japan	1594	NIPPON SEIKI	Japan
1557	WAKAMOTO PHARM	Japan	1595	FDK CORP	Japan
1558	HIROSE ELECTRIC	Japan	1596	HIRATA CORP	Japan
1559	IWAKI & CO	Japan	1597	HEIWADO CO LTD	Japan
1560	XNET CORP	Japan	1598	SHOWA AIRCRAFT	Japan
1561	MITSUBISHI CHEMI	Japan	1599	FAST RETAILING	Japan
1562	TOA OIL	Japan	1600	KUMAGAI GUMI CO	Japan
1563	NIPPON SHOKUBAI	Japan	1601	OKAMOTO INDS INC	Japan
1564	YACHIYO INDUS CO	Japan	1602	KEIKYU CORP	Japan

No.	Firm Name	Country	No.	Firm Name	Country
1603	DAISHINKU CORP	Japan	1641	TRUSCO NAKAYAMA	Japan
1604	TODA KOGYO CORP	Japan	1642	ADVANEX INC	Japan
1605	JGC CORP	Japan	1643	MITSUBISHI RESEA	Japan
1606	SG HOLDINGS CO L	Japan	1644	RAITO KOGYO	Japan
1607	TRINITY INDL	Japan	1645	KOMERI CO LTD	Japan
1608	HOKKAIDO CHUO BU	Japan	1646	THREE F CO LTD	Japan
1609	NET ONE SYSTEMS	Japan	1647	SODICK CO LTD	Japan
1610	TABUCHI ELECTRIC	Japan	1648	NPC INC	Japan
1611	HOKURIKU GAS CO	Japan	1649	KUMIAI CHEM IND	Japan
1612	FURUNO ELEC CO	Japan	1650	CTI ENGINEERING	Japan
1613	JEOL LTD	Japan	1651	OPTEX GROUP CO L	Japan
1614	TAIYO HOLDINGS	Japan	1652	GAKKEN HD	Japan
1615	NIHON DEMPA CO	Japan	1653	WELCIA HOLDINGS	Japan
1616	NIPPON KOEI	Japan	1654	NISSEI PLASTIC	Japan
1617	KAMIGUMI CO LTD	Japan	1655	KING JIM	Japan
1618	YOSHINOYA HD	Japan	1656	TOMOE ENGINEER	Japan
1619	HAMAMATSU PHOTON	Japan	1657	NITORI HOLDINGS	Japan
1620	HARIMA CHEMICALS	Japan	1658	LIFE CORP	Japan
1621	ALPHA CORP	Japan	1659	HIDAY HIDAKA	Japan
1622	HARMONIC DRIVE	Japan	1660	JK HOLDINGS CO L	Japan
1623	NOEVIR HOLDING C	Japan	1661	YAMABIKO	Japan
1624	SOMAR CORP	Japan	1662	DAITRON CO LTD	Japan
1625	KOMAIHALTEC INCC	Japan	1663	DYDO GROUP HOLDI	Japan
1626	KOSAIDO CO LTD	Japan	1664	SHOFU INC	Japan
1627	MARUBUN CORP	Japan	1665	ASAHI DIAMOND IN	Japan
1628	JBCC HOLDINGS IN	Japan	1666	TOSEI CORP	Japan
1629	SHIMANO INC	Japan	1667	TRANSCOSMOS INC	Japan
1630	ISAMU PAINT	Japan	1668	MICRONICS JAPAN	Japan
1631	PIGEON CORP	Japan	1669	KODENSHA	Japan
1632	MEIKO CONSTRUCTI	Japan	1670	IRISO ELECTRONIC	Japan
1633	KENKO MAYONNAISE	Japan	1671	KEIYO GAS	Japan
1634	SHIMA SEIKI MFG	Japan	1672	IZUMI	Japan
1635	SK-ELEC	Japan	1673	MARUYAMA MFG	Japan
1636	NICHIHA CORP	Japan	1674	ROLAND DG CORP	Japan
1637	NAKANO CORP	Japan	1675	ISHII FOOD CO	Japan
1638	MORI-GUMI CO LTD	Japan	1676	CHUBU-NIPPON	Japan
1639	DESCENTE LTD	Japan	1677	SEINO HOLDINGS	Japan
1640	NISHIKAWA RUBBER	Japan	1678	SHIKOKU CHEMICAL	Japan

No.	Firm Name	Country	No.	Firm Name	Country
1679	MARUICHI STL TUB	Japan	1717	MOBILE TELECOMMU	Kuwait
1680	FUJIMI INC	Japan	1718	KUWAIT FINANCE	Kuwait
1681	YUKEN KOGYO	Japan	1719	BANK AUDI SAL	Lebanon
1682	YUKI GOSEI KOGYO	Japan	1720	LIETUVOS ENERGIJ	Lithuania
1683	NIPPON KOSHUHA	Japan	1721	ARCELORMITTAL	Luxembourg
1684	TOYO LOGISTICS	Japan	1722	TENARIS SA	Luxembourg
1685	NEW JAPAN CHEM	Japan	1723	SANDS CHINA LTD	Macau
1686	CHOFU SEISAKUSHO	Japan	1724	MGM CHINA	Macau
1687	JAPAN EXCHANGE G	Japan	1725	WYNN MACAU LTD	Macau
1688	NISSIN CORP	Japan	1726	ILLOVO SUGAR MAL	Malawi
1689	MAEDA ROAD CONST	Japan	1727	NESTLE (MALAY)	Malaysia
1690	MEIJI ELECTRIC I	Japan	1728	TELEKOM MALAYSIA	Malaysia
1691	SHINSEI BANK LTD	Japan	1729	GENTING PLANTATI	Malaysia
1692	SAN-A CO LTD	Japan	1730	GENTING MALAYSIA	Malaysia
1693	ORIENT CORP	Japan	1731	WESTPORTS HOLDIN	Malaysia
1694	EHIME BANK LTD	Japan	1732	SUNWAY BHD	Malaysia
1695	77 BANK LTD	Japan	1733	AXIATA GROUP BER	Malaysia
1696	MENICON CO LTD	Japan	1734	MEDIA PRIMA BHD	Malaysia
1697	NOMURA CO LTD	Japan	1735	UMW HLDG BHD	Malaysia
1698	H I S CO LTD	Japan	1736	CIMB GROUP HOLDI	Malaysia
1699	MOROZOFF LTD	Japan	1737	PICHEM	Malaysia
1700	ZENKOKU HOSHO	Japan	1738	AMBANK HLDG BHD	Malaysia
1701	BIC CAMERA INC	Japan	1739	GAMUDA BHD	Malaysia
1702	RYOHIN KEIKAKU	Japan	1740	ASTRO MALAYSIA	Malaysia
1703	ALBIS CO LTD	Japan	1741	UEM EDGENTA BHD	Malaysia
1704	NIHON SEIKAN	Japan	1742	PUNCAK NIA HLD B	Malaysia
1705	KEYENCE CORP	Japan	1743	TENAGA NASIONAL	Malaysia
1706	MITSUBISHI LOGIS	Japan	1744	HEINEKEN MALAYSI	Malaysia
1707	ASAHI KOGYOSHA	Japan	1745	PUBLIC BANK BHD	Malaysia
1708	KOEI CHEMICAL	Japan	1746	MALAYSIAN RES CO	Malaysia
1709	T HASEGAWA CO	Japan	1747	BIMB HLDGS BHD	Malaysia
1710	TSURUMI MFG CO	Japan	1748	IHH HEALTHCARE B	Malaysia
1711	KOBE ELEC RAIL	Japan	1749	GENTING BHD	Malaysia
1712	CYBER COM CO LTD	Japan	1750	SAPURA ENERGY BH	Malaysia
1713	RANDGOLD RES LTD	Jersey	1751	MMC CORP BHD	Malaysia
1714	CENTAMIN PLC	Jersey	1752	LAFARGE MALAYSIA	Malaysia
1715	ARAB BANK PLC	Jordan	1753	HAP SENG PLANTAT	Malaysia
1716	SAFARICOM PLC	Kenya	1754	PPB GROUP BERHAD	Malaysia

No.	Firm Name	Country	No.	Firm Name	Country
1755	HENGYUAN REFININ	Malaysia	1793	CHEDRAUI	Mexico
1756	BURSA MALAYSIA	Malaysia	1794	OHL MEXICO SAB D	Mexico
1757	AIRASIA GROUP BH	Malaysia	1795	ATTIJARIWafa	Morocco
1758	KINDRED GROUP PL	Malta	1796	FNB NAMIBIA HOLD	Namibia
1759	OMNICANE LTD	Mauritius	1797	ROYAL DUTCH SH-A	Netherlands
1760	TERRA MAURICIA L	Mauritius	1798	KONINKLIJKE PHIL	Netherlands
1761	SUN LIMITED-CL A	Mauritius	1799	ING GROEP NV	Netherlands
1762	PHOENIX BEVERAGE	Mauritius	1800	HEINEKEN NV	Netherlands
1763	CIEL LTD	Mauritius	1801	SBM OFFSHORE NV	Netherlands
1764	CEMEX SAB-CPO	Mexico	1802	AKZO NOBEL	Netherlands
1765	MEXICHEM-*	Mexico	1803	DSM (KONIN)	Netherlands
1766	GRUPO TELEV-CPO	Mexico	1804	CORBION NV	Netherlands
1767	WALMART DE MEXIC	Mexico	1805	GEMALTO	Netherlands
1768	KIMBERLY-CLA M-A	Mexico	1806	RANDSTAD NV	Netherlands
1769	GRUPO AEROPORTUA	Mexico	1807	AMG ADVANCED MET	Netherlands
1770	GRUPO ROTOPLAS S	Mexico	1808	BOSKALIS WESTMIN	Netherlands
1771	INDUSTRIAS PENOL	Mexico	1809	ABN AMRO-CVA	Netherlands
1772	GRUPO BIMBO-A	Mexico	1810	ASML HOLDING NV	Netherlands
1773	AXTEL-CPO	Mexico	1811	BETER BED HLDG	Netherlands
1774	FOMENTO ECON-UBD	Mexico	1812	ARCADIS NV	Netherlands
1775	GRUPO ELEKTRA SA	Mexico	1813	ASR NEDERLAND NV	Netherlands
1776	GRUPO F BANORT-O	Mexico	1814	WERELDHAVE NV	Netherlands
1777	AERO DEL SURES-B	Mexico	1815	DELTA LLOYD NV	Netherlands
1778	INFRAESTRUCTURA	Mexico	1816	VEON LTD	Netherlands
1779	VESTA SAB DE CV	Mexico	1817	OCI NV	Netherlands
1780	GRUPO MEXICO-B	Mexico	1818	FUGRO NV-CVA	Netherlands
1781	ALFA SAB-A	Mexico	1819	TOMTOM	Netherlands
1782	ELEMENTIA SAB DE	Mexico	1820	LAVIDE HOLDING	Netherlands
1783	ALPEK	Mexico	1821	SLIGRO FOOD GROU	Netherlands
1784	AMERICA MOVIL-L	Mexico	1822	VASTNED RETAIL N	Netherlands
1785	GRUPO CEMENTOS	Mexico	1823	SANFORD LTD	New Zealand
1786	GRUPO LALA SAB D	Mexico	1824	WAREHOUSE GROUP	New Zealand
1787	NEMAK SAB DE CV	Mexico	1825	KATHMANDU HOLDIN	New Zealand
1788	ALSEA SAB DE CV	Mexico	1826	MERCURY NZ LTD	New Zealand
1789	FIBRA UNO	Mexico	1827	NEW ZEAL OIL&GAS	New Zealand
1790	GENTERA SAB DE C	Mexico	1828	FISHER & PAYKEL	New Zealand
1791	CONTROLADORA V-A	Mexico	1829	NESTLE NIGERIA P	Nigeria
1792	SORIANA-B	Mexico	1830	STERLING BANK	Nigeria

No.	Firm Name	Country	No.	Firm Name	Country
1831	ZENITH BANK PLC	Nigeria	1869	INTL INDUS	Pakistan
1832	TOTAL NIGERIA PL	Nigeria	1870	RAFHAN MAIZE	Pakistan
1833	LAFARGE AFRICA P	Nigeria	1871	UNACEM SAA	Peru
1834	DANGOTE CEMENT	Nigeria	1872	BANCO DE CREDI-C	Peru
1835	GUARANTY TRUST	Nigeria	1873	SOUTHERN COPPER	Peru
1836	UNION BANK NIG	Nigeria	1874	VOLCAN CIA MIN-B	Peru
1837	NORSK HYDRO ASA	Norway	1875	AYALA CORP	Philippines
1838	EQUINOR ASA	Norway	1876	ENERGY DEVELOPME	Philippines
1839	YARA INTL ASA	Norway	1877	CEBU HOLDINGS	Philippines
1840	NORSKE SKOG	Norway	1878	SM INVESTMENTS	Philippines
1841	ORKLA ASA	Norway	1879	CEBU PROP-A	Philippines
1842	TELENOR ASA	Norway	1880	INTEGRATED MICRO	Philippines
1843	SCHIBSTED ASA-A	Norway	1881	INTL CONTAIN TER	Philippines
1844	AKER BP ASA	Norway	1882	ABOITIZ EQUITY	Philippines
1845	DNB ASA	Norway	1883	BANK PHILIPPINE	Philippines
1846	AKER SOLUTIONS A	Norway	1884	MANILA WATER	Philippines
1847	TOMRA SYSTEMS AS	Norway	1885	SECURITY BANK	Philippines
1848	HOEGH LNG HOLDIN	Norway	1886	DEL MONTE PAC LT	Philippines
1849	AF GRUPPEN ASA	Norway	1887	PHILEX MINING CO	Philippines
1850	PETROLEUM GEO	Norway	1888	ENERGA SA	Poland
1851	MULTICONSULT ASA	Norway	1889	KGHM	Poland
1852	SPAREBANK 1 SMN	Norway	1890	PGE SA	Poland
1853	STOREBRAND ASA	Norway	1891	RAWLPLUG SA	Poland
1854	WILHELMSSEN-A SHS	Norway	1892	LPP	Poland
1855	EUROPRI ASA	Norway	1893	ENEA	Poland
1856	ENTRA ASA	Norway	1894	JSW	Poland
1857	KVAERNER ASA	Norway	1895	EDP	Portugal
1858	XXL ASA	Norway	1896	CORTICEIRA AMORI	Portugal
1859	HEXAGON COMPOSIT	Norway	1897	GALP ENERGIA	Portugal
1860	ACWA POWER BARKA	Oman	1898	SONAE	Portugal
1861	RENAISSANCE SERV	Oman	1899	REN-REDE ENERGET	Portugal
1862	BANKMUSCAT SAOGG	Oman	1900	JERONIMO MARTINS	Portugal
1863	CRESCENT STEEL	Pakistan	1901	BANCO COM PORT-R	Portugal
1864	ICI PAK	Pakistan	1902	NOS SGPS	Portugal
1865	ATLAS HONDA	Pakistan	1903	SONAE INDUS/NEW	Portugal
1866	ATTOCK REFINERY	Pakistan	1904	DOHA BANK QPSC	Qatar
1867	PAKISTAN PETROLE	Pakistan	1905	VODAFONE QATAR	Qatar
1868	IGI HOLDINGS LTD	Pakistan	1906	QATAR NATIONAL B	Qatar

No.	Firm Name	Country	No.	Firm Name	Country
1907	NEPI ROCKCASTLE	Romania	1945	AEM HOLDINGS	Singapore
1908	ROSNEFT	Russia	1946	FRASERS COMMERCIAL	Singapore
1909	POLYMETAL	Russia	1947	FRASERS CENTREPO	Singapore
1910	LUKOIL	Russia	1948	INDOFOOD AGRICULTURE	Singapore
1911	NORILSK NICKEL	Russia	1949	FIRST RESOURCES	Singapore
1912	POLYUS	Russia	1950	OCBC BANK	Singapore
1913	RUSAL	Russia	1951	MAPLETREE INDUSTRIES	Singapore
1914	INTER RAO	Russia	1952	ASCENDAS REAL ESTATE	Singapore
1915	EVRAZ	Russia	1953	XP POWER LTD	Singapore
1916	NOVOLIPETSK STEEL	Russia	1954	SINGAPORE PRESS HOLDINGS	Singapore
1917	BASHNEFT	Russia	1955	FRASER AND NEAVE	Singapore
1918	SEVERSTAL	Russia	1956	SIA ENGINEERING	Singapore
1919	GAZPROM	Russia	1957	MAPLETREE LOG TRADING	Singapore
1920	LSR	Russia	1958	SLOVNAFT A.S.	Slovakia
1921	MOBILE TELESYSTEMS	Russia	1959	KRKA	Slovenia
1922	MMK	Russia	1960	TELEKOM SLOVENIA	Slovenia
1923	SBERBANK	Russia	1961	MERCATOR POSLOVNICA	Slovenia
1924	MOESK	Russia	1962	LONMIN PLC	South Africa
1925	NCSP	Russia	1963	NEDBANK GROUP	South Africa
1926	CENTER FOR CARGO	Russia	1964	GOLD FIELDS LTD	South Africa
1927	MOSENERGO	Russia	1965	IMPALA PLATINUM	South Africa
1928	PETROPAVLOVSK	Russia	1966	SIBANYE GOLD LTD	South Africa
1929	X 5 RETAIL-GDR	Russia	1967	CLICKS GROUP LTD	South Africa
1930	TMK	Russia	1968	KUMBA IRON ORE LTD	South Africa
1931	SAUDI INTERNATIONAL	Saudi Arabia	1969	ANGLO AMERICAN PLATINUM	South Africa
1932	SABIC	Saudi Arabia	1970	INVESTEC PLC	South Africa
1933	NIS AD NOVI SAD	Serbia	1971	INVESTEC LTD	South Africa
1934	CAPITALAND LTD	Singapore	1972	ASPEN PHARMACARE	South Africa
1935	SINGAPORE TELECOM	Singapore	1973	DRDGOLD LTD	South Africa
1936	CAPITALAND RETAIL	Singapore	1974	ASTRAL FOODS LTD	South Africa
1937	GENTING SINGAPORE	Singapore	1975	EXXARO RESOURCES	South Africa
1938	SEMBCORP MARINE	Singapore	1976	REUNERT LTD	South Africa
1939	KEPPEL TELE & TRADING	Singapore	1977	GRINDROD LTD	South Africa
1940	SINGAPORE AIRLINES	Singapore	1978	MERAFEE RESOURCES	South Africa
1941	UNITED OVERSEAS	Singapore	1979	COMAIR LTD	South Africa
1942	DBS GROUP HOLDINGS	Singapore	1980	OCEANA GROUP LTD	South Africa
1943	FRASERS PROPERTY	Singapore	1981	BARLOWORLD LTD	South Africa
1944	UOL GROUP LTD	Singapore	1982	NORTHAM PLATINUM	South Africa

No.	Firm Name	Country	No.	Firm Name	Country
1983	OMNIA HOLDINGS	South Africa	2021	SAMSUNG ELECTRON	South Korea
1984	TFG	South Africa	2022	KCC CORP	South Korea
1985	MTN GROUP LTD	South Africa	2023	LG ELECTRONICS	South Korea
1986	AVI LTD	South Africa	2024	SAMSUNG ELECTRO	South Korea
1987	CITY LODGE HOTEL	South Africa	2025	KOREA GAS CORP	South Korea
1988	SAPPI LTD	South Africa	2026	GS ENGINEERING	South Korea
1989	FAMOUS BRANDS LT	South Africa	2027	HYUNDAI MOTOR	South Korea
1990	ALLIED ELE-A SHR	South Africa	2028	PULMUONE CO LTD	South Korea
1991	MMI HOLDINGS LTD	South Africa	2029	SK CHEMICALS CO	South Korea
1992	WESIZWE PLATINUM	South Africa	2030	AMOREPACIFIC GRO	South Korea
1993	NAMPAK LTD	South Africa	2031	SK INNOVATION	South Korea
1994	AFRICAN PHOENIX	South Africa	2032	LG CHEM LTD	South Korea
1995	MR PRICE GROUP	South Africa	2033	MIRAE ASSET DAEW	South Korea
1996	NETCARE LTD	South Africa	2034	SAMSUNG FIRE & M	South Korea
1997	ASSORE LTD	South Africa	2035	POSCO CHEMTECH	South Korea
1998	EOH HOLDINGS LTD	South Africa	2036	SAMSUNG ENGINEER	South Korea
1999	REDEFINE PROPERT	South Africa	2037	SAMSUNG C&T CORP	South Korea
2000	ATTACQ LTD	South Africa	2038	DAEWOO ENG & CON	South Korea
2001	MURRAY & ROBERTS	South Africa	2039	HANKOOK TIRE CO	South Korea
2002	LIFE HEALTHCARE	South Africa	2040	AMOREPACIFIC COR	South Korea
2003	GROWTHPOINT PROP	South Africa	2041	KB FINANCIAL GRO	South Korea
2004	PHUMELELA GAMING	South Africa	2042	LG HOUSEHOLD & H	South Korea
2005	WILSON BAYLY HOM	South Africa	2043	SAMSUNG LIFE INS	South Korea
2006	UNICORN CAPITAL	South Africa	2044	KOREAN AIR LINES	South Korea
2007	EXTRACT GROUP LT	South Africa	2045	SAMSUNG SECS CO	South Korea
2008	AVENG LTD	South Africa	2046	DOOSAN E&C	South Korea
2009	GROUP FIVE LTD	South Africa	2047	HYUNDAI STEEL	South Korea
2010	VALUE GROUP LTD	South Africa	2048	LG UPLUS CORP	South Korea
2011	NASPERS LTD-N	South Africa	2049	POSCO	South Korea
2012	CORONAT	South Africa	2050	COWAY CO LTD	South Korea
2013	SUPER GROUP LTD	South Africa	2051	NH INVESTMENT &	South Korea
2014	SANLAM LTD	South Africa	2052	SAMSUNG SDI CO	South Korea
2015	DIS-CHEM PHARMAC	South Africa	2053	LOTTE FINE CHEMI	South Korea
2016	FORTRESS REIT LT	South Africa	2054	DGB FINANCIAL GR	South Korea
2017	BRIMSTONE INVEST	South Africa	2055	LG DISPLAY CO LT	South Korea
2018	S-OIL CORP	South Korea	2056	HANMI PHARM CO L	South Korea
2019	SHINHAN FINANCI	South Korea	2057	BNK FINANCIAL GR	South Korea
2020	SK HYNIX INC	South Korea	2058	HANA FINANCIAL G	South Korea

No.	Firm Name	Country	No.	Firm Name	Country
2059	LG INNOTEK CO LT	South Korea	2097	SSANGYONG MOTOR	South Korea
2060	SAMSUNG HEAVY IN	South Korea	2098	YUHAN CORP	South Korea
2061	STX CORPORATION	South Korea	2099	SAMSUNG BIOLOGIC	South Korea
2062	KC GREEN HOLDING	South Korea	2100	HYUNDAI HEAVY IN	South Korea
2063	KIA MOTORS CORP	South Korea	2101	WOONGJIN ENERGY	South Korea
2064	HYUNDAI MOBIS	South Korea	2102	LOTTE HIMART	South Korea
2065	JB FINANCIAL GRO	South Korea	2103	JEJU BANK	South Korea
2066	ASIA CEMENT CO L	South Korea	2104	HANWHA CHEM CORP	South Korea
2067	DB HITEK CO LTD	South Korea	2105	KEPCO PLANT SERV	South Korea
2068	HYUNDAI ENG&CONS	South Korea	2106	BGF RETAIL CO LT	South Korea
2069	HSD ENGINE	South Korea	2107	NONGSHIM CO LTD	South Korea
2070	KOREA ELEC POWER	South Korea	2108	MOTONIC CORP	South Korea
2071	DB INSURANCE CO	South Korea	2109	PAN OCEAN CO LTD	South Korea
2072	SK TELECOM	South Korea	2110	SHINSEGAE INC	South Korea
2073	KOREA PETROCHEM	South Korea	2111	TONG YANG MOOL	South Korea
2074	SONGWON IND CO	South Korea	2112	KOREA ZINC CO	South Korea
2075	KT CORP	South Korea	2113	HANDOK INC	South Korea
2076	HANKOOK SHELL	South Korea	2114	SAMSUNG SDS CO	South Korea
2077	HANWHA GALLERIA	South Korea	2115	SUNGSHIN CEMENT	South Korea
2078	DAEWOO SHIPBLDG	South Korea	2116	KAKAO CORP	South Korea
2079	HYUNDAI GLOVIS	South Korea	2117	MOORIM P&P CO LT	South Korea
2080	KISCO CORP	South Korea	2118	NS SHOPPING CO L	South Korea
2081	CJ CHEIL	South Korea	2119	FURSYS INC	South Korea
2082	LOTTE CHEMICAL C	South Korea	2120	CJ CORP	South Korea
2083	HYUNDAI HEAVY	South Korea	2121	GS HOME SHOPPING	South Korea
2084	HANON SYSTEMS	South Korea	2122	INDUSTRIAL BANK	South Korea
2085	LOTTE CHILSUNG	South Korea	2123	KOREA LINE CORP	South Korea
2086	CJ LOGISTICS	South Korea	2124	SHINSEGAE FOOD	South Korea
2087	KOREA AEROSPACE	South Korea	2125	KOREAN REINSURAN	South Korea
2088	KT&G CORP	South Korea	2126	HANWHA LIFE INSU	South Korea
2089	CAPRO CORP	South Korea	2127	MERITZ FIRE&MARI	South Korea
2090	HANWHA AEROSPACE	South Korea	2128	SAMSUNG CARD CO	South Korea
2091	HYUNDAI LIVART C	South Korea	2129	HANWHA GENERAL I	South Korea
2092	KUMHO PETROCHEMI	South Korea	2130	CHONG KUN DANG P	South Korea
2093	SK HOLDINGS CO L	South Korea	2131	S-1 CORPORATION	South Korea
2094	SSANGYONG CEM	South Korea	2132	BUKWANG PHARM CO	South Korea
2095	TONGYANG LIFE IN	South Korea	2133	DONGBU CORP	South Korea
2096	LOTTE SHOPPING	South Korea	2134	HANALL BIOPHARMA	South Korea

No.	Firm Name	Country	No.	Firm Name	Country
2135	BINGGRAE CO LTD	South Korea	2173	CELLNEX TELECOM	Spain
2136	NAVER CORP	South Korea	2174	NH HOTEL GROUP S	Spain
2137	E-MART INC	South Korea	2175	ATLANTICA YIELD	Spain
2138	OTTOGI CORP	South Korea	2176	NEINOR HOMES SA	Spain
2139	KT SKYLIFE CO LT	South Korea	2177	PRIM SA	Spain
2140	SK SECURITIES	South Korea	2178	ZARDOYA OTIS	Spain
2141	SEOUL CITY GAS	South Korea	2179	ALMIRALL SA	Spain
2142	ILJIN ELECTRIC C	South Korea	2180	JOHN KEELLS HLDG	Sri Lanka
2143	IBERDROLA SA	Spain	2181	AITKEN SPENCE PL	Sri Lanka
2144	ENDESA	Spain	2182	DIALOG AXIATA PL	Sri Lanka
2145	NATURGY ENERGY	Spain	2183	CIC HOLDINGS PLC	Sri Lanka
2146	FERROVIAL SA	Spain	2184	COMMERCIAL BK	Sri Lanka
2147	REPSOL SA	Spain	2185	SAMPATH BANK PLC	Sri Lanka
2148	ACCIONA SA	Spain	2186	AITKEN SPENCE H	Sri Lanka
2149	BANKINTER	Spain	2187	SRI LANKA TELECO	Sri Lanka
2150	EDP RENOVAVEIS S	Spain	2188	HEMAS HOLDINGS	Sri Lanka
2151	BANCO SANTANDER	Spain	2189	JOHN KEELLS PLC	Sri Lanka
2152	FLUIDRA SA	Spain	2190	BOLIDEN AB	Sweden
2153	BBVA	Spain	2191	ELECTROLUX AB-B	Sweden
2154	ABENGOA -CL A	Spain	2192	SEB AB-A	Sweden
2155	MAPFRE SA	Spain	2193	SKF AB- B SHARES	Sweden
2156	TELEFONICA	Spain	2194	BILLERUDKORSNAS	Sweden
2157	GRIFOLS SA	Spain	2195	ASSA ABLOY AB-B	Sweden
2158	RED ELECTRICA	Spain	2196	LUNDIN PETROLEUM	Sweden
2159	GESTAMP AUTOMOCI	Spain	2197	SWEDBANK AB-A	Sweden
2160	TECNICAS REUNIDA	Spain	2198	SSAB-A	Sweden
2161	INDITEX	Spain	2199	SVENSKA HAN-A	Sweden
2162	PROSEGUR	Spain	2200	AAK AB	Sweden
2163	SIEMENS GAMESA R	Spain	2201	SANDVIK AB	Sweden
2164	PROSEGUR CASH SA	Spain	2202	TRELLEBORG-B	Sweden
2165	FCC	Spain	2203	ESSITY AKTIEBO-A	Sweden
2166	ACS	Spain	2204	ERICSSON LM-B	Sweden
2167	AMADEUS IT GROUP	Spain	2205	HUSQVARNA-B SHS	Sweden
2168	BANCO SABADELL	Spain	2206	HEXPOL AB	Sweden
2169	ACERINOX	Spain	2207	ICA GRUPPEN AB	Sweden
2170	BOLSAS Y MERCADO	Spain	2208	SCANDIC HOTELS	Sweden
2171	CAF	Spain	2209	CLOETTA AB-B SHS	Sweden
2172	CIE AUTOMOTIVE	Spain	2210	VOLVO AB-B	Sweden

No.	Firm Name	Country	No.	Firm Name	Country
2211	AUTOLIV INC	Sweden	2249	PANDOX AB	Sweden
2212	CASTELLUM AB	Sweden	2250	LUNDBERGS AB-B	Sweden
2213	SAS AB	Sweden	2251	HALDEX AB	Sweden
2214	NOLATO AB-B	Sweden	2252	INVESTOR AB-B	Sweden
2215	HENNES & MAURI-B	Sweden	2253	CAPIO AB	Sweden
2216	NOBIA AB	Sweden	2254	KINNEVIK AB - B	Sweden
2217	FABEGE AB	Sweden	2255	BONAVA AB	Sweden
2218	GRANGES AB	Sweden	2256	AHLSSELL AB	Sweden
2219	ATLAS COPCO-A	Sweden	2257	HEXAGON AB-B	Sweden
2220	JM AB	Sweden	2258	ENIRO AB	Sweden
2221	SWEDISH MATCH AB	Sweden	2259	GEBERIT AG-REG	Switzerland
2222	LINDAB INTERNATI	Sweden	2260	ABB LTD-REG	Switzerland
2223	DUNI AB A	Sweden	2261	STMICROELECTRONI	Switzerland
2224	NCC AB-B	Sweden	2262	LAFARGEHOLCIM-RE	Switzerland
2225	SKANSKA AB-B	Sweden	2263	GIVAUDAN-REG	Switzerland
2226	THULE GROUP AB/T	Sweden	2264	NESTLE SA-REG	Switzerland
2227	FAGERHULT AB	Sweden	2265	GLENCORE PLC	Switzerland
2228	WIHLBORGS FASTIG	Sweden	2266	SWISS RE AG	Switzerland
2229	MODERN TIMES-B	Sweden	2267	UBS GROUP AG	Switzerland
2230	TELE2 AB-B SHS	Sweden	2268	SIKA AG-REG	Switzerland
2231	RECI PHARM-B	Sweden	2269	NOVARTIS AG-REG	Switzerland
2232	KAPPAHL AB	Sweden	2270	CLARIANT AG-REG	Switzerland
2233	AXFOOD AB	Sweden	2271	SONOVA HOLDING A	Switzerland
2234	ROTTNEROS AB	Sweden	2272	FISCHER(GEO)-REG	Switzerland
2235	AXIS COMMUNICATI	Sweden	2273	VONTOBEL HLDG-R	Switzerland
2236	RATOS AB-B SHS	Sweden	2274	SWISSCOM AG-REG	Switzerland
2237	ATRIUM LJUN-B SH	Sweden	2275	ROCHE HLDG-GENUS	Switzerland
2238	SECURITAS AB-B	Sweden	2276	EDMOND DE ROTHSC	Switzerland
2239	VITROLIFE AB	Sweden	2277	FERREXPO PLC	Switzerland
2240	GETINGE AB-B SHS	Sweden	2278	TE CONNECTIVITY	Switzerland
2241	DOMETIC GROUP AB	Sweden	2279	ZURICH INSURANCE	Switzerland
2242	SKISTAR AB	Sweden	2280	DORMAKABA HOLDIN	Switzerland
2243	HUFVUDSTADEN -A	Sweden	2281	SWISS LIFE H AG	Switzerland
2244	KLOVERN AB-A SHS	Sweden	2282	JULIUS BAER GROU	Switzerland
2245	INDUSTRIVARDEN-A	Sweden	2283	CREDIT SUISS-REG	Switzerland
2246	FINGERPRINT CA-B	Sweden	2284	SCHINDLER HLD-PC	Switzerland
2247	SWEDISH ORPHAN B	Sweden	2285	SULZER AG-REG	Switzerland
2248	INTRUM AB	Sweden	2286	BUCHER INDUS-REG	Switzerland

No.	Firm Name	Country	No.	Firm Name	Country
2287	PANALPINA WE-REG	Switzerland	2325	HTC	Taiwan
2288	HELVETIA HOL-REG	Switzerland	2326	CATHAY FINANCIAL	Taiwan
2289	LONZA GROUP -REG	Switzerland	2327	CHUNGHWA TELECOM	Taiwan
2290	BARRY CALLEB-REG	Switzerland	2328	SHIN KONG FNCL	Taiwan
2291	BALOISE HOL-REG	Switzerland	2329	CHINA MAN-MADE	Taiwan
2292	FLUGHAFEN ZU-REG	Switzerland	2330	CHINA MOTOR	Taiwan
2293	LINDT&SPRUENGLI	Switzerland	2331	TATUNG	Taiwan
2294	EMMI AG-REG	Switzerland	2332	INVENTEC	Taiwan
2295	DUFRY AG-REG	Switzerland	2333	TAISHIN HOLDINGS	Taiwan
2296	IMPLENIA AG-REG	Switzerland	2334	PRESIDENT CHAIN	Taiwan
2297	MIKRON HLDG-RG N	Switzerland	2335	TAIWAN PROS	Taiwan
2298	CALIDA HLDG-REG	Switzerland	2336	FUBON FINANCIAL	Taiwan
2299	GAM HOLDING AG	Switzerland	2337	CHUNGHWA CHEM	Taiwan
2300	HUBER + SUHN-REG	Switzerland	2338	EVA AIRWAYS	Taiwan
2301	BASLER KANTON-PC	Switzerland	2339	GREEN ENERGY	Taiwan
2302	BELL FOOD GROUP	Switzerland	2340	SUNKO INK	Taiwan
2303	UMC	Taiwan	2341	HUA NAN FNCL	Taiwan
2304	INNOLUX	Taiwan	2342	GIANTPLUS TECH	Taiwan
2305	CHINA STEEL CORP	Taiwan	2343	WIN SEMI	Taiwan
2306	UNI-PRESIDENT EN	Taiwan	2344	SANYANG MOTOR	Taiwan
2307	YIEH PHUI	Taiwan	2345	SHUANG BANG IND	Taiwan
2308	EPISTAR	Taiwan	2346	FAR EASTONE TELE	Taiwan
2309	CTBC FINANCIAL	Taiwan	2347	ADVANTECH	Taiwan
2310	KING YUAN ELEC	Taiwan	2348	TUNG HO STEEL	Taiwan
2311	CHINA DEVT	Taiwan	2349	APACER TECH	Taiwan
2312	MACRONIX INTL	Taiwan	2350	SAN FU	Taiwan
2313	E.SUN FINANCIAL	Taiwan	2351	PRIMAX ELEC	Taiwan
2314	TON YI IND	Taiwan	2352	CATHAY CHEMICAL	Taiwan
2315	TSMC	Taiwan	2353	FORMOSA TAFFETA	Taiwan
2316	PHISON ELEC	Taiwan	2354	EVERLIGHT ELEC	Taiwan
2317	WINBOND ELEC	Taiwan	2355	ARDENTEC	Taiwan
2318	CHINA AIRLINES	Taiwan	2356	CHENG LOONG	Taiwan
2319	LITE-ON TECH	Taiwan	2357	TAIYEN BIOTECH	Taiwan
2320	ACER INC	Taiwan	2358	FORMOSA ADVANCED	Taiwan
2321	MOTECH IND	Taiwan	2359	TAINAN SPINNING	Taiwan
2322	FIRST FINANCIAL	Taiwan	2360	PRESIDENT SEC	Taiwan
2323	ASIA POLYMER	Taiwan	2361	CATHAY REAL EST	Taiwan
2324	CHINA PETROCHEM	Taiwan	2362	POU CHEN	Taiwan

No.	Firm Name	Country	No.	Firm Name	Country
2363	CHINA STEEL CHEM	Taiwan	2401	PROSPERITY	Taiwan
2364	CHAILEASE	Taiwan	2402	KWONG LUNG	Taiwan
2365	DAILY POLYMER	Taiwan	2403	PLANET TECH	Taiwan
2366	FENG TAY	Taiwan	2404	CHINA CHEM&PHARM	Taiwan
2367	NAMCHOW HLDGS	Taiwan	2405	HU LANE	Taiwan
2368	TNC INDUSTRIAL	Taiwan	2406	BES ENGINEERING	Taiwan
2369	PEGATRON	Taiwan	2407	CAPITAL SEC	Taiwan
2370	SCINOPHARM	Taiwan	2408	UNION BANK	Taiwan
2371	YUEN JEN	Taiwan	2409	MICROELEC TECH	Taiwan
2372	MAO BAO	Taiwan	2410	GREAT TAIPEI GAS	Taiwan
2373	VOLTRONIC POWER	Taiwan	2411	YAGEO	Taiwan
2374	TAIWAN BUS BANK	Taiwan	2412	CONCORD SECS	Taiwan
2375	SINOPAC FNCL	Taiwan	2413	TSH BIOPHARM	Taiwan
2376	CHENG FWA IND	Taiwan	2414	ARBOR TECH	Taiwan
2377	WAN HAI LINES	Taiwan	2415	DAVICOM SEMI	Taiwan
2378	WOWPRIME	Taiwan	2416	U-MING MARINE	Taiwan
2379	FORMOSA SUMCO	Taiwan	2417	KUNG SING ENGINE	Taiwan
2380	ASIA CEMENT CORP	Taiwan	2418	ACTER	Taiwan
2381	MERRY ELEC	Taiwan	2419	TAIWAN CEMENT	Taiwan
2382	KING'S TOWN BANK	Taiwan	2420	ASIA VITAL	Taiwan
2383	MOMO.COM	Taiwan	2421	SINYI REALTY	Taiwan
2384	CHANG HWA BANK	Taiwan	2422	AVER INFO	Taiwan
2385	TAIWAN LIPOSOME	Taiwan	2423	TRADE-VAN	Taiwan
2386	TAIWAN COOP FNCL	Taiwan	2424	SUN BROTHER DEVT	Taiwan
2387	HON HAI	Taiwan	2425	FORMOSA PLASTICS	Taiwan
2388	CHUNG HWA CHEM	Taiwan	2426	SUN YAD	Taiwan
2389	ELITEGROUP	Taiwan	2427	GIANT MANUFACTUR	Taiwan
2390	APEX BIOTECH	Taiwan	2428	TEN REN TEA	Taiwan
2391	MARKETECH INTL	Taiwan	2429	EVERMORE CHEM	Taiwan
2392	ENTIE COMMERCIAL	Taiwan	2430	LUNG YEN LIFE	Taiwan
2393	FOXCONN TECH	Taiwan	2431	MOSEL VITELIC	Taiwan
2394	UNION INSURANCE	Taiwan	2432	FUBURG IND	Taiwan
2395	KING SLIDE WORKS	Taiwan	2433	SIRTEC	Taiwan
2396	ZENG HSING	Taiwan	2434	NAN KANG RUBBER	Taiwan
2397	UNIZYX HOLDING	Taiwan	2435	LCY CHEMICAL	Taiwan
2398	GLOBAL UNICHIP	Taiwan	2436	TAH KONG CHEM	Taiwan
2399	KEDGE	Taiwan	2437	SIMPLO TECH	Taiwan
2400	INVENTEC BESTA	Taiwan	2438	HSING TA CEMENT	Taiwan

No.	Firm Name	Country	No.	Firm Name	Country
2439	TAIWAN FU HSING	Taiwan	2477	BANGKOK BANK PUB	Thailand
2440	ENTEREX INTL	Taiwan	2478	SAHA PATHANA INT	Thailand
2441	GLOBAL WAFERS	Taiwan	2479	PRUKSA HOLDING P	Thailand
2442	CATCHER TECH	Taiwan	2480	THANACHART CAPIT	Thailand
2443	PACIFIC HOSPITAL	Taiwan	2481	TMB BANK PCL	Thailand
2444	APEX SCIENCE	Taiwan	2482	ROBINSON PCL	Thailand
2445	WEI CHUAN FOODS	Taiwan	2483	BANGKOK EXPRESSW	Thailand
2446	HO TUNG CHEMICAL	Taiwan	2484	BERLI JUCKER PCL	Thailand
2447	CHENG SHIN	Taiwan	2485	ECOBANK TRANSNAT	Togo
2448	EVERGREEN INTL	Taiwan	2486	GARANTI	Turkey
2449	TECOM	Taiwan	2487	ULKER	Turkey
2450	NIKO SEMI	Taiwan	2488	ANADOLU EFES BIR	Turkey
2451	SYNNEX TECH INTL	Taiwan	2489	YAPI KREDI	Turkey
2452	SIGURD	Taiwan	2490	MIGROS	Turkey
2453	MERIDA INDUSTRY	Taiwan	2491	AKBANK	Turkey
2454	RUENTEX IND	Taiwan	2492	ARCELIK	Turkey
2455	ITE TECH	Taiwan	2493	AYGAZ AS	Turkey
2456	ORIENT SEMI	Taiwan	2494	BRISA	Turkey
2457	INDORAMA VENTURE	Thailand	2495	SABANCI HOLDING	Turkey
2458	PTT EXPL & PROD	Thailand	2496	DOGUS OTOMOTIV S	Turkey
2459	SIAM CEMENT PCL	Thailand	2497	TURKIYE SINAI	Turkey
2460	IRPC PCL	Thailand	2498	KOC HOLDING	Turkey
2461	DELTA ELEC THAI	Thailand	2499	EREGLI	Turkey
2462	THAI OIL PCL	Thailand	2500	AKCANSA CIMENTO	Turkey
2463	CHAROEN POK FOOD	Thailand	2501	TURK TRAKTOR VE	Turkey
2464	BANPU PUB CO LTD	Thailand	2502	BOYNER PERAKENDE	Turkey
2465	ELEC GENERATING	Thailand	2503	KERNEL	Ukraine
2466	THAI UNION GROUP	Thailand	2504	ABU DHABI COMMER	United Arab Emirates
2467	CENTRAL PATTANA	Thailand	2505	ARAMEX PJSC	United Arab Emirates
2468	PTT PCL	Thailand	2506	EMIRATES INTEGRA	United Arab Emirates
2469	HOME PRODUCT CEN	Thailand	2507	DP WORLD LTD	United Arab Emirates
2470	ADVANCED INFO	Thailand	2508	POLARCUS LTD	United Arab Emirates
2471	SIAM COMM BK PCL	Thailand	2509	FIRST ABU DHABI	United Arab Emirates
2472	MINOR INTERNATIO	Thailand	2510	CAIRN ENERGY	United Kingdom
2473	AIRPORTS OF THAI	Thailand	2511	PREMIER OIL PLC	United Kingdom
2474	BANK AYUDHYA PCL	Thailand	2512	CNH INDUSTRIAL N	United Kingdom
2475	SRI TRANG AGRO	Thailand	2513	BP PLC	United Kingdom
2476	INTOUCH HOLDINGS	Thailand	2514	ROYAL MAIL	United Kingdom

No.	Firm Name	Country	No.	Firm Name	Country
2515	MONDI PLC	United Kingdom	2553	PAN AFRICAN RESO	United Kingdom
2516	MONDI LTD	United Kingdom	2554	SYNTHOMER PLC	United Kingdom
2517	DIAGEO PLC	United Kingdom	2555	KAZ MINERALS PLC	United Kingdom
2518	CENTRICA PLC	United Kingdom	2556	ROTORK PLC	United Kingdom
2519	RIO TINTO PLC	United Kingdom	2557	TULLOW OIL	United Kingdom
2520	RIO TINTO LTD	United Kingdom	2558	BIG YELLOW GROUP	United Kingdom
2521	LLOYDS BANKING	United Kingdom	2559	SMITH & NEPHEW	United Kingdom
2522	BRIT AMER TOBACC	United Kingdom	2560	KIER GROUP PLC	United Kingdom
2523	PEARSON PLC	United Kingdom	2561	CARILLION PLC	United Kingdom
2524	RECKITT BENCKISE	United Kingdom	2562	BURBERRY GROUP	United Kingdom
2525	STANDARD CHARTER	United Kingdom	2563	RENEWI PLC	United Kingdom
2526	RELX PLC	United Kingdom	2564	IHS MARKIT LTD	United Kingdom
2527	GLAXOSMITHKLINE	United Kingdom	2565	WHITBREAD PLC	United Kingdom
2528	SSE PLC	United Kingdom	2566	CHEMRING GROUP	United Kingdom
2529	ANGLO AMER PLC	United Kingdom	2567	DRAX GROUP PLC	United Kingdom
2530	DS SMITH PLC	United Kingdom	2568	PENNON GRP PLC	United Kingdom
2531	LAND SECURITIES	United Kingdom	2569	SPORTS DIRECT IN	United Kingdom
2532	AVIVA PLC	United Kingdom	2570	BUNZL PLC	United Kingdom
2533	DERWENT LONDON	United Kingdom	2571	SAFESTORE HOLDIN	United Kingdom
2534	WPP PLC	United Kingdom	2572	REACH PLC	United Kingdom
2535	UNILEVER NV-CVA	United Kingdom	2573	SIG PLC	United Kingdom
2536	ASSOC BRIT FOODS	United Kingdom	2574	BALFOUR BEATTY	United Kingdom
2537	WH SMITH PLC	United Kingdom	2575	RDI REIT PLC	United Kingdom
2538	GEM DIAMONDS LTD	United Kingdom	2576	JD SPORTS FASHIO	United Kingdom
2539	SHAFTESBURY	United Kingdom	2577	BBA AVIATION PLC	United Kingdom
2540	COBHAM PLC	United Kingdom	2578	SPECTRIS PLC	United Kingdom
2541	HSBC HOLDINGS PL	United Kingdom	2579	ELEMENTIS PLC	United Kingdom
2542	ASTRAZENECA PLC	United Kingdom	2580	INTERSERVE PLC	United Kingdom
2543	MORGAN ADVANCED	United Kingdom	2581	SERCO GROUP	United Kingdom
2544	COUNTRYSIDE PROP	United Kingdom	2582	CLS HOLDINGS	United Kingdom
2545	HELICAL PLC	United Kingdom	2583	BERKELEY GROUP	United Kingdom
2546	EXPERIAN PLC	United Kingdom	2584	DIALIGHT PLC	United Kingdom
2547	BARCLAYS PLC	United Kingdom	2585	SEVERN TRENT	United Kingdom
2548	PARAGON BANKING	United Kingdom	2586	TOPPS TILES PLC	United Kingdom
2549	PRUDENTIAL PLC	United Kingdom	2587	SENIOR PLC	United Kingdom
2550	MORGAN SINDALL G	United Kingdom	2588	GREGGS PLC	United Kingdom
2551	BARRATT DEV	United Kingdom	2589	SPIRAX-SARCO ENG	United Kingdom
2552	LIBERTY GLOBAL-A	United Kingdom	2590	DIALOG SEMICOND	United Kingdom

No.	Firm Name	Country	No.	Firm Name	Country
2591	CAPITA PLC	United Kingdom	2629	MCCARTHY & ST	United Kingdom
2592	THOMAS COOK GROU	United Kingdom	2630	SPEEDY HIRE PLC	United Kingdom
2593	JOHNSTON PRESS	United Kingdom	2631	INTERMEDIATE CAP	United Kingdom
2594	G4S PLC	United Kingdom	2632	RESTAURANT GROUP	United Kingdom
2595	EI GROUP PLC	United Kingdom	2633	GAME DIGITAL PLC	United Kingdom
2596	OPHIR ENERGY	United Kingdom	2634	SAGE GROUP	United Kingdom
2597	KCOM GROUP PLC	United Kingdom	2635	VP PLC	United Kingdom
2598	MAN GROUP PLC	United Kingdom	2636	BODYCOTE PLC	United Kingdom
2599	MARSTON'S PLC	United Kingdom	2637	VICTREX PLC	United Kingdom
2600	BOOT (HENRY) PLC	United Kingdom	2638	HAYS PLC	United Kingdom
2601	COMPASS GROUP	United Kingdom	2639	WOOD GROUP (JOHN	United Kingdom
2602	CYBG PLC	United Kingdom	2640	DAILY MAIL TST A	United Kingdom
2603	DEBENHAMS PLC	United Kingdom	2641	B&M EUROPEAN	United Kingdom
2604	JARDINE LLOYD TH	United Kingdom	2642	ST MODWEN PROPS	United Kingdom
2605	SSP GROUP PLC	United Kingdom	2643	SDL PLC	United Kingdom
2606	VESUVIUS PLC	United Kingdom	2644	FISHER (JAMES)	United Kingdom
2607	HOWDEN JOINERY G	United Kingdom	2645	LOOKERS PLC	United Kingdom
2608	PZ CUSSONS PLC	United Kingdom	2646	REA HOLDINGS	United Kingdom
2609	RENTOKIL INITIAL	United Kingdom	2647	COMPUTACENTER PL	United Kingdom
2610	BELLWAY PLC	United Kingdom	2648	MELROSE INDUSTRI	United Kingdom
2611	BROWN (N) GROUP	United Kingdom	2649	SOFTCAT PLC	United Kingdom
2612	NATL EXPRESS GRP	United Kingdom	2650	OXFORD INSTR	United Kingdom
2613	ITV PLC	United Kingdom	2651	QINETIQ GROUP PL	United Kingdom
2614	CAPITAL & COUNTI	United Kingdom	2652	IP GROUP PLC	United Kingdom
2615	JUPITER FUND	United Kingdom	2653	EUROMONEY INSTL	United Kingdom
2616	INTL CONS AIRLIN	United Kingdom	2654	GENEL ENERGY PLC	United Kingdom
2617	GREENE KING PLC	United Kingdom	2655	INCHCAPE PLC	United Kingdom
2618	RICARDO PLC	United Kingdom	2656	MJ GLEESON PLC	United Kingdom
2619	PHOENIX GROUP HO	United Kingdom	2657	WORKSPACE GROUP	United Kingdom
2620	ASHTAD GROUP	United Kingdom	2658	CMC MARKETS P-WI	United Kingdom
2621	GALLIFORD TRY	United Kingdom	2659	EASYJET PLC	United Kingdom
2622	AUGEAN PLC	United Kingdom	2660	MICRO FOCUS INTL	United Kingdom
2623	MITCHELLS & BUTL	United Kingdom	2661	CONSORT MEDICAL	United Kingdom
2624	TED BAKER PLC	United Kingdom	2662	AVON RUBBER	United Kingdom
2625	DIPLOMA PLC	United Kingdom	2663	PETS AT HOME	United Kingdom
2626	CARPETRIGHT PLC	United Kingdom	2664	CARD FACTORY PLC	United Kingdom
2627	MOTHERCARE PLC	United Kingdom	2665	STERIS PLC	United Kingdom
2628	ENERGEAN OIL	United Kingdom	2666	FUTURE PLC	United Kingdom

No.	Firm Name	Country	No.	Firm Name	Country
2667	STHREE PLC	United Kingdom	2705	ALLIED MINDS PLC	United Kingdom
2668	JUST GROUP PLC	United Kingdom	2706	CML MICROSYSTEMS	United Kingdom
2669	COUNTRYWIDE PLC	United Kingdom	2707	NEWMONT MINING	United States
2670	XAAR PLC	United Kingdom	2708	BANK OF AMERICA	United States
2671	PENDRAGON	United Kingdom	2709	MOSAIC CO/THE	United States
2672	ITE GROUP PLC	United Kingdom	2710	JOHNSON CONTROLS	United States
2673	MCKAY SECS-ORD	United Kingdom	2711	KIMBERLY-CLARK	United States
2674	CLARKSON PLC	United Kingdom	2712	EXELON CORP	United States
2675	IG GROUP HOLDING	United Kingdom	2713	INTL FLVR & FRAG	United States
2676	CHESNARA PLC	United Kingdom	2714	MERCK & CO	United States
2677	SUBSEA 7 SA	United Kingdom	2715	GENERAL MOTORS C	United States
2678	HUNTING PLC	United Kingdom	2716	JOHNSON&JOHNSON	United States
2679	SOPHOS GROUP	United Kingdom	2717	CONOCOPHILLIPS	United States
2680	LOW & BONAR	United Kingdom	2718	ECOLAB INC	United States
2681	VENATOR MATERIAL	United Kingdom	2719	EASTMAN CHEMICAL	United States
2682	CHARLES TAYLOR P	United Kingdom	2720	AT&T INC	United States
2683	BEAZLEY PLC	United Kingdom	2721	AIR PRODS & CHEM	United States
2684	CIRCASSIA PH	United Kingdom	2722	EQT CORP	United States
2685	JOHN LAING	United Kingdom	2723	DUKE ENERGY CORP	United States
2686	ONESAVINGS BANK	United Kingdom	2724	3M CO	United States
2687	POLYPIPE GROU	United Kingdom	2725	COLGATE-PALMOLIV	United States
2688	PV CRYSTALOX SOL	United Kingdom	2726	ABBOTT LABS	United States
2689	HASTINGS GROUP	United Kingdom	2727	ALTRIA GROUP INC	United States
2690	ASSURA PLC	United Kingdom	2728	INTEL CORP	United States
2691	CONNECT GROUP PL	United Kingdom	2729	CARNIVAL PLC	United States
2692	AVOCET MINING	United Kingdom	2730	CITIGROUP INC	United States
2693	LOK'N STORE GRP	United Kingdom	2731	UNITED PARCEL-B	United States
2694	GENUS PLC	United Kingdom	2732	HEWLETT PACKA	United States
2695	NOBLE CORP PLC	United Kingdom	2733	AMERICAN ELECTRI	United States
2696	BREWIN DOLPHIN	United Kingdom	2734	ALCOA CORP	United States
2697	GW PHARMACEUTICA	United Kingdom	2735	HP INC	United States
2698	ASCENTIAL PLC	United Kingdom	2736	GREIF INC-CL A	United States
2699	FDM GROUP HOLDIN	United Kingdom	2737	APPLE INC	United States
2700	AON PLC	United Kingdom	2738	BANK NY MELLON	United States
2701	TOWN CENTRE SECS	United Kingdom	2739	XYLEM INC	United States
2702	ENQUEST PLC	United Kingdom	2740	CARNIVAL CORP	United States
2703	ENSCO PLC-CL A	United Kingdom	2741	CHEVRON CORP	United States
2704	JANUS HENDERSON	United Kingdom	2742	BEST BUY CO INC	United States

No.	Firm Name	Country	No.	Firm Name	Country
2743	AGILENT TECH INC	United States	2781	INTL PAPER CO	United States
2744	WEC ENERGY GROUP	United States	2782	LOWE'S COS INC	United States
2745	CABOT CORP	United States	2783	PROLOGIS INC	United States
2746	WELLTOWER INC	United States	2784	PNC FINANCIAL SE	United States
2747	QUALCOMM INC	United States	2785	OSHKOSH CORP	United States
2748	UNION PAC CORP	United States	2786	GOLDMAN SACHS GP	United States
2749	AMERICAN AIRLINE	United States	2787	BRISTOL-MYER SQB	United States
2750	EDWARDS LIFE	United States	2788	IRON MOUNTAIN	United States
2751	SEMPRA ENERGY	United States	2789	SHIRE PLC	United States
2752	BECTON DICKINSON	United States	2790	TYSON FOODS-A	United States
2753	AMERICAN EXPRESS	United States	2791	UNITED CONTINENT	United States
2754	PEPSICO INC	United States	2792	AVALONBAY COMMUN	United States
2755	ARCHER-DANIELS	United States	2793	KILROY REALTY	United States
2756	ELI LILLY & CO	United States	2794	NISOURCE INC	United States
2757	FLUOR CORP	United States	2795	APTARGROUP INC	United States
2758	CVS HEALTH CORP	United States	2796	HERSHEY CO/THE	United States
2759	HCP INC	United States	2797	ABM INDUSTRIES	United States
2760	ALLERGAN PLC	United States	2798	SPECTRA ENERGY	United States
2761	PFIZER INC	United States	2799	KOHL'S CORP	United States
2762	JPMORGAN CHASE	United States	2800	PRUDENTL FINL	United States
2763	NORTHERN TRUST	United States	2801	LINCOLN NATL CRP	United States
2764	ENERGY CORP	United States	2802	ALPHABET INC-A	United States
2765	METTLER-TOLEDO	United States	2803	CATERPILLAR INC	United States
2766	METLIFE INC	United States	2804	AMGEN INC	United States
2767	DUNKIN' BRANDS G	United States	2805	NRG ENERGY	United States
2768	KEYSIGHT TEC	United States	2806	CUMMINS INC	United States
2769	HALLIBURTON CO	United States	2807	ARRIS INTERNATIO	United States
2770	JONES LANG LASAL	United States	2808	AK STEEL HLDG	United States
2771	FORD MOTOR CO	United States	2809	ABBVIE INC	United States
2772	ON SEMICONDUCTOR	United States	2810	APPLIED MATERIAL	United States
2773	EDISON INTL	United States	2811	PILGRIM'S PRIDE	United States
2774	NEXEO SOLUTIONS	United States	2812	SHERWIN-WILLIAMS	United States
2775	CAESARS ENTERTAI	United States	2813	KEYCORP	United States
2776	BIOGEN INC	United States	2814	CHURCH & DWIGHT	United States
2777	FMC CORP	United States	2815	SALESFORCE.COM	United States
2778	KROGER CO	United States	2816	NEXTERA ENERGY	United States
2779	GENERAL ELECTRIC	United States	2817	BROOKFIELD PRO-A	United States
2780	PPL CORP	United States	2818	INFINERA CORP	United States

No.	Firm Name	Country	No.	Firm Name	Country
2819	REGENERON PHARM	United States	2857	COWEN INC	United States
2820	ROCKWELL AUTOMAT	United States	2858	PHILLIPS 66	United States
2821	KELLOGG CO	United States	2859	AFLAC INC	United States
2822	VORNADO RLTY TST	United States	2860	LEAR CORP	United States
2823	VERIZON COMMUNIC	United States	2861	AMERISOURCEBERGE	United States
2824	GOODYEAR TIRE	United States	2862	UNDER ARMOUR-A	United States
2825	EMERSON ELEC CO	United States	2863	US STEEL CORP	United States
2826	QUEST DIAGNOSTIC	United States	2864	FIFTH THIRD BANC	United States
2827	GENTEX CORP	United States	2865	VERISK ANALYTI	United States
2828	WALT DISNEY CO	United States	2866	CENTERPOINT ENER	United States
2829	NAVISTAR INTL	United States	2867	MORGAN STANLEY	United States
2830	PINNACLE WEST	United States	2868	ACCO BRANDS CORP	United States
2831	VISA INC-CLASS A	United States	2869	HUMANA INC	United States
2832	SOUTHERN CO	United States	2870	NUCOR CORP	United States
2833	JETBLUE AIRWAYS	United States	2871	HANESBRANDS INC	United States
2834	PLEXUS CORP	United States	2872	FORTIVE CORP	United States
2835	ALLIANCE DATA	United States	2873	THERMO FISHER	United States
2836	VARIAN MEDICAL S	United States	2874	WOODWARD INC	United States
2837	VALVOLINE INC	United States	2875	TRAVELERS COS IN	United States
2838	BERRY GLOBAL GRO	United States	2876	BOSTON SCIENTIFC	United States
2839	ITRON INC	United States	2877	PRA HEALTH SCIEN	United States
2840	WHIRLPOOL CORP	United States	2878	SPECTRUM BRANDS	United States
2841	NIELSEN HOLDINGS	United States	2879	BOEING CO/THE	United States
2842	AECOM	United States	2880	COOPER-STANDARD	United States
2843	SCHNITZER STEEL	United States	2881	FACEBOOK INC-A	United States
2844	REC SILICON ASA	United States	2882	MARTIN MAR MTLs	United States
2845	RAYTHEON CO	United States	2883	TAUBMAN CENTERS	United States
2846	BOSTON PROPRTIE	United States	2884	NABORS INDS LTD	United States
2847	STARBUCKS CORP	United States	2885	KB HOME	United States
2848	MACERICH CO	United States	2886	MINERALS TECH	United States
2849	MARATHON PETROLE	United States	2887	WYNN RESORTS LTD	United States
2850	GILEAD SCIENCES	United States	2888	HUNTINGTON BANC	United States
2851	CMS ENERGY CORP	United States	2889	BED BATH & BEYOND	United States
2852	UNITEDHEALTH GRP	United States	2890	TTM TECHNOLOGIES	United States
2853	HOLLYFRONTIER CO	United States	2891	JACOBS ENGIN GRP	United States
2854	PRINCIPAL FINL	United States	2892	EXPEDITORS INTL	United States
2855	FLOWERS FOODS	United States	2893	ROCKWELL COLLINS	United States
2856	WALMART INC	United States	2894	SKYWORKS SOLUTIO	United States

No.	Firm Name	Country	No.	Firm Name	Country
2895	VISTEON CORP	United States	2933	PARSLEY ENERGY-A	United States
2896	PRIMERICA INC	United States	2934	KKR & CO INC-A	United States
2897	SYNCHRONY FINANC	United States	2935	SUMMIT HOTEL PRO	United States
2898	CONSTELLATION-A	United States	2936	OLIN CORP	United States
2899	AXALTA COATING S	United States	2937	ARCONIC INC	United States
2900	INGEVITY CORP	United States	2938	ARMSTRONG FL	United States
2901	ASHLAND GLOBAL H	United States	2939	SYNOPSIS INC	United States
2902	TRANSOCEAN LTD	United States	2940	RELIANCE STEEL	United States
2903	HANNON ARMSTRONG	United States	2941	MULTI-COLOR CORP	United States
2904	BLACK HILLS CORP	United States	2942	CALIF WATER SRVC	United States
2905	MASTERCARD INC-A	United States	2943	CITIZENS FINANCI	United States
2906	BLACKROCK INC	United States	2944	AFFIL MANAGERS	United States
2907	LENNOX INTL INC	United States	2945	HAYNES INTL INC	United States
2908	CHARLES RIVER LA	United States	2946	MEREDITH CORP	United States
2909	COOPER TIRE & RU	United States	2947	FTI CONSULTING	United States
2910	DOLLAR TREE INC	United States	2948	WHITING PETROLEU	United States
2911	KMG CHEMICALS	United States	2949	MURPHY OIL CORP	United States
2912	DAVITA INC	United States	2950	RANGE RESOURCES	United States
2913	DOVER CORP	United States	2951	FIRST REPUBLIC B	United States
2914	CHOICE HOTELS	United States	2952	CINCINNATI FIN	United States
2915	CARMAX INC	United States	2953	CARLISLE COS INC	United States
2916	INTEGRAT DEVICE	United States	2954	FINISAR CORP	United States
2917	MDU RES GROUP	United States	2955	COLUMBIA SPORTSW	United States
2918	BIOMARIN PHARMAC	United States	2956	RYDER SYSTEM INC	United States
2919	DOWDUPONT INC	United States	2957	CIRRUS LOGIC INC	United States
2920	MAXIMUS INC	United States	2958	WILLIAMS COS INC	United States
2921	EQUITY RESIDENTI	United States	2959	ZUMIEZ INC	United States
2922	TUPPERWARE BRAND	United States	2960	NEW JERSEY RES	United States
2923	TANDY LEATHER FA	United States	2961	WEBSTER FINL	United States
2924	NATL OILWELL VAR	United States	2962	SCHWAB (CHARLES)	United States
2925	HUDSON TECH	United States	2963	VERSUM MATER	United States
2926	PACCAR INC	United States	2964	AGCO CORP	United States
2927	VALERO ENERGY	United States	2965	FUELCELL ENERGY	United States
2928	REALOGY HOLDINGS	United States	2966	CUBIC CORP	United States
2929	ITT INC	United States	2967	ALEXANDRIA REAL	United States
2930	BIO-RAD LABS-A	United States	2968	ROPER TECHNOLOGI	United States
2931	PNM RESOURCES	United States	2969	BRISTOW GROUP IN	United States
2932	CALERES INC	United States	2970	HOLOGIC INC	United States

No.	Firm Name	Country
2971	KIRBY CORP	United States
2972	TOLL BROTHERS	United States
2973	CORNING INC	United States
2974	HUNT (JB) TRANS	United States
2975	WORKIVA INC	United States
2976	ARAMARK	United States
2977	PACKAGING CORP	United States
2978	OWENS-ILLINOIS	United States
2979	FRANKLIN RES INC	United States
2980	WR BERKLEY CORP	United States
2981	TRIUMPH GROUP	United States
2982	MSCI INC	United States
2983	CROCS INC	United States
2984	FED REALTY INVS	United States
2985	CLEAN HARBORS	United States
2986	AMDOCS LTD	United States
2987	AMERICAN INTERNA	United States
2988	ROSS STORES INC	United States
2989	CLEAR CHANNEL-A	United States
2990	TEGNA INC	United States
2991	NUANCE COMMUNICA	United States
2992	EXTRA SPACE STOR	United States
2993	GENTHERM INC	United States
2994	AMERIPRISE FINAN	United States
2995	FIRST HORIZON NA	United States
2996	VIET NAM DAIRY P	Vietnam
2997	DHG PHARMACEUTIC	Vietnam
2998	BAO VIET HOLDING	Vietnam
2999	VINGROUP JSC	Vietnam
3000	ZAMBIA SUGAR PLC	Zambia